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Pharmacists for the Global Goals:  
Creating Value Beyond Health



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# Oral Presentations: Hospital and Clinical Pharmacy



## Analysis of pharmacist interventions and drug related problems on the use of controlled antimicrobials at a regional hospital in Taiwan

Shin Li<sup>\*1</sup>, Sue-Fei Cheng<sup>1</sup>, Hui-Ting Huang<sup>2</sup>

### Abstract

**OBJECTIVES:** This study aims to identify and analyze the pattern of drug-related problems (DRPs) and pharmacist interventions on the use of controlled antimicrobials since the implementation of antimicrobial stewardship program (ASP), also to assess further opportunities for pharmacists as an effective role in ASP at a regional hospital in Taiwan.

**METHODS:** A retrospective descriptive study was conducted using electronic medical record, antimicrobial application form and pharmacist documentations for data collection, including DRPs identified, recommendations of intervention, physicians' feedbacks and content of antimicrobial orders from July 2017 to March 2018. DRP classification was based on adapted Pharmaceutical Care Network Europe Foundation classification version 8.02. Controlled antimicrobials are defined by hospital policy and consensus.

**RESULTS:** A total of 1231 controlled antimicrobial prescriptions were reviewed, including 109 DRPs encounters and 118 proposed pharmaceutical interventions. The most prevalent DRP was inappropriate frequency, accounting for 46.8% (n=51) of all, followed by inappropriate dose (22.9%, n=25) and no or wrong outcome monitoring (11.9%, n=13); and 26.2% DRPs occurred while prescribing or monitoring vancomycin, 25.4% for piperacillin-tazobactam. Of all 118 pharmacist interventions, 72.9% (n=86) were accepted with order changes, 12.7% (n=15) were rejected and 14.4% (n=17) were accepted with no changes. Dosage modification, consisting of dosing interval and dose, constituted 66.1% (n=78) of all interventions.

**CONCLUSION:** The study revealed high physicians' acceptance rate to pharmacist interventions on controlled antimicrobials use, especially recommendations for dosage modification and a similar pattern for unaccepted ones. Inappropriate dosage regimen and dose were both prevailing types of DRPs.

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## Effectiveness of Peritoneal Dialysis Medication Therapy Adherence Clinic (PD-MTAC) Pharmacists in a Tertiary Hospital in Malaysia

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### Abstract

**OBJECTIVES:** Medication Therapy Adherence Clinic (MTAC) is a pharmacist-managed clinic where pharmacists identify pharmaceutical care issues and provide individualised medication counseling to patients. The objective of the study was to categorise types and causes of drug related problems (DRPs) detected by pharmacists in peritoneal dialysis (PD) patients. Furthermore, interventions implemented along with the outcomes were identified.

**METHODS:** PD-MTAC patients in Tengku Ampuan Rahimah Hospital Malaysia were recruited in the study. Patients aged 14 years old and above with at least 1 medication from January 2008 to September 2017 were included. This was a retrospective observational study. MTAC clinical activity sheets were reviewed. DRPs were classified according to the Pharmaceutical Care Network Europe (PCNE) Classification v8.0. PCNE v8.0 classification includes drug related problems (P), causes (C), interventions and outcomes.

**RESULTS:** Out of 322 patients, 54% were on >10 drugs. Many patients (268, 83%) had at least 1 DRP. From the 1031 DRPs identified, the most common were effect of drug treatment not optimal (P1.2, 57%), followed by untreated symptoms/indication (P1.3, 21%) and adverse drug event (P2.1, 15%). The main cause for P1.2 was patient noncompliance (C7.1, 65%). For P1.3, there was no drug despite existing indication (C1.6, 98%). Furthermore, P2.1, was mainly due to dose selection (C3, 57%). DRPs were intervened at patient level (51%) through counselling whereas at prescriber level (47%), changes of drug regimen were proposed. Prescribers accepted 97% of interventions suggested. Overall, 75% of DRPs were solved.

**CONCLUSION:** This study demonstrated a high number of DRPs encountered by PD patients. The importance of pharmacists was evident in detecting, intervening and resolving DRPs at both patient and prescriber level. We found PD-MTAC pharmacists to have an effective role in providing optimal care to PD patients.

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## Role of Pharmacist in managing diabetes in children of Pakistan

Faraz Ashraf\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The objective of the Oral presentation is to deliver the participants (Pharmacists) about the role of Pharmacists in the management of diabetes.

in the hospital and community pharmacy setups, pharmacists play a major role in the diagnosis and management of the disease with the discussion and patient counseling.

Hence, pharmacist plays a key role in establishing good therapeutic plan for the management of Diabetes patient.

**METHODS:** The method used to gather the data of children under 14 years of age either having diabetes or visiting hospitals for their checkups for diabetes diagnosis.

100 patients were seen in the study and it was mandatory for them to visit pharmacist for counseling and discussion. Meanwhile, the pharmacist also discussed the cases with the physician.

**RESULTS:** results obtained were, that pharmacists play a vital role in the management of diabetes in children. Either it is the intake of oral medication or insulin. the pharmacist has a major role.

A diabetes clinic was established in different hospitals which were attached to the pharmacists and direct liaison was established between physician, pharmacist and patient. Moreover, the nursing staff was also in collaboration with the healthcare team.

**CONCLUSION:** Pharmacist has a major and vital role in the healthcare system and in the management of major diseases as well. the role of pharmacist can be established in the way by evaluating two different groups of patients one who were in discussion and consultation with the pharmacists and who are not.

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## The role of the home-care pharmacist in a community hospital

Yu-Chun Chen\*

### Abstract

**OBJECTIVES:** The objectives are to determine the effectiveness on patients who are received home-care pharmaceutical service.

**METHODS:** Pharmacists provided home-care service to the patient who were in need from January to June 2018. Pharmacist assessed patients adherence and medicine knowledge, collected the drug-related problems from home-care pharmaceutical care.

**RESULTS:** Home visits were most commonly performed for individuals who are elder or physically challenged. The most common drug-related problems was about patients' medication adherence(35%); the second and third drug-related problems were side effects(30%); instructions for taking medicine(10%).

**CONCLUSION:** Home-care pharmaceutical service plays an important role in patient who are far from community pharmacy or lack of adequate medical resource.

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## Antidiabetic Effect of Combination of Fractionated-extracts of *Andrographis paniculata* and *Centella asiatica*: In vitro and In vivo studies

Agung Endro Nugroho\*

### Abstract

**OBJECTIVES:** Diabetes mellitus (DM) is one of the degenerative diseases of carbohydrate metabolism, characterized by hyperglycemic conditions. One effort to treat this disease is to use traditional medicinal plants such as *Andrographis paniculata* and *Centella asiatica*. In this study, we evaluated the combination of fractionated extracts of *A. paniculata* and *C. asiatica* on 3T3-L1 adipocyte cells and in Neonatal-STZ (nSTZ) induced rats.

**METHODS:** The study was performed using two assays i.e in vitro and in vivo assays. In vivo assays involved analysis of PPAR $\gamma$  and GLUT4 expression with PCR. In vivo assays, Hyperglycemic condition in rats was stimulated using a single dose injection of 90 mg/kg BW streptozotocin (STZ) intraperitoneally in 2 days neonatal rats. Twelve weeks old neonatal STZ-induced rats were orally administrated with the drugs for 14 consecutive days.

**RESULTS:** Evaluation of combination of fractionated extracts of *A. paniculata* and *C. asiatica* on PPAR $\gamma$  and GLUT4 mRNA expressions in 3T3-L1 adipocyte, and its effect on insulin-stimulated glucose uptake. In the study, This combination increase the glucose uptake and insulin sensitivity through up-regulation of PPAR $\gamma$  and GLUT4 mRNA expressions in 3T3-L1 adipocyte. On the other side, this combination also decrease postprandial blood glucose and MDA levels, and increase blood SOD and GPx levels significantly. Moreover, administration of this combination can restore the number of pancreatic beta cells and insulin expressions.

**CONCLUSION:** The combination of fractionated extracts of *A. paniculata* and *C. asiatica* exhibited antidiabetic on 3T3-L1 adipocyte cells and nonatal-STZ (nSTZ) induced rats. Combination of *A. paniculata* and *C. asiatica* is potential to develop as an anti-diabetic agent for type 2 diabetes.

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## Assessment of the Risk of Acute Kidney Injury in Patients Receiving Colistimethate Sodium for the Treatment of Multidrug Resistant Gram-Negative Infections

Nusaibah Abdul Rahim\*

### Abstract

**OBJECTIVES:** Rapidly increasing Gram-negative superbugs including multidrug resistant (MDR) *Acinetobacter baumannii* has led to the resurgence of old antibiotics such as colistimethate sodium (CMS). Recently, a new CMS dosing regimen which consists of an initial high loading dose followed by high maintenance dose has been proposed. This study aimed to assess the risk of acute kidney injury (AKI) in patients receiving CMS for MDR Gram-negative infections.

**METHODS:** A retrospective observational study of ICU and neuro-ICU patients in University Malaya Medical Centre (UMMC), receiving intravenous CMS was conducted. The study period was from May 2013 to August 2017. Patients aged 18 years old and above for culture-positive MDR Gram-negative infections were included. Prescriptions, drug administration charts and medical records were reviewed. The incidence of AKI was determined as per RIFLE criteria. SPSS (Version 23) was used for analysis.

**RESULTS:** Of 106 patients, high CMS loading dose of 9 million IU followed by maintenance dose 4.5 million IU given twice daily were prescribed in 73 patients. The overall incidence of AKI with CMS use was 45.3%. Logistic regression demonstrated no significant association between loading dose and AKI. Significant factors ( $P < 0.05$ ) included older age (OR=1.03; 95%CI=1.01-1.05), female (OR=3.24; 95% CI=1.38-7.60), longer CMS duration (OR=1.09; 95% CI=1.02-1.16), lower baseline ALT (OR=0.99; 95% CI=0.98-0.997), on loop diuretics (OR=4.01; 95% CI=1.19-13.57) and inotropes (OR=5.01; 95% CI=2.02-12.43). Multivariate analysis of these factors identified female and concomitant inotropes as significant factors.

**CONCLUSION:** In our study, high CMS loading dose followed by high maintenance dose twice daily did not appear as a risk factor for the incidence of AKI. Our findings also suggest that patients receiving CMS of female sex and on concomitant inotropes may need to be closely monitored.

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## Research Study on the Provision of Clinical Pharmacy Services in DOH Government Hospitals in the Philippines

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### Abstract

**OBJECTIVES:** This study aimed to evaluate the clinical pharmacy services in DOH (Department of Health) hospitals across the country and establish the ideal ratio of clinical pharmacists to patients.

**METHODS:** A survey was given to pharmacists who conduct clinical pharmacy services in DOH hospitals to determine their demographics and their perceived and actual roles as clinical pharmacists. Another survey for chief pharmacists of DOH and private hospitals was given to estimate the number of pharmacists conducting clinical pharmacy services in the country. Focused-group discussions were conducted with pharmacists from four tertiary government hospitals to gain insight on their clinical pharmacy practices. Descriptive statistics and thematic analysis were used to analyze the data.

**RESULTS:** A total of 120 pharmacists conducting clinical pharmacy services in DOH hospitals was recorded. Based on the survey for chief pharmacists, there are 407 pharmacists who do clinical pharmacy in the 164 hospitals that participated. Top clinical pharmacy services being performed by clinical pharmacists are education on the use of medical devices, patient counseling, and assessment of the clinical outcomes of pharmacotherapy. The participants believe that there should be an established plantilla item for clinical pharmacists in DOH hospitals and necessary training and certification to provide clinical pharmacy services should be developed and implemented. An estimated budget for the plantilla items to meet the clinical pharmacist-to-patient ratio of 1:30 in all DOH government hospitals is 982, 976, 076.00 PhP.

**CONCLUSION:** The establishment of clinical pharmacy services in the Philippines is essential to achieve optimum patient outcomes. Thus, the government must invest in the training of clinical pharmacists, creation of plantilla positions, and standardization of clinical pharmacy services based on patient's needs and hospital level to promote patient safety. Keywords: pharmacist, clinical pharmacy, government hospital

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# Oral Presentations:

## Pharmacoepidemiology and Pharmacoeconomics



## Establishing Multifaceted Mechanisms to Document, Detect, Report and Evaluate Adverse Drug Reactions in an Academic Medical Center in Taiwan

Lee, Pei-Chen\*<sup>1</sup>, Chin-Chin Ho<sup>1</sup>, Yueh-Ching Chou<sup>1</sup>, Yuh-Lih Chang<sup>1</sup>

### Abstract

**OBJECTIVES:** The objectives of the improvement project were to establish multifaceted mechanisms to document, detect, report and evaluate ADRs via information system, healthcare professionals' intervention and multidisciplinary teaming work in an academic medical center with 2947-bed capacity in Taiwan.

**METHODS:** The improvement project was proceeded through establishing several mechanisms to facilitate the documentation, detection, reporting and evaluation of ADRs, including the online ADRs reporting system hyperlinked to hospital electronic records, the multi-categories documentation on the front page of patients' medical records, the multiple function warning and interception system, intervention by pharmacists, and development of preventive strategies approved by Drug Safety Committee (DSC).

**RESULTS:** Five major mechanisms were established in the project. The online ADRs reporting system implemented in 2013 assisted healthcare professionals to report more efficiently and saved around 70% reporting time. The multi-categories documentation on the front page of patients' medical records and the multiple function warning and interception system implemented in 2016 allowed physician to document 1,743 suspected ADRs with Anatomical Therapeutic Chemical (ATC) codes and detected 425 potentially ADRs simultaneously. Pharmacists also discovered 522 physician-ignoring drug-allergies events in 2016-2017. DSC monitored above-mentioned results of mechanisms and initiated several preventive strategies.

**CONCLUSION:** The innovative multifaceted mechanisms facilitate the documentation and reporting of ADRs, detect potentially similar ADRs via information technology and improve the drug safety for patients.

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## Efficacy of antihyperlipidemic drugs in treatment of diabetic retinopathy: a systematic review and meta-analysis

Leo Tsui\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Dyslipidemia is known to be a risk factor for diabetic retinopathy, and antihyperlipidemic therapy can prevent disease progression. However, the therapeutic or preventive effects of lipid-lowering drugs on diabetic retinopathy and macular edema remain to be clarified. The purpose of this study is to explore the efficacy of statin, one of the antihyperlipidemic drugs, for diabetic retinopathy through systematic review and meta-analysis.

**METHODS:** This study examined the question of whether patients with diabetic retinopathy have the benefit of clinical symptoms of retinopathy after treatment with statin. We systematically reviewed randomized controlled trials on PubMed, Embase, and Cochrane Library databases according to previously defined PICOS. The search results showed that 191, 730 and 83 articles were found in PubMed, Embase and Cochrane Library respectively (update to April 8, 2018).

**RESULTS:** After literature screening and analysis, 3 related randomized controlled trials were found (the total number of samples was 110). The interventions were placebo and 10 mg atorvastatin, 20 mg atorvastatin, and 20 mg simvastat. The results of the random-effect model

analysis showed that oral administration of statin therapy was beneficial to prevent vision loss compared with placebo group (odds ratio = 0.28, 95% confidence interval: 0.08, 1.05), but there was no significant difference, as well as macular edema (odds ratio = 0.34, 95% confidence interval: 0.11, 1.02) and retinal vascular hard exudates (odds

ratio = 0.23, 95% confidence interval: 0.03, 1.61).

**CONCLUSION:** The results of a systematic literature review show that in the absence of large, high-level of evidence, only small randomized controlled trials attempted to clarify the efficacy of statin drugs for diabetic retinopathy. The results of meta-analysis did not confirm the clinical benefit of statin.

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## High-Potency Statins But Not All Statins Decrease the Risk of New-Onset Osteoporotic Fractures: A Nationwide Population-Based Cohort Study

Lin, Tsung-Kun\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Statins have been linked to new-onset osteoporotic fractures (NOFs), and different statins may alter the risk for the development of NOFs. In this study, we investigated the association between different statins and the development of NOFs.

**METHODS:** This was a longitudinal cohort study performed using data from claim forms submitted to the Taiwan Bureau of National Health Insurance, including case patients with NOFs from January 2004 to December 2013 and non-NOF subjects. We estimated the hazard ratios (HRs) of NOFs associated with statin use. Non-user subjects served as the reference group.

**RESULTS:** A total of 44,405 patients with NOFs were identified from among 170,533 patients with hyperlipidemia during the study period. The risk of developing NOFs after adjusting for age, sex, comorbidities, and concurrent medication use was higher among users of lovastatin (HR, 1.09; 95% confidence interval [CI], 1.02–1.15) than among nonusers. Patients who took atorvastatin (HR, 0.78; 95% CI, 0.74–0.82) and rosuvastatin (HR, 0.72; 95% CI, 0.65–0.80) were at lower risk of developing NOFs compared with nonusers. Simvastatin, pravastatin, fluvastatin, and pitavastatin were not associated with the risk of developing NOFs.

**CONCLUSION:** Patients taking atorvastatin or rosuvastatin were at lower risk of developing NOFs, and the use of lovastatin was associated with a significantly increased risk of developing NOFs during the 10-year follow-up. This study also highlighted that high-potency statin has a dose-response effect on lower N

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## Barriers and facilitators of adhering to the treatment regimens among patients receiving hemodialysis in Banda Aceh: a qualitative ecological evaluation

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### Abstract

**OBJECTIVES:** There are stories those hemodialysis (HD) patients could tell us about their life experience. Reflecting on the shared thoughts, within those treatment regimens prescribed (dialysis attendance, medications, dietary, fluid restriction) and patient's self-care, we could have a clearer picture of the patients' adherence behavior by understanding their barriers and those facilitators, in the caring process and prospecting interventions.

**METHODS:** This study used qualitative inquiry to interview purposely six HD patients with a set of semi-structure interview guide and open-ended questions and conducted non-participating observations in the dialysis center of a tertiary teaching hospital in Banda Aceh, Indonesia. Fieldnotes were taken and reflected. Interviews were audio-recorded, transcribed and thematically analyzed. While listing of those facilitators and barriers to patients, an ecological model is chosen as analysis framework.

**RESULTS:** Different themes were developed from different levels in the ecological analysis and separated as facilitators (former) versus barrier (later). First, from the individual level, lesson learned from complications versus patient's strategy taking medication. Second, from interpersonal level, socialization versus special cultural or social occasion. Third, from the organizational level, the community in the HD center versus overloading health staffs. Fourth, from the community level, religious belief versus stigma. Last, from the policy level, universal health coverage versus health system information discrepancy.

**CONCLUSION:** Patient's adherence behavior to treatment regimens is crucial to sustaining their life spend. A pharmacist's role play could be suggested by those themes developed, as interventions, to empower the patients and provide more dedicated patient-centered care.

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## Does Angiotensin Receptor Blocker Improves Survival Among Hypertensive Hemodialysis Patients?

Dr Raja Ahsan Aftab\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The aim and objective of current study is to assess the impact on survival of hypertensive hemodialysis patients when treated with losartan 50mg

**METHODS:** A multicenter, prospective, single-blind randomized trial was conducted to estimate the survival of post-dialysis euvolemic hypertensive patients when treated with losartan 50mg every other day (EOD). Post-dialysis euvolemic assessment was done by a body composition monitor (BCM). Covariate Adaptive Randomization was used for allocation of participants to the standard or intervention arm, and for the follow-up duration was twelve months. Survival trends were analyzed using Kaplan-Meier analysis.

**RESULTS:** Altogether, 88 (40.1%) patients were randomized into standard (n=44) and intervention arms (n=44), and 36 (81.8%) patients in each arm completed a follow up of 12 months. A total of eight patients expired during the 12 month follow-up period (6 deaths among standard arm and 2 in intervention arm). However, the probability of survival, between both arms was not significant (p 0.13). Cox regression analysis revealed that chances of survival were higher among the patients in the intervention (OR 3.17) arm than the standard arm (OR 0.31) however the survival was found not statistically significant.

**CONCLUSION:** There was no statistical significant difference in one year survival of post dialysis euvolemic hypertensive patients when treated losartan 50mg

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## Risk factors of moderate to severe chemotherapy-induced anemia in ovarian cancer patients treated with paclitaxel plus carboplatin regimen

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### Abstract

**OBJECTIVES:** Among the total incidence of chemotherapy-induced anemia (CIA) in epithelial ovarian cancer (EOC) patients treated with paclitaxel plus carboplatin regimen of 92.8 %, there are 64.4 % in moderate to severe CIA which may be lethal. The etiology of moderate to severe CIA is multifactorial, including cumulative dose of paclitaxel and/or carboplatin. There is no previous studies, so it was the objectives of this study.

**METHODS:** Retrospective cohort was conducted in a general hospital. Patients were recruited from in-patient records if all of the inclusion criteria were met, i.e. diagnosed with EOC and treated with paclitaxel plus carboplatin regimen between 2009 and 2016. Moderate to severe CIA was defined as a hemoglobin level < 10 g/dL after received chemotherapy. Analyzed differences of risk factors between groups by backward multivariable logistic regression for a receiver operating characteristic (ROC) curve.

**RESULTS:** There were 82 eligible patients, of which 45 (54.9 %) were categorized as patients with moderate to severe CIA. Backward multivariable logistic regression analysis suggested statistical significances in moderate to severe CIA patients with  $\geq 50$  years (OR = 3.97;  $p=0.008$ ) and carboplatin cumulative doses of  $\geq 3,950$  mg (OR = 10.30;  $p=0.044$ ). ROC curve analysis of the risk factors predicted 74.3 % of moderate to severe CIA.

**CONCLUSION:** EOC patients who were  $\geq 50$  years treated with cumulative doses of carboplatin of  $\geq 3,950$  mg were the significant risk factors and should be further clinically monitored. Keywords: chemotherapy-induced moderate to severe anemia, epithelial ovarian cancer, paclitaxel plus carboplatin regimen, ROC curve

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## Extending Opportunities of Pharmacists in the Age of Personalized Medicine

Heejin Kam\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The functional scope of pharmacists is mostly limited to conventional roles. They should expand roles to promote public health by utilizing their expertise of pharmacy. The study aims to introduce personalized medicine as the service that pharmacists need to pursue in the future. Personalized medicine is the new medical paradigm where doctors identify individual characteristics of patients through diagnosis and provide optimal prevention therapy.

**METHODS:** I explore the way in which pharmacists can best serve personalized pharmacotherapy in the healthcare ecosystem in Korea. First, I conduct a research on strategies which can be implemented to practice pharmacogenomics in clinical pharmacy and relate to pharmacist's participation. Second, I investigate the potential opportunities of pharmacists as genetic counsellors, who are professionals providing personalized help when patients make decisions about their genetic health.

**RESULTS:** Genomic-based personalized medicine allows optimising therapeutic efficacy, boosting up the drug development process, and drug repositioning. The role of pharmacists as pharmacogenomic specialists is essential in genome analysis as only pharmacists learnt an accurate understanding of drug interaction and are the legally guaranteed drug-related authority. Furthermore, pharmacists should serve as genetic counsellors who provide a patient specific help in patients' genetic health based on genetic testing and provide advice on overall health care and genetic disease.

**CONCLUSION:** This study suggested personalized medicine including genetic analysis experts and genetic counselors as pharmacists' potential services.

Through this role expansion, it is necessary to promote the expansion of pharmacist function and professionalism and contribute to the promotion of public health.

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# Oral Presentations: Scientific



## Phytochemical Screening, anti-microbial and anti-oxidant activity determination of *Momordica charantia*

Prof. Dr. Naeem Hasan Khan\*

### Abstract

**OBJECTIVES:** 1. To screen the phytochemical constituents *Momordica Charantia*.

2. To determine the anti-microbial activity of *Momordica Charantia* by well diffusion method.
3. To find out the anti-oxidant activity of *Momordica Charantia* was carried out by DPPH radical-scavenging activity and total phenol assay.

**METHODS:** Maceration and Soxhlet extractions were carried out with double distilled water and absolute ethanol. The extracts were dried and evaporated and diluted for tests. Total phenolic content was determined according to the Folin-Ciocalteu method, using Gallic acid as standards.

Anti-microbial activity was determined against different bacteria using Well Diffusion method. Anti-oxidant activity tests were carried out by DPPH radical-scavenging activity and total phenolic content.

**RESULTS:** The results showed that alkaloids, triterpenoids/steroids and carbohydrates were positive in Soxhlet extraction with ethanol. Similarly alkaloid, saponins, triterpenoids and phenols were present in the residue after maceration with ethanol. No anti-microbial activity was shown.

For DPPH, the percentage scavenging of each concentration of extracts was calculated by using the equation of Radical scavenging (%) =  $[(A_0 - A_1 / A_0) \times 100]$  as well as IC<sub>50</sub> of different extracts. All the extracts showed increased hydroxyl radical scavenging activity in an increase dose manner. However, the results of all the extracts were significantly lower than the positive control Butyl Hydroxyl Toluene (BHT).

**CONCLUSION:** This study reported that *Momordica charantia* fruit did not have anti-microbial activity.

Total phenolic content of macerated ethanolic extract showed higher value which indicated better anti-oxidant activity. All the extracts showed increased anti-oxidant activity in an increase dose manner.

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## Re-188 Labeled Magnetic Nanoparticle as the Magnetism Derived Target Accumulation, a Collagen-Induced Rheumatic Arthritis Animal Experience

Mei-Hua Chuang\*

### Abstract

**OBJECTIVES:** Targeted approach of drug delivery design will be beneficial for better therapeutic outcomes and also with fewer side effects. Functioning nanoparticle could be a vector for magnet target therapy; with appropriate radiolabeling with  $\beta$ -emitted isotope and derived via external magnetism. This radiolabeled magnet nanoparticle would accumulate efficiently within focal area, so the better treatment efficacy and safety can be expected.

**METHODS:** Magnetic ferrit ( $\text{Fe}_3\text{O}_4$ ) nanoparticles were developed. This nanoferrit can be radiolabeled with Tc-99m pertechnetate to form Tc-99m nanoferrit. Since Re-188 is the homologous element in periodic system with Tc-99m, same radiolabeling procedure was repeated to make the Re-188 nanoferrit. Radiolabeling efficiency was checked by TLC. Animal image was acquired via a  $\gamma$ -camera. Arthritis rats were induced by injection type 2 collagen at the tail. 2-3 weeks after injection, arthritis was proof by X-ray.

**RESULTS:** The animal module of collagen-induced rheumatic arthritis rats was established. However, the radiolabeling efficiency of Re-188 over the nanoferrit was not ideal. After injection of the Re-188 nanoferrit from the tail vein of the rate, most of the radioactivity was demonstrated within the urinary bladder, no matter normal or arthritis rates. A magnet was applied to the skin of the arthritis joint area, but also failed to enhance the accumulation of radionanoferrit.

**CONCLUSION:** Radiolabeling efficiency of Re-188 nanoferrit was not as good as Tc-99m nanoferrit as we had reported previously. After intravenous injection, dissociation of the labeling within living animal was developed and leads to the radioactivity within the bladder. Other labeling ligands will be considered.

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## In Vitro Antiaging Potentials of Grapefruit Peel (*Citrus maxima* L.), Langsat (*Lansium domesticum* Corr) and Strawberry (*Fragaria x ananassa* (Duchesne ex Weston))

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### Abstract

**OBJECTIVES:** This research aims to evaluate some of sources for cosmetic i.e. grapefruit peel, langsat peel and strawberry fruit in term of antiaging activity. These materials contained flavonoid, vitamins and natural antioxidant. Therefore, it can be explored as antiaging material in cosmetics product. Antiaging cosmetics is one of important preparation to overcome the problem of premature aging that can be caused by extra exposure of sunlight.

**METHODS:** Firstly, ethanol extracts of grape fruit peel, langsat peel, and strawberry fruit was prepared and followed by antiaging activity assay and anti tyrosinase. Test inhibition of elastase and collagenase was conducted using Neutrophil elastase and MMP-1 method of Colorimetric Drug Discovery Kit manual produced by Enzo Life Science. Meanwhile, test inhibitory activity against tyrosinase was conducted using spectrophotometric method that developed by Wong et al (2010).

**RESULTS:** The result showed that ethanolic extract of grapefruit peel has inhibitory activity against elastase and collagenase in level of 71.77% and 25.85%, respectively for 50 µg/mL extract. The ethanolic extract of Langsat peel showed activity to inhibit elastase and collagenase about 37.71 % and 50% respectively, in concentration of 50 µg/mL extract. In addition, anti-tyrosinase test results showed that three extracts have activity to inhibit tyrosinase enzyme with IC50 values are 3312.5, 328.33 and 492.68 µg/ml, respectively for extract of grape fruit peel, langsat peel, and strawberry fruit.

**CONCLUSION:** Based on these results, it can be concluded that the extracts of grape fruit peel, langsat peel, and strawberry fruit can be used as a cosmetic active ingredient for anti-aging and anti-tyrosinase.

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## Alkylated Phenolic Natural Products Validate the Claimed Anti-Cancer and Antioxidative Properties of the Philippine Nutraceutical Plant *Syzygium lineatum* (DC). Merr & L.M. Perry

Agnes L. Castillo, PhD\*<sup>1</sup>, Franklin Ibanez<sup>2</sup>, Allan Patrick G. Macabeo<sup>3</sup>

### Abstract

**OBJECTIVES:** The cytotoxicity and antioxidant properties of a Philippine nutraceutical plant, *Syzygium lineatum* (DC). Merr & L.M. Perry, its crude leaf extracts, sub-extracts, derivatives and isolated compounds were investigated.

**METHODS:** The crude dichloromethane-methanolic leaf extract was partitioned using solvents of different polarities such as petroleum ether, DCM and butanol. The petroleum ether and DCM sub-extracts were partially purified through silica gel vacuum liquid chromatography to produce several fractions which were subjected to MTT assay against K-562, Hela and HUVEC cell lines and were further subjected to silica gel purification to obtain isolates which were then spectroscopically identified by NMR.

**RESULTS:** The petroleum ether (PE) sub-extract exhibited cytotoxic activity against K-562, Hela and HUVEC cell lines with IC<sub>50</sub> values of 22 µg/mL, 25 µg/mL and 31 µg/mL respectively. Other extracts exhibited cytotoxic activity with an IC<sub>50</sub> greater than 50 µg/mL. Several fractions of the semi-purified PE extracts and semi-purified DCM extracts showed promising cytotoxic activities. SIPE1 exhibited cytotoxic activities against K-562 and Hela cell lines with IC<sub>50</sub> values of 43 µg/mL and 40 µg/mL while no significant inhibitory effect against HUVEC. In the antioxidant assays, the crude extract, the sub-extracts, semi-purified extracts and isolated compounds showed promising antioxidant effects.

**CONCLUSION:** Results show the potential of *Syzygium lineatum* leaf extracts and its phenolic derivatives as natural products against cancer.

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## Isolated Pectin from the Unripe Peels of Cultivars of Banana *Musa Acuminata L.* and *Musa Acuminata* × *M. Balbisiana L.* Family Musaceae as Binding Agent in Ascorbic Acid Tablet

Dr. Ma. Victoria E. Mendoza, RPh\*<sup>1</sup>, Kathleen R. Malabanan<sup>1</sup>, Brigette Anne O. Mallari<sup>1</sup>, Ermira D. Brijuega<sup>1</sup>, Anna Muriel T. Jacinto<sup>1</sup>, Michael Thomas T. Montesa<sup>1</sup>, Jaymie Lauren T. Martinez<sup>1</sup>

### Abstract

**OBJECTIVES:** This experimental study dealt with determining the effectivity of the isolated pectin from the peel of three cultivars of banana as a tablet binder.

**METHODS:** The collected plant parts were subjected to extraction and isolation of pectin which was later evaluated in terms of organoleptic and physico-chemical properties specifically density, pH, bulk and tapped density, and flowability. The formulated ascorbic acid tablet with banana pectin as binding agent was subjected to weight variation test, tablet thickness, tablet hardness, friability and disintegration USP Quality tests.

**RESULTS:** For weight variation results, all the banana pectin complied with the USP requirement and thus are accepted. Acceptable tablet hardness as stated in the USP is within 4 – 8 or 10 kg thus, all the formulated tablets are accepted. Likewise, the tested tablets did not incur powder loss outside the limit of 1% and thus are considered acceptable. Tablet disintegration of all the tested tablets fall within the acceptable range of 15-30 minutes.

**CONCLUSION:** The pectin isolated from the unripe peels of *Musa acuminata L.* and *Musa acuminata* × *M. balbisiana* possess acceptable organoleptic and physicochemical characteristics; and USP acceptable qualities as a tablet binder.

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## Premna odorata and Psidium guajava ethanol extracts as preservatives in suspension

Erna C. Arollado<sup>\*1</sup>, Leslie B. Tomagan<sup>1</sup>, Richelle Ann M. Manalo<sup>1</sup>, Irizh-Lyn R. Sampang<sup>1</sup>, Janvin Jessel A. Cariscal<sup>1</sup>

### Abstract

**OBJECTIVES:** Preservatives are substances added to products to extend shelf-life. Synthetic compounds have been widely used for such applications. However, reports demonstrated adverse effects of synthetic preservative consumption. Thus, there is a need to develop alternative preservatives to avoid undesirable effects. This study aimed at using ethanol extracts of *Premna odorata* and *Psidium guajava* as preservatives in suspension.

**METHODS:** Ethanolic leaf extracts of *Premna odorata* and *Psidium guajava* were formulated into suspension and evaluated for their antimicrobial preservative activity using United States Pharmacopeia (USP) guidelines.

**RESULTS:** Based on USP product category 4 criteria, suspensions of *Premna odorata* and *Psidium guajava* demonstrated acceptable preservative activity against selected microorganisms, *Escherichia coli* and *Staphylococcus aureus*. These bioactivities can be attributed to phytochemicals present in the extracts such as glycosides, reducing substances, flavonoids and alkaloids.

**CONCLUSION:** *Premna odorata* and *Psidium guajava* ethanol leaf extracts can be used as alternative sources of antimicrobial preservative in suspension. These extracts can also be added to pharmaceutical products to reduce the amount of synthetic preservatives in the formulation.

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## Characterization and Evaluation of Tamarind Seed Polysaccharide as an Orally Disintegrating Film

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### Abstract

**OBJECTIVES:** Tamarind seed polysaccharide (TSP), a neutral branched polysaccharide which consists of a cellulose-like backbone that carries xylose and galactoxylose substances, has exhibited promising potential as a multi-functional excipient with a wide range of uses in different drug delivery systems. The study aimed to evaluate the physicochemical and mechanical properties of TSP as an orally disintegrating film (ODF).

**METHODS:** TSP was extracted and isolated from the tamarind seeds using ethanol as the precipitant. Characterization of extracted TSP was done in terms of bulk characteristics and solubility analysis. ODFs were prepared with use of TSP as film-forming agent and glycerin as plasticizer using an improvised solvent casting method. An independent t-test was conducted to evaluate and compare the mechanical and physicochemical properties of the prepared film with those of carboxymethylcellulose (CMC) films.

**RESULTS:** Seeds obtained from Alaminos, Laguna had a total percentage yield of 30.73%. Phytochemical analysis confirmed the presence of TSP in the sample matrix. Physicochemical characteristics of the extract showed similarities with those existing in literature (Singh, 2011). Differential scanning calorimetry showed the presence of impurities in the sample and its amorphous nature. The mechanical properties of the TSP film were heavily affected by its uneven thickness, resulting to a poor tensile strength, low percent elongation and slower disintegration time. The water vapor transmission rate and the water uptake of the TSP film was comparable to that of the CMC film.

**CONCLUSION:** Results obtained from the study showed that the extraction of tamarind seed polysaccharide from a local Philippine source is feasible. The comparability of the TSP film and CMC film in terms of some mechanical properties shows the potential of the substance to be utilised as a film former in ODFs.

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# Oral Presentations:

## Pharmaceutical Legislation, Regulatory Science and Pharmacopeia



## Validation of High Performance Liquid Chromatography for Analysis of Isoniazid in Human Plasma

Novi Yantih\*<sup>1</sup>, Yahdiana Harahap<sup>2</sup>, Wahono Sumaryono<sup>3</sup>, Rianto Setiabudy<sup>4</sup>

### Abstract

**OBJECTIVES:** Treatment of tuberculosis with isoniazid (INH) requires high patient compliance to achieve therapeutic effectiveness. One way of knowing patient compliance is to monitor the drug in the blood. A valid bio-analysis method is required in the context of drug monitoring. The objective of the study was to validate the bio-analytic method with high performance liquid chromatography for the determination of isoniazid in human blood plasma.

**METHODS:** The chromatographic separation was conducted using Reliant® C18 column (250x4.6mm) with temperature of 30°C, a 20 mM hexane sulphonic acid pH 2.47-methanol (65:35) as mobile phase with a flow rate of 1 mL/min, detected at 265nm, and vitamin B6 as an internal standard. Lower limit of quantification (LLOQ), recovery, linearity, accuracy, precision, and method selectivity and stability tests have validated. Samples were stored at 20°C for 0, 7, and 14 days on a long-term stability test.

**RESULTS:** The results showed that LLOQ of INH was 0.1258µg/mL, respectively. The recovery test showed range 92,99-101,86%. Linearity, accuracy, precision, and method selectivity met the requirements of bio-analysis method validation according to FDA. On the stability test for 14 days at -20 ° C, the results showed that the sample was unstable.

**CONCLUSION:** This method was valid for determining levels of INH in human plasma for samples stored for 7 days. Keywords: Isoniazid, HPLC, human plasma

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## Direct analysis – no sample preparation – of bioavailable cortisol in human plasma by weak affinity chromatography (WAC)

Timothy Jay L. Bengala<sup>\*1</sup>, Sten Ohlson, Jagjit Kaur, Manfred Raida, Ulf Niss, Chester Lee Drum, Bernard Boehm, Anthony Torres<sup>2</sup>, Sten Ohlson<sup>3</sup>, Jagjit Kaur<sup>4</sup>, Manfred Raida<sup>5</sup>, Ulf Niss<sup>6</sup>, Chester Lee Drum<sup>7</sup>, Bernard Boehm<sup>8</sup>, Anthony Torres<sup>9</sup>

### Abstract

**OBJECTIVES:** The main objective of this research was to show that weak affinity chromatography/WAC is a better method for the determination of plasma cortisol than the two most commonly used methods. The WAC method can circumvent the weaknesses of the electrochemiluminescence immunoassay method/ECLIA (i.e. cross-reactivity with other steroidal hormones/drugs) and of the chromatographic methods (i.e. complex sample preparation)

**METHODS:** The WAC column was a silica-based column containing immobilized human serum albumin/HSA at 118 mg of HSA per gram of silica (0.9 mM). WAC was performed isocratically with 5 mmol/L ammonium acetate at pH 7.4 as the mobile phase. The flow rate was 0.2 mL/min and injection volume was 5  $\mu$ L. Cortisol standards were analyzed in duplicates where patient samples were examined once. Plasma samples were centrifuged at 12,500g for 5 min. The clear supernatant (100  $\mu$ L) was diluted 1:10 with the mobile phase.

**RESULTS:** Quantification: The average percent recovery of cortisol for the cortisol-spiked plasma samples was 92%. The reason for the lower end of recoveries is the inherent binding of added cortisol to available endogenous CBG in the plasma.

Specificity: Interferences from other corticosteroids including cortisone, prednisone, prednisolone and dexamethasone were not seen in the chromatograms at the selected MRM (363.0  $\rightarrow$  121.0) for cortisol.

Correlation with immunoassay: A fair correlation can be seen with a  $R^2 = 0.66$  ( $P < 0.0001$ ;  $n = 147$ ). We noticed a number of outliers ( $n = 9$ ) at higher total concentration of cortisol which when removed increases the correlation to  $R^2 = 0.72$  ( $P < 0.0001$ ;  $n = 138$ )

**CONCLUSION:** This pilot study suggests a novel analytical approach for clinical analysis of cortisol based on WAC-MS where there is no need for elaborate sample preparation. Further studies will include a full validation of this approach in a clinical setting in addition to comparison with other LC/MS methods.

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## The Comparison of Incurred Sample Stability of Esomeprazole in Dried Blood Spot and Human Plasma Using High Performance Liquid Chromatography

Prof. Dr. Yahdiana Harahap, MS., Apt\*<sup>1</sup>

### Abstract

**OBJECTIVES:** This research aims to compare the incurred sample stability of esomeprazole in dried blood spot and human plasma using lansoprazole as internal standard using high performance liquid chromatography.

**METHODS:** The analytical separation was performed on C-18 column (Waters, Sunfire™ 5 µm; 250 x 4.6 mm), column temperature was 40°C. The mobile phase used acetonitrile - phosphate buffer pH 7.6 (40: 60% v/v) with flow rate of 1.00 mL/min; and detected at 300 nm. The analyte was extracted from plasma and dried blood spot by liquid-liquid extraction using dichloromethane and by dilution using methanol, respectively. Incurred sample stability were analysed on day 0, 7, 14 and 30.

**RESULTS:** These methods was linear in the range concentration of 70-1400 ng/mL for dried blood spot and 5-1500 ng/mL for human plasma with both  $r > 0.99$ . The % differentiation of esomeprazole's incurred samples stability of both methods on day 7, 14, and 30 of 6 subjects were less than 20%. The difference of incurred sample stability and area under the curves were evaluated using ANOVA. The results on incurred sample stability showed no significant differences ( $p > 0.05$ ) while area under the curves showed significant differences ( $p < 0.05$ ).

**CONCLUSION:** The incurred samples of esomeprazole in dried blood spot and human plasma was stable at least until 30 days. The incurred sample stability showed better result on dried blood spot than in plasma sample.

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## Development of Predictive PBPK Model for Extended-Release Metformin Tablets

Imma Coney Payac Olayan<sup>\*1</sup>, Donato D. Legaspi, Jr.<sup>2</sup>, Frances Lois U. Ngo<sup>3</sup>, Bryan Paul I. Bulatao<sup>3</sup>

### Abstract

**OBJECTIVES:** Physiologically Based Pharmacokinetic (PBPK) Models integrate physiological and physicochemical processes that determine the pharmacokinetic behavior of compounds such as Metformin. Creating PBPK models using the Simcyp software can be used as a method in requesting biowaivers of extended release formulations. The study aims to develop a drug specific PBPK model that can be used to correlate in-vivo in-vitro performance of metformin ER tablets.

**METHODS:** Metformin specific PBPK model was developed from pharmacokinetic parameters from literature and in vivo data from Balan et al. (2001). Simcyp<sup>®</sup> Population-Based Simulator was then utilized to generate the PBPK model. Dissolution was performed on two brands of 500 mg metformin ER tablets available in the Philippines to examine the internal validity of the model. Point-to-point relationship was evaluated to determine if the model achieved level A correlation by computing for the prediction error.

**RESULTS:** An R value of 0.99308 ( $R^2 = 0.9862$ ) was obtained using the actual dissolution data and the dissolution data predicted by Simcyp from the in vivo study. This indicates a very high correlation between the observed and predicted values. A point to point relationship (Level A correlation) however, must also be established by finding the prediction error (%PE). A level A IVIVC model should be able to predict in vivo dissolution using in vitro data. The % PE of the model was greater than the 10% criteria indicative of a Level A correlation. Therefore, the model developed has poor internal predictability and must be further refined by adding data on parameters crucial in metformin absorption.

**CONCLUSION:** A physiologically based pharmacokinetic model for metformin 500 mg extended release-tablets was developed using pharmacokinetic parameters and in vivo clinical trial data from literature. The model showed a very high correlation but poor predictability between predicted and actual data.

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## Development of low-cost sitagliptin tablet with optimization on formulatiuon, process technology, coating and primary packaging for JKN government program (national healthcare insurance coverage)

Muhamad Ulfi Bahari\*<sup>1</sup>, Chitra Fadilla Dzulfia<sup>1</sup>

### Abstract

**OBJECTIVES:** The objective of this study was to develop a competitive drug products Sitagliptin tablet for the Indonesian government to improve their support on national healthcare insurance coverage program, especially for diabetic sufferers. The goal is to reduce the COGS value by optimizing particular factors such as the formulation, process technology, and the packaging material.

**METHODS:** The formulation for the sitagliptin tablet is consist of DCP, MCC, CCS, Talc, colloidal silicon dioxide, magnesium stearate, and Opadry II orange. The analytical method for the final product is based on USP 41th Sitagliptin tablet monograph, and the comparative in-vitro dissolution was compared to Januvia following the FDA guidance for dissolution testing of Immediate release solid oral dosage form. The primary packaging was developed for three type of materials to optimize the product COGS

**RESULTS:** The optimum formula for the sitagliptin tablet was comprising 30.0-40.0 % DCP, 30.0- 40.0% MCC PH101, 1.0-3.0% croscarmellose sodium; 0.1-0,5% talc; 0.5-2.0% magnesium stearate; and 3.0% weight gain of Opadry II orange. All the critical attribute such as product description, tablet dimension, weight, Identification, hardness, disintegration time, assay, dissolution, and content uniformity defined by USP 41th and in-house development.

The comparative dissolution testing result was similar with F2 value 81.38; 80.75; and 72.85 in pH 1.2; 4.5; and 6.8 respectively. The 12 µm polycell was chosen since it has the cheapest price and give an acceptable result on accelerated stability testing.

**CONCLUSION:** The generic product Sitagliptin tablet developed by Kimia Farma, an Indonesian Pharma SOE shows similar rate of dissolution profile to Januvia. Although it has competitive price, the product is assured with the same quality as Januvia (Merck).

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## Development of novel cell-based assay system for screening anti-cancer drugs

Yulseung Sung\*

### Abstract

**OBJECTIVES:** I try to find a good biomarker and target it to find a good screening model in order to develop a New Drug. After finding a Hit molecule, several medicinal chemistry technique will be administered in order to optimized the Hit molecule and find a good Drug Candidate. Ultimately, this research mainly aims to construct an effective screening system in finding a good anti-cancer drug as well as other diseases that is related to the screening system

**METHODS:** In order to develop an effective targeted cancer therapy, one must focus on a high-quality data expressing a key difference between cancer cells and normal cells. This research focuses mainly on the metabolism of each cell. Cancer cells will need other nutrient sources such as amino acids or fatty acids to go through TCA cycle which produces other cellular components such as DNA and intracellular organelles. So I concentrated on the function of amino acid transporters in cancer cells.

**RESULTS:** The idea of the novel screening system is to target a mitochondrial amino acid transporter. The principle idea of this transporter was taken from the character of the Amino Acid Transporters. They are co-transporters which signifies that whenever an amino acid is transported, a co-molecule is transported together. A specifically engineered Yellow Fluorescence Protein (YFP) quenches whenever this co-molecule is met.

**CONCLUSION:** Therefore, using subcloning technology of vectors and specific genes, a specific vector will be made so that it could be transfected to a selected cell line to contain the YFP protein in a wanted location and show significant fluorescence change so that it could be applied for an effective screening

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## The Cytotoxic Activity of Fractions from Ethyl Acetate Extract and Methanol Extract of Rumput Gong (*Eriocaulon cinereum* R. Br.) on HeLa Cervical Cancer Cell

Arde Toga Nugraha<sup>\*1</sup>, Pinus Jumaryatno<sup>1</sup>, Widya Nurdiahandari<sup>1</sup>, Auva Azkia<sup>1</sup>

### Abstract

**OBJECTIVES:** *Eriocaulon cinereum* R. Br., known as rumput gong by people at Bangka Belitung Island. Traditionally *Eriocaulon cinereum* R.Br. has been used to treatment tumor diseases. Previous study showed that the cytotoxic activity from ethyl acetate extract has IC50 value 573,75 µg/ml and from methanol extract has IC50 427,79 µg/ml. Therefore, further study from fraction of ethyl acetate extract and methanol extract requires cytotoxic testing of HeLa cells.

**METHODS:** Extracted of *Eriocaulon cinereum* R.Br was done by ultrasound assisted extraction used n-hexane followed by ethyl acetate and methanol as last eluent. Fractionation from ethyl acetate extract was done by vacuum liquid chromatography with dichloromethane and ethyl acetate as eluent. Fractionation from methanol extract was performed using separation tunnel method with dichloromethane and water as eluent. The cytotoxic activity was evaluated by MTT assay method and measured using microplate reader a

**RESULTS:** Cytotoxic activity of fraction ethyl acetate and dichloromethane from ethyl acetate extract has IC50 249,60 µg/ml and 292,681 µg/ml. Then, Cytotoxic activity of fraction dichloromethane and water from methanol extract has IC50 235, 65 µg/ml and 2325,30 µg/ml

**CONCLUSION:** The fraction of ethyl acetate and dichloromethane from extract ethyl acetate and fraction of dichloromethane from methanol extract showed cytotoxic activities against HeLa cells.

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# Oral Presentations: Industrial Pharmacy and Marketing



## Formulation and Evaluation Entecavir tablet

Yuti Mutiawati\*<sup>1</sup>, Efrinaldi<sup>1</sup>, Dwi Dara Cahyani<sup>1</sup>, Agung Rahmat Fauzi<sup>1</sup>, Lia Mulyawati Efendi<sup>1</sup>

### Abstract

**OBJECTIVES:** The objective of this research was to formulate, develop and evaluate of entecavir coating immediate release tablets, Entecavir is an oral antiviral drug used in the treatment of hepatitis B infection. Entecavir is a guanosine nucleoside analogue with selective activity against hepatitis B virus (HBV), which inhibits reverse transcription, DNA replication and transcription in the viral replication process.

**METHODS:** In the development of the formula, wet granulation method is used, with excipient material comprising Microcristalline Cellulose 101 and Lactose monohydrate as filler, Povidone. The preformulation parameters such as bulk density, tapped density, compressibility index and hausner's ratio were analysed for prepared granules before compression. The thickness, hardness, friability, weight variation, disintegration time and drug content uniformity, dissolution was evaluated for core and coated tablets.

**RESULTS:** The In-Vitro drug release studied (comparative dissolution) were performed in the USP Apparatus-II (Paddle) used three dissolution medium at pH 1,2, pH 4,5 and pH 6,8, which is compared to the innovator, with results that meet the requirements that is, at pH 1.2 the value of F1: 6.73 and F2: 55.20, at pH 4.5 the value F1: 2.78 and the value of F2: 62.80 and at pH 6.8 the value F1: 6,91 and the value of F2: 53.05 with reference to the F1 value requirement is less than 10 and the F2 value is greater than 50.

**CONCLUSION:** These conclusion indicated that the formula is meet the requirements, further research is required to include stability, pilot scale and bioequivalent tests

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## Syrup Formulation and Immunostimulant Stability of Polysaccharide Fraction of *Morinda citrifolia* L. Fruit

*Ediati Budi Cahyono\**

### Abstract

**OBJECTIVES:** The aim of this research was to get the optimum and stable the syrup of standardized polysaccharide using formula A and formula B.

**METHODS:** The optimization was done using Simplex Lattice Design (SLD) method and tested its stability under extreme temperature change effect using thaw cycling method by evaluating the physical properties, microbial contamination and immunostimulant activity. MTT reduction method was used to determine immunostimulant activity

**RESULTS:** Based on the results of stability tests using pH, viscosity, taste, amount of bacteria, yeast and mold parameters, formula A could maintain better stability than formula B, so that immunostimulant activity testing was performed on formula A. Formula A syrup could increasing lymphocyte proliferation at a concentration of 13.33 to 106.64  $\mu\text{g}/\mu\text{L}$  and also showed a stable immunostimulant activity under the influence of extreme temperature changes.

**CONCLUSION:** From the results it can be concluded that formula A could be used to produce the stable of physical properties, immunostimulant activity and no microbial contamination syrup contain standardized polysaccharide of Noni fruit.

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## Asian rice-starch based film as a potential buccal delivery system: Effect of plasticiser on drug release pattern

Choon Fu Goh<sup>\*1</sup>, Siok Yee Chan<sup>1</sup>, Jui Yeh Lau<sup>1</sup>, Yi Cin Tiew<sup>1</sup>, Thesigan Balakrishnan<sup>1</sup>

### Abstract

**OBJECTIVES:** Rice starch has been well explored for film-forming behaviour in packaging industry. Owing to its excellent film-forming behaviour, this study aims to explore the effect of plasticiser and drug loading in buccal film formation using rice starch.

**METHODS:** To produce a rice film via film casting method, powdered rice grains from Sekinchan, Malaysia was heated in distilled water and dried in oven. Glycerol or sorbitol was added as plasticiser (2%w/w) with 0, 10, 20 or 30%w/w of paracetamol (PCM) loading into rice mixture prior heating. The obtained RF was characterised using infrared (IR), X-ray diffraction (XRD), swelling test and in vitro dissolution test in simulated saliva solution.

**RESULTS:** Halo pattern in XRD and the absence of characteristic peak of PCM in FTIR spectra indicate amorphous nature of the RF with 10% PCM. This leads to the highest dissolution rate of PCM among all RF. RF of 20% PCM revealed a similar drug release pattern to the former RF which may be attributed to the different swelling behaviour of RF under the influence of plasticiser. Sorbitol RF of 10% and 20% PCM achieved a higher drug release as compared to the glycerol RF because of a better swelling profile due to a strong interaction sorbitol with polymeric starch chains. As expected, crystalline nature of PCM in RF 30% PCM results in a poor drug release rate.

**CONCLUSION:** Rice starch, a natural source, is a potential polymeric film for buccal delivery system. Apart from the influence of drug crystallinity, plasticiser-starch interaction and swelling index of the RF were found to have a great impact on the drug release pattern.

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## Development of Cross-linked Xanthan Gum – Acacia Gum Nanoparticles for Oral Insulin Delivery

Silvia Surini, Ph.D., Apt. <sup>\*1</sup>, Ade Laura Rachmawati<sup>1</sup>, Anton Bahtiar<sup>1</sup>

### Abstract

**OBJECTIVES:** The insulin nanoparticles has been developed as an alternative to oral insulin delivery. Nanoparticle drug delivery system could be prepared by a cross-linked polymer, which was composed of xanthan gum and acacia gum, and cross-linked by sodium trimetaphosphate. The aim of the present study was to produce insulin nanoparticles using the cross-linked polymer of xanthan gum and acacia gum for oral delivery.

**METHODS:** In this study, insulin nanoparticles was prepared by mixing xanthan gum and acacia gum colloid and using sodium trimetaphosphate as a cross-linking agent. Insulin nanoparticle powder were characterized in terms of degree of substitution (DS), entrapment efficiency, particle size, swelling ability, in vitro release, and stability study. In addition, an in vivo study using diabetic rat was conducted.

**RESULTS:** The results showed that the DS of the insulin nanoparticles was 0.08–0.10 and the EE was 26.11-48.73%. Moreover, the insulin nanoparticles size (Dv90) was 547-726 nm, and the swelling ability of 2.9 and 3.4-fold in pH 1.2 and pH 6.8, respectively. The insulin nanoparticles provided the insulin release in vitro of 78.42 - 85.67% within 3 hours. Furthermore, the stability study at 40C showed that the remaining-insulin was 68.82 - 80.19% during 12 weeks. The results of in vivo study showed that insulin nanoparticles could reduced glucose blood level on diabetic rat up to 29.72% at minute 120 after treatment and had bioavailability of 83.33% compared to subcutaneous injection.

**CONCLUSION:** In conclusion, this work demonstrated that the insulin nanoparticles composed of the cross-linked polymer of xanthan gum-acacia gum might be a potential oral insulin delivery.

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## Evaluation of factors affecting the microencapsulation of mefenamic acid with cellulose acetate phthalate

Bryan Paul I. Bulatao<sup>\*1</sup>, Arwin Jerome Onda<sup>1</sup>, Jonas Aquino<sup>1</sup>, Princess Allyza Mondala<sup>1</sup>

### Abstract

**OBJECTIVES:** This study aimed to evaluate the factors affecting the microencapsulation of mefenamic acid with cellulose acetate phthalate. Specifically, this study aimed to describe the morphology of the formulated microcapsules under various formulation factors, analyze the effects of the factors through full-factorial analysis, and determine the appropriate model for the mechanism of release of Mefenamic acid formulated as microcapsule.

**METHODS:** A modified emulsion solvent evaporation method was employed to formulate the microcapsules. Microscopic evaluation of the microcapsules was conducted using stereomicroscope and SEM. Regression analysis was performed to evaluate the effects of the factors - polymer:drug ratio, amount of emulsifier, and stirring rate - to percent yield, particle size, drug entrapment efficiency, and release kinetics.

**RESULTS:** The microcapsules exhibited spherical and equant in shape with rough surface. The percent yield ranged from 77.33% to 92.39% among the formulations. The particle size ranged from 290.12  $\mu\text{m}$  to 1162.12  $\mu\text{m}$ , with stirring rate being a significant factor. DEE ranged from 63.55% to 96.86%, with amount of emulsifier, and combined effects of polymer:drug ratio and amount of emulsifier being the significant factors. Using the predicted model, a desired particle size of 561.77  $\mu\text{m}$  and a DEE of 93.70% can be achieved by setting polymer:drug ratio to 1.25:1, amount of emulsifier to 4 mL, and stirring rate to 650 RPM. Most formulations demonstrated the Korsmeyer-Peppas as their model of release kinetics.

**CONCLUSION:** It can be concluded that the factors under study can significantly affect the in vitro performance of the mefenamic acid microcapsule. These factors can be manipulated to improve the results of the responses.

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## Amorphous Solids: A Solution for Dissolution Performances of Poorly Soluble Active Pharmaceutical?

Siok-Yee Chan<sup>\*1</sup>, Ahmed Farhan<sup>1</sup>

### Abstract

**OBJECTIVES:** Advancement of amorphous pharmaceutical solids is known to increase the aqueous solubility of APIs. The aim of this study is to revisit the advantages of amorphous solid as solution in dissolution enhancement of poorly soluble drug.

**METHODS:** Eight active pharmaceutical ingredients (APIs) Clotrimazole, Etoricoxib, Flurbiprofen, Gliclazide, Ibuprofen, Ketoconazole, Paracetamol, and Piroxicam are used in this study to examine the objectives stated. Amorphous solids of the 8 APIs were prepared by quench-cooling; and to compare pure forms of APIs in term of their aqueous solubility, wettability, and dissolution performances.

**RESULTS:** Among the drugs tested, Clotrimazole; Etoricoxib, Flurbiprofen; Gliclazide; and Piroxicam have better solubility and DE (except for Etoricoxib) as amorphous forms. Amorphous forms of Ibuprofen, Ketoconazole and Paracetamol have lower solubility and DE than their pure APIs. All amorphous solids have better wetting properties than their crystalline solids based on their contact angles results. Therefore, dissolution rates of the amorphous drugs in this study are not affected by their wettability. Amorphous solids tend to recrystallise during storage and dissolution process. Ultimately, this will affect the aqueous solubility and dissolution performances.

**CONCLUSION:** In conclusion, not all amorphous drugs have good solubility and dissolution performances. Further investigations are needed to know more about the factors affecting aqueous solubility of amorphous solids.

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## Enhanced solubility and dissolution rate of Olmesartan medoxomil Nanosuspensions by High Pressure Homogenization

Sisinthi Sreenivas Patro\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Olmesartan medoxomil, used in the treatment of hypertension is a selective and competitive angiotensin-II receptor blocker (ARB). The oral bioavailability of OLM in healthy humans is only 26% due to its poor water solubility which in turn leads to poor bioavailability. Hence, the objective of this study is to improve its solubility and dissolution rate by preparing Olmesartan nanosuspensions employing a high pressure homogenization technique.

**METHODS:** Nanosuspension, a promising approach for solubility enhancement is employed in this study. Nanosuspensions were prepared by high pressure homogenization technique using three different stabilizers (TPGS, SLS and P188), homogenization cycles and homogenization pressures. The prepared nanosuspensions were characterized for particle size and zeta potential analysis, Transmission Electron Microscopy (TEM) study, drug content study and in vitro drug dissolution testing.

**RESULTS:** The particle sizes of optimized Olmesartan nanosuspensions were of ~150nm with narrow size distribution. This result was further confirmed by the TEM image. The optimized nanosuspensions produced were also found to retain a high drug content ranging from 94.27% to 96.71%. Furthermore, the in vitro release study of optimized nanosuspensions demonstrated superior dissolution velocity compared to the Olmesartan coarse powder. The optimized nanosuspensions were able to increase the saturation solubility of Olmesartan by 3-fold.

**CONCLUSION:** Based on the results, it was concluded that the nanosuspensions is a promising drug delivery approach that can be employed for the enhancement of solubility and dissolution rate of Olmesartan medoxomil.

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# Oral Presentations: Pharmaceutical Education



## The effectiveness of Recipe Video For Extemporaneous Pharmaceutical Products

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### Abstract

**OBJECTIVES:** The overarching objective of this product is to prepare the student to extemporaneous preparation of pharmaceutical products. Following that, the specific objective of this study is to investigate the effectiveness of the extemporaneous recipe video. Therefore, objective and subjective assessments of the prepared extemporaneous products were carried out.

**METHODS:** A pre-recorded steps of extemporaneous emulsion wet gum method were prepared. The recipe video was released to students at least a week before the extemporaneous preparation class. During the class, student is allowed to view and refer the the recipe videos. Conventional briefing was performed for emulsion dry gum method. Both emulsion products were assessed objectively with re-designed rubric to compare the two teaching approaches.

**RESULTS:** The feasibility of this approach was assessed among 111 students. In this study, 93.5% of the students like the idea of video demonstration, 4.6% voted that they may like the idea and 1.9% dislike the idea. A poll on the students' opinions showed that 67.6% strongly agree that the video tutorial will be effective for their learning and 32.4% had a slight doubt on the effectiveness of this approach. "The video preparation for practical is a very good initiative", "Tutorial videos for dosage forms preparation is very informative, clear and easy to understand" are among the comments quoted for open-ended questions.

**CONCLUSION:** The application of video as a tool in teaching and learning of professional courses is particularly useful. This will promote effectiveness, prevent miscommunication, assumption and ensure accurate information are delivered to the students.

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## Flipped Classroom as an Effective Approach in Enhancing Student Learning of a Poorly-Achieved Pharmacy Course

Choon Fu Goh<sup>\*1</sup>, Eng-Tek Ong<sup>2</sup>

### Abstract

**OBJECTIVES:** With the aid of technology, higher education is gradually transforming towards promoting student-centred learning using blended learning. Flipped classroom (FC) approach was introduced and implemented in a public university of Malaysia to investigate its effectiveness in improving student learning of selected topics in a module which students performed dismally. Students' perceptions on the use of FC were also examined.

**METHODS:** This study employed a quasi-experimental pretest-posttest control group design using two intact classrooms of Year 2 pharmacy students. The experimental group (FC) were instructed to watch three narrated lectures in the form of video recording before attending the in-class activities. A pretest was administered at the outset of the study. A posttest of which the relevant questions were embedded in the final exam. Students voluntarily answered survey on FC. The data were analysed using ANCOVA.

**RESULTS:** The adjusted mean of score of final exam in the FC was statistically significantly higher than that in the traditional classroom ( $F=14.00$ ,  $p<0.05$ ). The findings from the survey indicated that more than two-thirds of the respondents responded positively in using FC and that they felt they have more confidence when participated in tutorials, practical classes and test/exam. More than 80% of the respondents opined that this FC approach not only assisted them in learning; it also allowed for self-paced learning. About three quarters of the respondents perceived that FC was not only interactive and engaging; it also facilitated their understanding with ease during the class.

**CONCLUSION:** FC was found to enhance the academic achievement of pharmacy students as compared to the traditional approach in a poorly-achieved module. FC, as perceived by students, facilitates active learning within an interactive environment during class.

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## Community Based Inter-professional Education: The University of the Philippines College of Pharmacy Experience

Margarita M. Gutierrez\*<sup>1</sup>, Mac Ardy J. Gloria<sup>2</sup>, Kristine Eves S. Garcia<sup>2</sup>

### Abstract

**OBJECTIVES:** This study aimed to: (1) describe the perceptions of pharmacy students from UP Manila who took part in a four-week, interdisciplinary community health development program; and, (2) determine the outcomes of their participation in the IPE initiative.

**METHODS:** 20 students participated in the CHDP-IPE in Cavite from April to May 2017, while 11 students participated from April to May 2018 in an Interprofessional team composed of medical, nursing and social work students. A pre- and post-deployment Interdisciplinary Education Perception Scale (IEPS) by Luecht (1990) was administered. Students also shared their experiences through open-ended questions and essays.

**RESULTS:** After the CHDP-IPE experience, the students significantly perceived that individuals in their profession: (1) are well- trained and extremely competent; (2) are able to work closely with other professions and have good relations; (3) are very positive about their goals and objectives; and, (4) are very positive about their contributions and accomplishments. Furthermore, the students thought that individuals in other health professions: (1) are able to work closely with individuals in their profession; (2) respect the work done by their profession; and, (3) think highly of their profession.

**CONCLUSION:** Through the CHDP-IPE experience, students developed an increased positive perception in the three domains: competency and autonomy, perceived need for cooperation, and perception of actual cooperation. There were still, however, perceived challenges and issues in their experiences in the program.

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## Learning Outcomes in Community, Hospital and Industrial Pharmacy Internship - Related Courses of the B.S. Pharmacy Program at the University of Makati

Maria Fay Nnette M. Cariaga\*<sup>1</sup>

### Abstract

**OBJECTIVES:** This study was done assess the achievement of learning outcomes in community, hospital and industrial pharmacy internship- related courses of the Bachelor of Science in Pharmacy program of the University; identify gaps as perceived by the respondents (students, alumni and preceptors) as a basis of continuous quality improvement.

**METHODS:** This research made use of both qualitative and quantitative methods. Records review, mapping, content validity and reliability testing were employed in the development of the survey instrument. Quantitative data were organized and analyzed using Microsoft Excel Analysis Toolpak. Descriptive statistics (mean) and correlational analysis (Pearson R) were used to analyze the quantitative data.

**RESULTS:** The list of learning outcomes along: community and hospital pharmacy; and industrial pharmacy internship- related courses are said to be valid and reliable as evidenced by reliability coefficient of 0.97 and 0.99, respectively. Based on the results, most of the aforesaid learning outcomes were realized and applied by the students and alumni in their respective internship and practice sites. Relevant inputs were also shared by the preceptors along this line. There is a weak to moderate correlation between the self-assessment ratings and the official grades of the students along the three (3) areas of internship, to wit: community, hospital and industrial pharmacy.

**CONCLUSION:** The results are highly relevant and they pave the way to developing continuous quality improvement (CQI) system pertinent to the implementation of OBE to pharmacy education.

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## Alignment of Community Internship Performance with National Professional Competency Standards: Basis for A Proposed Community Pharmacy Internship Evaluation Tool for UPHSD Colleges of Pharmacy

Ermira Diloy Brijuega, RPh MS Phar\*<sup>1</sup>, Christalyn Joy A. Bagsarsa<sup>1</sup>, Ma. Victoria E. Mendoza<sup>1</sup>, Anna Muriel T. Jacinto<sup>1</sup>, Anna Muriel T. Jacinto<sup>1</sup>, Michael Thomas T. Montesa<sup>1</sup>, Jaymie Lauren T. Martinez<sup>1</sup>

### Abstract

**OBJECTIVES:** To create a community pharmacy internship evaluation tool for the three campuses of University of Perpetual Help System DALTA – College of Pharmacy with criteria aligned to the desired competencies of a professional community pharmacist based on the Philippine Pharmacy Standards of Practice.

**METHODS:** The performance areas in the UPHSD community pharmacy internship tool was aligned with the national competency standards stipulated in the Philippine Pharmacy Standards of Practice. The preliminary draft of the two-part proposed evaluation tool (practical and theoretical) was evaluated by ten members of the academe and twenty volunteer alumni drug store owners. Statistical tests were performed to determine content validity and reliability of the proposed evaluation tool.

**RESULTS:** Cronbach's alpha ( $\alpha = 0.903$ , high internal consistency) showed that the tool reached an acceptable reliability. Fleiss' kappa and Content Validity Ratio (CVR) revealed that there is a moderate (substantial) agreement between the evaluators, ( $k = 0.546$ ,  $p = 0.006$ ; statistics significant at  $p < 0.05$ ) along the use of technical terms. Fleiss' kappa result revealed that the evaluators generally "agree" (close to 1.0 level of agreement) that the distribution of weight is "appropriate" while the layout/format is "acceptable".

**CONCLUSION:** The proposed evaluation tool for community pharmacy internship of UPHSD Colleges of Pharmacy is reliable and valid and can be utilized for evaluating student interns in community pharmacy internship.

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## Specific Instrument for Assessment The Quality of Pharmacy Education to Maintain the Culture of Continuous Quality Improvement in Indonesia

*Prof. Dr. Yahdiana Harahap, MS., Apt\*<sup>1</sup>*

### Abstract

**OBJECTIVES:** Accreditation is the process in which certification of institution quality, competency, authority, or credibility is presented. In the previous the accreditation of pharmacy education was assessed by National Accreditation Board below The Ministry of Research, Technology and Higher Education.

**METHODS:** Government through the health professional education quality project in 2014 launched Indonesian Accreditation Agency for Higher Education in Health (IAAHEH) for assessing the quality of the study programs of health education such as medicine, dentistry, nursing, midwifery, nutrient, public health, and pharmacy using specific instrument for each study program.

**RESULTS:** Since 2015 IAAHEH start to operate and do the accreditation of all health education in Indonesia and become the private institution for accreditation, but should report the responsibilities to government through National Accreditation Board. The main function of IAAHEH is to perform accreditation the health study program including the established study program as well as the new study program. The goal of IAAHEH not only give the accreditation status but the most important thing is to develop awareness, motivation, and concrete steps that ultimately lead to a culture of continuous quality improvement. The significant difference with National Accreditation Board that in IAAHEH

**CONCLUSION:** there is the facilitation process that nurturing the study program in arrange the good documentation and there is also the surveillance for monitoring the quality improvement process. After facilitator approved the facilitation process, then continue to the desk assessment.

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## Knowledge, Attitude, Perception and Willingness to Practice Graduate Studies in Pharmacy Among Hospital and Clinical Pharmacist in Dhaka City of Bangladesh

Riel Anthony Oli\*<sup>1</sup>, Tamanna Azad<sup>1</sup>

### Abstract

**OBJECTIVES:** This study was designed to evaluate knowledge, attitude, perception and willingness of the hospital and clinical pharmacists towards practicing graduate studies in pharmacy, and to identify their most significant issues and concerns regarding higher studies.

**METHODS:** This paper adopted both qualitative and quantitative research design. A validated 40 item self-administered survey questionnaire on knowledge, attitude, perception and willingness was used in the study using a 4-point Likert Scale. The response rate was 62.5%. Chi-square test was used to measure significant differences between variables.

**RESULTS:** The pharmacists have strongly agreed that graduate studies are very influential in hospital and clinical pharmacy administration (3.63). Their responses clearly shows that graduate study is about persistence, determination, and intellectual (3.30). However, there was a strong negative attitude that the degree is unnecessary to grab their first job (1.45). Interestingly, participants strongly believed that some skills are not gained even in graduate studies (3.43). A mean value of 3.50 showed that participants strongly believe graduate studies will encourage their confidence in future expertise field. Years of experience shows significant differences with the response.

**CONCLUSION:** The study concludes that advanced level of education for the hospital and the clinical pharmacist would contribute to the country when a realistic pattern is ensured on its operation because continuous educational intervention would bring about updated knowledge and practice in drug safety and use.

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# Oral Presentations: Community Pharmacy



## Factors Affecting Adherence and Non-adherence to the Treatment Regimen of Selected Sexually-Transmitted Infections Among Men who have Sex with Men (MSM) in Selected Cities in Metro Manila

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### Abstract

**OBJECTIVES:** The study focused on the identification of significant factors that affect the adherence & non-adherence to the treatment regimen of selected STIs among MSM. It measured patient adherence & non-adherence to the treatment regimen & established its association with pre-determined factors. The factors that were considered are: demographics; knowledge; psychological factors which are composed of motivation, attitude & perception; & barriers to treatment

**METHODS:** A total of 205 participants were recruited in the study where they filled out a self-administered questionnaire that measured their knowledge on STI (STD-KQ) & assessed their attitude, motivation, & perceptions of their illness, staff, & the clinical setting (PAMPA). The possible barriers to their treatment adherence were also measured using the ASK-20 tool. These factors were analyzed using STATA 13 to determine if they have significant association with treatment adherence & non-adherence (MARS-5 scale)

**RESULTS:** Measurement of patient adherence concluded that 132 (64%) are adherent and 73 (36%) are non-adherent. The researchers determined that four (4) out of nine (9) factors are predictors of both treatment adherence and non-adherence among MSMs with selected STIs namely, educational attainment ( $p=0.009$ ), patient knowledge ( $p=0.008$ ), perception ( $p<0.001$ ), and barriers ( $p=0.027$ ). There is increased odd of achieving adherence among MSM who had college level education, with higher patient knowledge, higher perception scores and higher scores obtained for barriers to treatment measurement. Non-adherence, however, has reverse association with higher scores from the factors measured.

**CONCLUSION:** Among the participants, 64% were adherent. The study identified 4 factors that could influence both adherence & non-adherence to the treatment regimen - educational attainment, psychological factor, patient knowledge & barriers to treatment.

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## The Roles and Identity of Community Pharmacists in the Philippine Rural Setting

Karina Marie Sonza Batu\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The Filipino community pharmacists in spite of being the most accessible in the community are still underutilized members of the health care team. This study aimed to describe the roles and identity of Filipino community pharmacists in a Philippine rural setting using the phenomenological design to obtain the needed data from November 2017 to February 2018.

**METHODS:** Employed licensed community pharmacists, regardless of age, sex, highest educational attainment and background of professional experiences participated in in-depth interviews. The owners of the drugstores and the frequent customers of the community pharmacies were also interviewed to verify the findings during the triangulation process. The interviews were coded and converted to field texts. Bracketing was observed. A repertory grid was constructed and qualitative data were reduced

**RESULTS:** The themes that emerged descriptive of the roles of the Filipino community pharmacists were promoting safe use of drugs, ensuring quality medicines, counseling patients, training pharmacy assistants, and managing records. Community pharmacists as drug expert, manager, and drug seller were the themes that developed as the identity of the Filipino community pharmacists. The factors that influence the participants' identity as Filipino community pharmacists generated five themes: experience at the work place, advocacy on drug use, desire to uplift the profession, and love towards hometown.

**CONCLUSION:** The study revealed that although the participants are fully aware and are responsive of their roles as community pharmacists, they are strongly affected by their experiences in the workplace and the expectations and beliefs of the drugstore owners and customers towards them.

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## Outcomes of Thai Pharmacy Undergraduates in Smoking Cessation Practice with Current Smokers

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### Abstract

**OBJECTIVES:** The aim of this study was to evaluate outcomes of case-based intervention in a smoking cessation training course for Pharmacy undergraduates of Mahasarakham University, Thailand.

**METHODS:** A descriptive study was performed between June 2013 and March 2014. The course training was designed with a three hour lectures, three hour role playing activities and two hours practice with current smokers for third year Pharmacy students. An assignment of one pharmacy student was to provide a service to one smoker with a 2 week followiup. Voice recordings of counseling were performed with consent.

**RESULTS:** There were 112 pharmacy students, most of them were female (73.2%). Students' confidence increased significantly after a training course ( $p < 0.001$ ). Students performed complete skills in the 5 A's strategies which are as follows, Ask (100%), Advise (72.3%), Assess (96.4%), Assist (5.36%) and Arrange follow-up (30.4%). Students' confidence in high and very high levels to provide smoking cessation counseling increased from 12.5% to 60.7% after the study. There were 112 smokers (male 97.3%). After the 2 week follow-up the abstinence rate was 6.2%. Number of cigarettes smoked per day decreased significantly after the study ( $10.65 \pm 7.87$  to  $8.18 \pm 6.66$  cigarettes per day, respectively,  $p < 0.001$ ).

**CONCLUSION:** In conclusion, the case-based intervention in the 8-hour training program improved students' confidence and counseling skills of smoking cessation services.

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## Involvement of Pharmacists in Mental Healthcare and Advocacy in the Philippines: A Roundtable Discussion

Jarvin Enosh T. Tan, RPh\*<sup>1</sup>, Priscilla Nicole T. Bacungan<sup>1</sup>, Donato D. Legaspi, Jr.<sup>1</sup>

### Abstract

**OBJECTIVES:** This roundtable discussion was conducted to accomplish the following objectives:

1. To obtain multisectoral inputs on the local situation on mental health
2. To determine the current gaps in mental healthcare and possible solutions
3. To determine where pharmacists may best contribute in the field of mental health

**METHODS:** Stakeholders from multiple sectors spanning government agencies, professional societies, service user groups, and advocacy organizations were invited. The World Café method was used with participants being placed in 4 groups and discussion of set guide questions taking place, followed by rotation of one representative per group to the other groups to enrich all discussions with ideas from each other. Finally, a large group synthesis was done, and patterns and action points were identified.

**RESULTS:** Participants noted the local situation on mental health to be improving in terms of awareness, help-seeking behavior, and info dissemination; however, problems persist like stigma, inequities, lack of integration, program cascade, and a resource shortage. Strengths included the presence of many advocacy groups, programs, and IT plus impending passage of the Mental Health Act, while gaps noted were on competency and number of professionals, misinformation, poor portrayal in media, community readiness, and lack of collaboration. Identified roles for pharmacists include medication counselling and adherence, capacity building and curriculum development, collaboration, and advocacy.

**CONCLUSION:** Though the Philippine Mental Health Act has recently been signed into law, there remains many gaps in the mental healthcare system. At the same time, there are many opportunities where pharmacists can contribute in collaboration with fellow health professionals, advocates, and service users.

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## Knowledge and Medication Adherence among Hypertensive Geriatrics Practicing Polypharmacy in Baguio City

Aldrex B Dacawe<sup>\*1</sup>

### Abstract

**OBJECTIVES:** The researcher aimed to determine the association between level of knowledge on hypertension and extent of medication adherence among hypertensive geriatrics practicing polypharmacy in Baguio City.

**METHODS:** A cross-sectional descriptive study was carried out in Baguio City from April 2018 to May 2018. A questionnaire containing the Hypertension Knowledge-Level Scale (HK-LS) and the 8-item © Morisky Medication Adherence Scale (MMAS-8) was delivered to a random sample of 322 hypertensive geriatrics aged 60 years old and above. IBM SPSS Statistics version 24 was used for data entry and analysis.

**RESULTS:** Out of the 322 respondents, 100 (31.06%) had scored excellent level of knowledge, 216 (67.08%) were considered as having average level of knowledge and 6 (1.86%) were considered as having poor level of knowledge regarding hypertension. Furthermore, only 4 (1.24%) of the study participants showed high adherence to medication, while 82 (25.47%) showed medium adherence to medication and 236 (73.29%) showed poor adherence to medication. Ultimately, the results of the study clearly showed that as the score of the Hypertension Knowledge-Level Scale goes up, interpreted as higher knowledge, the score on the Eight-item Morisky Medication Adherence Scale also goes up, indicating poorer adherence.

**CONCLUSION:** The participants have average hypertension knowledge and low adherence. Level of knowledge on hypertension does not greatly affect medication adherence. Despite this outcome, it is believed that medication adherence is a multi-factorial phenomenon and knowledge is only one key of these factors.

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## Evaluation of the newly developed blended learning program to support Community Pharmacists in integrative healthcare

Wong Pei Nee<sup>\*1</sup>

### Abstract

**OBJECTIVES:** The objective of this project was to evaluate the effectiveness of a newly developed blended continuing professional development (CPD) programme related to complementary medicine for community pharmacists.

**METHODS:** A 4-hour live classroom with active learning related to complementary medicine was introduced to a group of community pharmacists (n=168) following the completion of a series of CPD online complementary medicine modules. A random sample of pharmacists (n=16) were then invited to participate in one of three focus groups between February and March 2018. Focus group discussions were audio-recorded and transcribed, and data was analysed inductively using thematic analysis.

**RESULTS:** Themes generated from focus groups regarding pharmacists' experiences were categorised as follows: (a) having positive learning experiences, (b) overcoming technical issues, (c) facilitators and barriers to integrative care, (d) approaches to enhance blended learning, and (e) specialised service providers.

**CONCLUSION:** Overall, satisfaction levels were high and pharmacists reported positive impacts on their learning and practice of complementary medicine. The identification of barriers and facilitators to enhance the effectiveness of the blended learning programme will be recommended for implementation in subsequent years.

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## Utilization of Social Media as a Support Tool for Patient Counseling: Project DOHA

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### Abstract

**OBJECTIVES:** This study was conducted to compare the effectiveness of Traditional counseling, Social media counseling, and Traditional with Social media counseling for patients with DOHA with regards to the over-all knowledge, compliance, and practice of the patients.

**METHODS:** 12 patients were selected as participants in the study. The patients were classified based on their disease/drug classification and also based on the counseling intervention that they received: Traditional (Group A), Social media (Group B), and Traditional with Social media (Group C). The patients who have DM and HTN were subjected to counseling for 2 weeks and patients taking OTC and ABX were counseled for 1 week. Qualitative analysis was not done for OTC and AB

**RESULTS:** The results showed that patients under Group C had the highest scores across DOHA. Patients with DM and HTN under Group C showed the best compliance to the therapy in terms of diet, exercise, blood glucose/blood pressure monitoring, and intervention response records.

**CONCLUSION:** Traditional supplemented with social media counseling is the most effective type of patient counseling with regards to their over-all knowledge, compliance and practice towards their disease.

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# Oral Presentations:

## Administrative, Social Pharmacy and Ethics



## Access to Medicines Among Patients with Lifestyle – Related Non – Communicable Disease in Pangasinan Province, Philippines

Ian Kenneth B. Laroco, RPh, MPH\*<sup>1</sup>, Rosalyn G. Rosal, RPh, MPH, MSPH<sup>1</sup>, Kaycerey M. Capua, RN, RPh, MPH<sup>1</sup>

### Abstract

**OBJECTIVES:** The study was intended to determine the access to medicines and access barriers among patients with Lifestyle – Related Non-Communicable Disease (NCD) particularly those with hypertension and diabetes in the hope of advancing the accessibility of medicines of NCD patients.

**METHODS:** A descriptive method of research was used to determine and correlate the status of access to medicine and access barriers among NCD patients. The researcher used a survey questionnaire as the main instrument in data gathering. Respondents were selected using a random sampling design, specifically stratified sampling.

**RESULTS:** NCD patients have low or limited access to medicines in terms of medicines availability, affordability and geographical accessibility of the health facility, and encountered access barriers such as physical weakness of the body and muscles, cannot afford the cost of medicines and transportation cost going to health facilities, having difficulty in communication because of different dialect and having difficulty in understanding the instruction, medical advices and medication counseling of the health workers. Further, their access to medicine and access barriers have a significant relationship and difference when grouped according to their socio-demographic and health – related profile.

**CONCLUSION:** In general, NCD patients have a low or limited access to medicines particularly those who live in Low- and Middle- Income Class Municipalities and encountered different access barriers.

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## Assessment of Knowledge, Attitude, and Practice regarding Veterinary Antibiotic Use among Animal Farmers in Barangay Parada, Santa Maria, Bulacan

Kristel Abby Gatchalian Silva\*<sup>1</sup>, Acosta, J. M.<sup>2</sup>, Mallari, J.N.<sup>2</sup>, Ruamero, E.C.<sup>2</sup>

### Abstract

**OBJECTIVES:** The irrational use of antimicrobials in the veterinary sector greatly contributes to the emergence of antimicrobial resistance (AMR) in humans. However, there is still a paucity of information on the use of such drugs among animal farmers, especially in developing countries like the Philippines. This pilot study aims to assess the knowledge, attitude, and practice (KAP) among animal farmers regarding veterinary antibiotic use.

**METHODS:** A descriptive, cross sectional study was employed among the farmers of Barangay Parada, Santa Maria, Bulacan. Using total enumeration, data from 144 farmers were collected using a validated and pretested structured questionnaire. Analysis was done using Microsoft Excel® 2016 and Stata® MP 64 version 13.

**RESULTS:** Results showed that most farmers had low level of knowledge on antibiotic resistance and use. However, they were found to have a positive attitude in using antibiotics. Moreover, most farmers exhibited poor practice regarding antibiotic use. Incorrect practices included using antibiotics for non-bacterial diseases and growth promotion, non-adherence, and incorrect disposal. Statistical analysis of the data using either Chi square or Fisher's exact test showed that educational attainment, position in farm, role in antibiotics, and years of experience had a significant association ( $p < 0.05$ ) to knowledge.

**CONCLUSION:** It is hoped that this study will provide baseline information for future studies on the contribution of the animal industry to AMR as well as key strategies for interventions in its prevention and control.

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## Big data coming to pharmacy: practical use, applications, and future

Hye In Jung<sup>\*1</sup>, Eun Jeong Choi<sup>1</sup>

### Abstract

**OBJECTIVES:** In the new era of 4th industrial revolution, we focused on the utilization of “Big-data”, especially DUR, as the future of pharmacy. DUR provides information of drug interaction and precautions. It can be divided into prospectiveDUR(pDUR), currentDUR(cDUR), and retrospectiveDUR(rDUR). Korea shows strength in pDUR and cDUR but has weakness in rDUR due to the lack of system. Thus we studied Korea’s current state of rDUR and its improvement points.

**METHODS:** Since Korea is currently strong at pDUR and cDUR system, we decided to concentrate on what we can do to develop rDUR by utilizing local pharmacies. We suggest three major areas in which pharmacy should cover, by using big data and progressing rDUR. It includes 1) collecting clinical big-data by innovative medical instrument 2) managing drug history and medical institution interlocking system 3) monitoring drug side effects. Also, we suggest a way to apply these concepts in real life.

**RESULTS:** We found an application of an application(app), “Handypharmacy” as we decided to call, could turn our ideas into practice. Although there are already many applications, we suggest Handypharmacy as a new concept, in a way that it connects the pharmacists and the patients in one single platform, and constantly updates itself on the evidence of big-data collected by each individual. It allows other patients to have access and directly add their information into the big data. Most importantly it can be used as a tool for developing rDUR. It not only improves your current prescription pattern but also by collecting data you will be able to give the best medication to many patients in the future.

**CONCLUSION:** We selected application as a means to narrow the gap between the pharmacist and the patient, encouraging participation on rDUR. Its use may not be available at this moment, however in the right future, this application will become a great platform in the pharmaceutical industry.

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## Development and Validation of the Knowledge on Menopause and its Management Instrument (KnowMMI)

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### Abstract

**OBJECTIVES:** (i) To develop and validate a Knowledge on Menopause and Its Management Instrument (KnowMMI); (ii) To assess the knowledge of university female staff on menopause and its management and (iii) To determine factors associated with the levels of knowledge on menopause and its management.

**METHODS:** Female staff in a private university were requested to participate in this study. The KnowMMI was analysed for readability, difficulty factor and internal consistency. Test-retest was carried out after two to four weeks. The KnowMMI was tested on health care professionals as a comparison for discriminant validity. The KnowMMI consists of 20 items. Total scores of 50% and above were considered as adequate knowledge on menopause and its management while below 50% were considered as inadequate.

**RESULTS:** The Flesch Reading Ease Score of KnowMMI is 60.7 and the mean(standard deviation) difficulty factor is 0.45(0.26). The overall Cronbach's alpha of KnowMMI is 0.796 which indicates good internal consistency. Spearman's rho correlation coefficient for the total knowledge score between test-retest was 0.755 ( $p < 0.001$ ) and only two items in the KnowMMI showed significant difference between test-retest. This means that the KnowMMI has stable reliability. The average knowledge score of health care professionals was significantly higher than that of the university female staff [82.40(8.91) vs 44.70(19.53)%,  $p < 0.001$ ]. In addition, 56% of the respondents had total knowledge scores of less than 50%.

**CONCLUSION:** The KnowMMI is a valid and reliable instrument with good internal consistency, stable reliability and discriminant validity as well as acceptable reading ease and difficulty factor. In addition, more than 50% of the female staff had inadequate knowledge on menopause and its management.

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## Comparing Effectiveness of Pictogram versus Written Patient Information Leaflet: Case Study of Ibuprofen 200 mg

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### Abstract

**OBJECTIVES:** Successful treatment outcome cannot be achieved without appropriate drug administration. Many DRAs require pharmaceutical industry to prepare Patient Information Leaflet (PIL). Previous studies revealed that patients usually ignore written-PIL (W-PIL). Pictogram-PIL (P-PIL) was proposed as an alternative. This study aimed to compare P-PIL and W-PIL on communication effectiveness. The preference of PIL format was also assessed.

**METHODS:** A quasi-experimental post-test only study was conducted. Thai, readable, age 18-70 with 6-16 school-years were included. Ibuprofen 200 mg was selected to study. P-PIL or W-PIL was handed to 79 and 80 participants, consecutively. Eleven open-ended questions e.g. the product name, when and how to use medicine were asked. Score was counted when correctly point-out the answer in PIL, and answer in his/her own language. Chi-square, independent t-test, and regression analysis were used.

**RESULTS:** W-PIL showed greater communication effectiveness than P-PIL. It was found that 27.1% vs 22.8% of those reading W-PIL and P-PIL provided 11/11 correct answers (P-value =0.49). Those in W-PIL group had higher comprehension score than P-PIL group (9.60+1.51 vs 8.85+1.97, P=0.008). Reading P-PIL, getting older, having low education and being female led to significantly lower comprehension score. More than 70% of respondents reported they preferred W-PIL to accompany in product package. They perceived that W-PIL better provided detail drug information. They also think that both PIL format equally attract attention, and comprehensible.

**CONCLUSION:** W-PIL had better effectiveness to communicate drug information to lay people than P-PIL. However, there were rooms to improve P-PIL. Further study should focus on enhancing comprehensibility, and re-evaluate the communication effectiveness of both P-PIL and W-PIL.

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## A Study on the direction in development of Pharmaceutical Care Services in the 4th Industrial Revolution Society

So yeon Lim\*<sup>1</sup>, Min ju Kang<sup>2</sup>

### Abstract

**OBJECTIVES:** The fourth industrial revolution is a technological revolution that fuses the boundaries of physical, digital and biological spheres. This is a major change in the overall social system, and, in order to respond to these changes, pharmacists are also required to expand their roles beyond simple dispensing service. In Korea, we are in the process of initiating changes in pharmacist services. This study proposed solutions to these changes.

**METHODS:** In this study, we proposed four types of pharmacy services that Korean pharmacists have to focus on in the 4th industrial revolution society. We suggested them using four different methods. First, we designed a new system in detail. Second, we suggested improvement measures based on analysis of an existing system. Third, we compared an existing system with an advanced case. Fourth, we suggested the topics to be covered preferentially for the utilization of the media.

**RESULTS:** First, we proposed the release of a smart phone application. This application includes photo searching system, Q&A board with pharmacist and medication management system. Second, we proposed a visiting pharmacist service for elderly patients. This program provides a medication calendar, management of unused medicines and patient-customized medication counseling. Third, we proposed improving pharmaceutical specialty program. It would be possible with institutional support, diversification of fields and economic support. Fourth, we proposed utilization of new communication methods such as social networking services. For example, pharmacists can use YouTube with a topic of universal interest.

**CONCLUSION:** With these services, pharmacists will be the most accessible health care professionals in the society. As pharmacists' roles expand on focusing on pharmacist services, the importance of pharmacists as part of a teamcare will be acknowledged and achieving patients' health promotion will be possible.

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## Lived Experiences of Retakers in the Pharmacists Licensure Examination: A Bitter Pill to Swallow

Karina Marie Sonza Batu\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The study sought to describe the lived experiences and feelings of the pharmacy graduates who were retakers in the pharmacists licensure examination from a selected university from 2012-2016. This aims to examine the factors that would contribute to retakers to successfully pass the board examination and to serve as a guideline in the preparation of future pharmacy board examinees in the pharmacy licensure examination.

**METHODS:** Descriptive phenomenology design was utilized to capture the essence of phenomenon related to the lived experiences of the selections. Data were gathered through individual in-depth interview focusing on the meaning of the retakers' experiences and feelings regarding their failure in the pharmacy board examination. The interview was coded and converted into field text and bracketing was observed. For the validation of results, a triangulation process was performed with their faculty members.

**RESULTS:** The responses of the selections yielded three themes: The Bitter Pill Experience, Coping with the Dilemma and Learning from Failure. The Cool and Warm Analyses generated three themes: The Bitter Pill Experience where Pain, Regret, Denial, Expectations, Positivity emerged as the series of feelings the retakers felt after their failure. Suffering the Impact, Blaming Oneself and Picking the Pieces were identified as their responses and recovery processes in the theme Coping with the Dilemma. Lastly, Learning from Failure where Never Giving Up, Accepting the Experience, Getting Things Right and Moving On were the realizations and lessons identified by the retakers after their failure.

**CONCLUSION:** Failure to pass the board examination was a difficult journey to the selections. Their efforts to reduce the pain and sufferings came along with their right and positive attitudes and the people around them. The challenge however, is to still bring out the best of them and show that they still can.

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# Poster Presentations: Administrative, Social Pharmacy and Ethics



## Assessment of the Self-Medication Practice Among Community Pharmacists in Manila, Philippines

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### Abstract

**OBJECTIVES:** General: To assess the self-medication practice among community pharmacists in Manila, Philippines.

Specific:

To identify the demographic characteristics of community pharmacists that practice self-medication.

To identify the extent of self-medication of community pharmacists in Manila.

To determine the factors that influence community pharmacists to practice self-medication.

To describe the self-medication practice among community pharmacists.

**METHODS:** RESEARCH DESIGN & INSTRUMENTATION Descriptive, cross-sectional design, homogeneous purposive, self-administered pre-validated questionnaire.

POPULATION SIZE Slovin's formula

INCLUSION CRITERIA registered pharmacists age 21 & above from registered drugstores provided by FDA

EXCLUSION CRITERIA drugstore catering Chinese medicines & medical supplies

DATA COLLECTION ANALYSIS Pearson chi-square, frequency, percentage, mean, standard deviation, SPSS, MS excel, 0.05 alpha level

**RESULTS:** 72% of community pharmacists in Manila practice self-medication due to familiarity with treatment options, 83% of which use analgesics. All of the respondents self-medicate antibiotics while 2% self-medicate opioids and antidepressants. The reported perceived disadvantage of the practice include 83% adverse effects, 78% drug interaction & 76% antimicrobial resistance.

**CONCLUSION:** The factors that contribute to self-medication practice of community pharmacists in Manila is primarily the familiarity with treatment options. The majority of the respondents practice self-medication to treat minor illnesses using over-the-counter medicines, antibiotics, and food supplements.

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## Pharmacist Promoting Public Attention for Medication Safety through Organizing A Large-scale Garden-tour Charity Carnival

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### Abstract

**OBJECTIVES:** Supervised by the Ministry of Health and Welfare (MOHW), Taiwan Food and Drug Administration (TFDA), Taiwan Pharmacist Association (TPA) and Genesis Social Welfare Foundation have successfully organized a large-scale, garden-tour charity carnival, through this event to get the people of the whole country deeply feeling and knowing more about medication safety and the value of pharmacists in improving people's medication safety and good health.

**METHODS:** TPA organized and executed a series of preparatory meetings chaired by Ku Pou-jen (General Convener) and Huang Chin-shun (CEO) as to celebrate 2018 Pharmacist Day including 11 task groups: Activity promotion group, Venue group, General affairs group, Public relation media group, Program design group, Promotion booth group, Article propaganda group, Prize group, honored guest reception group, Mobility group, Ambulance group. Each group has 1 leader, 1~ 4 deputy leaders and 10~50 members.

**RESULTS:** Since TPA has held the first preparatory meeting on Nov. 3, 2017, till the meeting on Jun 28, 2018, we continued to hold group meeting 2 times every month. Actually carnival successively exposed to the public including: Advertising on Taipei Bus Body, Advertising on Bus Pavilion Lights, MRT Station Advertising, Vehicle Tour Broadcasting, Internet marketing, Event promotion video, Taiwan Formosa News marquee exposing, Marquee exposing in Taipei Zhongzheng District office. On Jul 1, 2018, at Freedom Square of Chiang Kai-shek Memorial Hall, more than 60,000 people were gathering, exciting and lively to take part in the Charity Carnival with pharmacists to promote the public medication safety

**CONCLUSION:** This carnival was echoed by the enthusiastic people. Many distinguished officers presented to celebrate with pharmacists and the public. The activity was rich of medication safety connotation, pharmacists and the public interacting, kinds of fun games, and education for promoting medication safety.

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## Comparison of the Knowledge, Attitude and Practice of Upcoming Health Professionals and General Students of Bangladesh regarding the Disposal of Unused and Expired Pharmaceuticals

Karunrat Tewthanom<sup>1</sup>

### Abstract

**OBJECTIVES:** In an overpopulated country like Bangladesh, the disposal of leftover medications has been a great concern since medication eventually enters the ecosystem and results unwanted impacts on human health and environment. The main objective of this study was to explore the knowledge, attitude and practice related to disposal of unwanted medicines among upcoming health professional and general students of Bangladesh.

**METHODS:** This study was conducted on the university students of three different subjects to evaluate their knowledge and practices regarding storage, utilization, and disposal method of drugs. A questionnaire consists of 16 questions evaluating the demographic, knowledge, practice, and attitudes of unused medicines disposal was prepared. Students were invited to complete paper-based questionnaire. Data were recorded and analyzed using SPSS spreadsheet.

**RESULTS:** Out of 250 respondents, 60% were upcoming healthcare professionals (medical and pharmacy students) and 40% were general students. Among them, 65.2% were having unused medications stored at home and majority (57.3%) of respondent's reason for having left over drugs was for future use (58.3%). Analgesics (72.4%) were the most commonly reported stored leftover medicine. A significant ( $p < 0.01$ ) number of participants (62.3%) were aware of the harmful consequences of improper disposal of leftover medicines, in them pharmacy students have the highest knowledge (75.8%). Moreover, discarding solid (85.8%) and liquid (64.4%) drug into dustbin was the popular methods of disposal.

**CONCLUSION:** This study suggests that there is an inadequate knowledge regarding impacts of improper medication disposal among general students compared to pharmacy and medical students. Therefore, it urges urgent attention to develop public education program about safe medication disposal process.

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## The effectiveness of a mass casualty disaster response drug supply mechanisms- Taiwan Hualien 0206 Earthquake as an Example

Tsai-Yen Liu\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Taiwan is a place where earthquakes spread frequently. How to maintain sufficient manpower for drug supply, smooth drug delivery, one of the keys to the success of the emergency plan. This study uses 0206 Taiwan Hualien earthquake as an example, To analyze the effectiveness of a mass casualty disaster response drug supply mechanisms in a medical center in eastern Taiwan.

**METHODS:** When earthquake occurred, the switchboard sent out a short message to directors of the pharmacy. Go to the hospital to count the number of medicine and prepare a variety of emergency medications. When the number of emergency medicines is insufficient, must be seconded immediately from other hospitals. When necessary, according to the "Measures for the mobilization of pharmaceuticals and medical materials stocks" formulated by the TFDA, can use the reserve drugs.

**RESULTS:** Although medical workers also fear the earthquake, they can still calmly perform the Injury classification and treat patients. After the hospital switchboard issued a support newsletter to the three directors of the pharmacy, all three supervisors were able to reach the hospital's emergency pharmacy within 15 minutes. A large number of emergency medications were provided for the injured at the time, including: Tetanus Toxoid 1ml/vial (Tetanus) 58 vial and Adrenalin HCl 1mg/ml/amp (Epinephrine) 66 amp, intravenous drip infusion have a total of 270 bottles. Drugs were transported from the drug store to the emergency pharmacy, and the process was smooth without damage or drug shortage.

**CONCLUSION:** As mass casualty disaster response plan drug supply mechanisms, the pharmacy directors had quickly arrived emergency pharmacy for drug distribution and supply to relieve the manpower or drug shortage crisis. Regular drills also allow all pharmacies emergency drug supply mechanisms to be effectiveness

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## Make a pharmacist friend for each family— The Family Pharmacist Program in Taipei Objectives

Lian Jia-Haur<sup>\*1</sup>, Huey-Jy Lee<sup>2</sup>, Chin-Shun Huang<sup>3</sup>, Chih-Wei Huang<sup>4</sup>

### Abstract

**OBJECTIVES:** 1. Understanding medical history and establishing medication history of the community residents.  
2. Conveying correct concepts about safe medication and teaching people how to use drugs correctly.  
3. Improving people's medical behaviors and medication concepts, reducing the wastage of health-care resources caused by multiple medications or repeated medications, and assuring the health of residents in the community.

**METHODS:** Inclusion criteria for providing services:

- 1.The patients who were assessed with more than five scores were included in elderly welfare institutions.
- 2.For community pharmaceutical care services: (1) hypertension/ hyperlipidemia/ diabetes mellitus or more than two chronic diseases (2) more than five prescription drugs (3) patient who need pharmaceutical care services.
- 3.The home-care patients referred by Department of Health, Taipei City Government were recruited.

**RESULTS:** In this program, 55 pharmacists took part in providing pharmaceutical care services for 1,482 residents. The sex ratio was about fifty-fifty between men and women; the age distribution was mostly between 60-80 years old. More than 90% of the people believed that the services provided by pharmacists were helpful and were satisfied with the pharmacists' services. At the same time, they hoped to obtain the pharmaceutical care services again. In addition to feel that the drug-related information from pharmacists was helpful, the public were also satisfied with the guidance and advice on self-care.

**CONCLUSION:** From the analysis of results, our pharmacists provided pharmaceutical care services to help people with non-unitary health care. We will implement a family pharmacist system that provides people with a convenient, accessible, communicative and drug-safety-oriented pharmaceutical care model.

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## Girl Care Pharmacy for the runaway girls and the girls in crisis

Suyeon Lee\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The purpose of Girl Care Pharmacy is, as the primary medical center, supporting for the girls who ran away from home, in good health conditions, and making them strong in physically and mentally. By running a Girl Care Pharmacy, the pharmacists can find and solve social underdogs in welfare blind spots. Girl Care Pharmacy can also serve as community pharmacy to strengthen their bond with runaway teenagers.

**METHODS:** The pharmacy gives out the free medicines and the free sanitary pads. Call number 120, then it gives the location of the nearest Girl Care Pharmacy. When the runaway girls visit the Girl Care Pharmacy and fill out the coupon, they can get the services. The limit is lesser than 10,000 won per person and it can be used 4 times a month. Also, the pharmacy is working with the centers, providing patients with medical services in hospitals.

**RESULTS:** Girl Care Pharmacy was a pilot program made by Seoul Women's Development Fund. In 2015, it joined various health care and medical festivals and events for promoting. The pharmacists open many classes for the girl's education. In 2016, it expanded its support to the girls in low-income. In 2017, Girl Care Pharmacy became Seoul City's Gender Equality Fund Program. The subsidies are the Seoul Metropolitan Government and the Seoul Pharmaceutical Association. Now, in Seoul, there are 247 Girl Care Pharmacies, and until last year, a cumulative 1598 girls had received the services. The Seoul Pharmaceutical Association plans to expand the services.

**CONCLUSION:** Girl Care Pharmacy has been done successful work as a community pharmacy. It has been giving out the free medicines and the free sanitary pads. It has opened the health care counsels and classes to educate the runaway girls. It keeps bringing them to the social boundary for protecting them.

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## A Generalized Drug Arrangement Model for Practicing Pharmacist Support

Chen Li Ming<sup>\*1</sup>

### Abstract

**OBJECTIVES:** Since 2014, pharmacists of Taiwan were adopted in medical personnel supporting system. Pharmacists who practice in clinics can support each other to perform drug dispensing. The system is to solve shortage condition for pharmacists on leave. And the familiarity of drug arrangement model is highly correlated with accuracy of drug dispensing for supporting pharmacists. The study is to understand and summarize the drug arrangement model used by phar

**METHODS:** The main primary data collection from pharmacists in Taipei city clinics targeting drug arrangement model, training period, and as well as individual opinions in the survey questionnaire.

**RESULTS:** Results from 62 questionnaires showed 22.58% of clinics had been supported by other pharmacists. However, 43.55% of clinics do not have segmentation for similar drug, 50% of pharmacists take about one week to accommodate drug arrangement model in clinics. For drug arrangement model in clinics, alphabetical order accounts for most at 28.99%, followed by disease classification mainly with partial pharmacology classification at 26.09%. However, the clinics pharmacists ideal drug distribution models are disease classification mainly with partial pharmacology classification and pharmacology classification account same for 30.3%. 54.85% clinics pharmacists agreed with the necessity for generalized

**CONCLUSION:** Generalized drug arrangement model can not only shorten time for pharmacist's adaption but decrease the risk of near miss. Disease classification mainly with partial pharmacology classification seemed a feasible model need further discussion to be adequate to different clinics.

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## A study on information sharing between hospitals and community pharmacies

Takao Orii\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Kawakita General Hospital (hereinafter referred to as “our hospital”) has launched a network that links to neighborhood medical institutions, such as clinics and community pharmacies. The system is now operating. The system allows to access to the clinical information on medical examinations, etc. that the patients received in our hospital and that the patients gave informed consent at community pharmacies, etc. This network system was establishe

**METHODS:** At community pharmacies, patients are explained about the system, and the informed consent forms signed by patients are sent to our hospital. The system becomes available from the time of patient registration onwards. Upon signing the informed consent form, patients are handed the consent withdrawal form, so that patients can cancel the community pharmacy-based access to their clinical information at any time. The clinical information available for patients through the system is the same as the

**RESULTS:** The establishment of the system has allowed our local 19 community pharmacies to search for and share clinical information at the time of medication guidance (as of September 2016). Community pharmacies dispensing drugs on the basis of out-of-hospital prescriptions have reported advantages of patient information sharing, such as access availability to information that allows them to check patients’ clinical course, including changes in medication history, during hospitalization as well as to check hospital medical record information on pharmacy-related components.

**CONCLUSION:** This suggested that the sharing of patient clinical information generated in hospitals could not only promote to strengthen the cooperation between hospitals and community pharmacies but also to lead to an improvement in the “quality” of pharmacist services as the regional medical cooperation system

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## Vulnerable families and seniors living alone drug and whole person health care

Shu-Ling Lee<sup>\*1</sup>, Chen-Sheng Chen<sup>2</sup>, Jen-Chieh Wang<sup>3</sup>, Yen-Lin Chang<sup>4</sup>

### Abstract

**OBJECTIVES:** The purpose of this study is to establish a comprehensive healthcare system to strengthen the elderly's understanding of health concepts and diseases, correct use of drugs to reduce adverse drug reactions, and provide professional nursing services for the elderly medication and drug integration.

**METHODS:** Pharmacist must complete 8 hours of community family pharmacist training and education. Each respondent kept a detailed record of the care visits, which included basic information, health status, medication, social assistance referral service. The quality indicators for the achievement of pharmacy care outcomes include (1)Medical advice (2)Cognition of medication (3)Social assistance referrals. We will handle community medication lectures and establish a pharmaceutical cooperation platform.

**RESULTS:** A total of 108 pharmacists participated in the care plan and served 669 home cases. The total number of visits was 2,200, including 375 new cases, 1,344 visits, 292 old cases, and 856 visits. The AA code to indicate the prescription or medication problem. The BB code indicates the pharmacist's suggestion. The CC code indicates the solution. A total of 3,632 suspected drug treatment problems (AA codes), 3,632 recommendations (BB codes) were obtained, and 2,126 responses (CC codes) were obtained. The results showed that 54.0% of the cases had improved disease control and 34.2% had disease control. It remained unchanged and 8.1% of cases had worse disease control.

**CONCLUSION:** After the care, the number of medical visits, types of medications, frequency of adverse drug reactions and repeated medications was significantly reduced. At the same time, patient compliance, drug storage suitability, and correct drug use knowledge were significantly improved.

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## Roles of Future Pharmacists on Adolescent Drug Abuse

Choi JaeYun\*

### Abstract

**OBJECTIVES:** Prescription and OTC drugs are used frequently in adolescents. Misuse or abuse of these drugs by adolescents can show narcotic-like effects, which can lead to social problems by giving them opportunities to abuse of narcotics and hallucinogenic drugs. The purpose of this study was to investigate the effectiveness of pharmacist involvements in adolescent drug uses through drug abuse prevention education and mutual communication method.

**METHODS:** A questionnaire survey was conducted for middle and high school students in Kyeonggi-do from October 2, 2016 to November 30, 2016, and Frequency, Percentage, Arithmetic mean average, Standard deviation, t-test, ANOVA, Factor analysis, Reliability analysis, Pearson correlation analysis, and Regression analysis were conducted using SPSS statistical package program(ver.17.0).

**RESULTS:** 71 students(36.2%) did not receive drug abuse prevention educations from pharmacists, 128 students(65.3%) have had the experience of drug purchasing at retail stores. Easy access to drug purchase may lead to drug abuse in adolescents. 6 students(3.1%) purchased drugs at small retail stores instead of pharmacies or clinics and 193 students(98.5%) answered it was easy to purchase drugs, which indicate great concern about drug abuse. Also, 64 students(32.7%) have experienced side effects after taking drugs. Gender, health status, drug abuse education, mutual communication with pharmacists and drug purchase route are confirmed as factors influencing adolescent drug abuse.

**CONCLUSION:** Social factors that have positive impacts on adolescent drug abuse are drug abuse education provided by pharmacists and collaborative communication, so the high quality of education and effective communication are definitely necessary in the future to improve adolescent's awareness of safe drug use.

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## The research of the institutional transformation on the separation of drug dispensing from medical practice in Taiwan

Chin-Shun, Huang<sup>\*1</sup>, Han-Chun, Huang<sup>2</sup>

### Abstract

**OBJECTIVES:** The implementation institution on the separation of drug dispensing from medical practice in Taiwan is 20 years till now. It's not only a new institution in medical proactive, but also the dilemma of the right of drug dispensing, the benefit in medical price and the professional pharmacist status. The institutional transformation is the most difficult challenge in Taiwan medical history. The purpose of the research is to investigate the process o

**METHODS:** According to the purpose of the research, the appropriate research method is qualitative research method that helps to clarify the context of reforming institution. There are in-depth interview and comparative analysis that were adopted in field survey method.

**RESULTS:** From the research, there are five stages in the analysis of the institutional transformation on the separation of drug dispensing from medical practice in Taiwan.

1. The chaotic medical period (1957-1988)
2. The period of pharmacists struggle in the separation of drug dispensing (1989-1993)
3. The period of institution law source verification (1993-1996)
4. Establish a dual-track system (1997-2007)
5. The implementation of the dual-track system for the separation of drug dispensing in the near term (2007-present)

**CONCLUSION:** The research is not only the investigation of the institutional transformation on the separation of drug dispensing from medical practice in Taiwan, but also the reflection of institutional promotion and implementation in Taiwan. The result of the research is the lens of the theory of institutional

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## Rapid decrease in codeine prescription to under twelve years old children after Japanese Ministry of Health and Labor request in July 2017.

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### Abstract

**OBJECTIVES:** In Europe and United States, it is contraindicated to use codeine to under 12 years old children in April 2015 and 2017, respectively. On July 4, 2017, Japanese Ministry of Health and Labor (JMHL) requested to revise the usage notes about drugs containing codeine as contraindicated to under twelve years old children promptly within 3 years. We followed the decline trend of codeine prescription after this JMHL request.

**METHODS:** The dosage of codeine in syrup or tables prescribed to under 12 years old children was checked monthly in four branches; I, H, KN, ON of Meihoku Pharmacy group on prescription request basis during two years, retrospectively before JMHL request, and prospectively for one year after JMHL request. We compared the dosage of codeine containing pharmaceutical prescriptions in children under 12 years of age every six months before and after JMHL request.

**RESULTS:** The percentage of codeine containing pharmaceutical prescriptions in children under 12 years of age was 3% at KN, 11% at H, 6% at I and 1% at ON branch. The ratio to total prescribed number for children under the age of 12 in the codeine-containing tablets and syrup decreased in all stores after JMHL request. The prescription volume of codeine-containing syrup was the lowest in the period from July to December 2017. In addition, the ratio of total prescriptions under 12 years of age was the lowest in July - December 2017 for all codeine containing tablets preparations. In the ON branch, the prescription of tablets to be under 12 years in the period of July - December 2017 became zero.

**CONCLUSION:** The notification from the JMHL request influenced the decline in the codeine-containing formulation amount in the second half of 2017. Moreover, it is also thought that information provision in Pharmacy group will further promote reduction of codeine-containing prescription by the end of 2018.

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## The way of health support pharmacy in the future

Mayumi Sakaguchi\*<sup>1</sup>, Yoshiko Shibata<sup>1</sup>, Yukiha Tanaka<sup>1</sup>, Yasuko Osikiri<sup>2</sup>

### Abstract

**OBJECTIVES:** In Japan, the "Health support pharmacy" system started in April 2016. The authors conducted research on "Health support pharmacy" in September 2016 before the notification began, and reported that people's awareness was low. In this research, we conducted a survey again in October 2017, compared with the results of the survey in 2016, and aimed to examine the future issues concerning "health support pharmacy".

**METHODS:** We conducted a questionnaire survey for participants of "OTC Promotion Education Event" that was held on October 20th and 21st. This event was hosted by Japan Federation of Self-Medication Industries, Tokyo Pharmaceutical Affairs Association, Tokyo Crude Drugs Association, Tokyo Pharmaceutical Association, and Tokyo Metropolitan Druggist Association

This study was approved by Japan Primary Care Association Ethics Committee (approval number: 2017-005 approval date: October 3, 2017).

**RESULTS:** Respondents received responses from 117people in 2016 and 121people in 2017 (recovery rate 100%).

About "Health support pharmacy", "I heard it for the first time" was 75 people (64.1%) in 2016 and 77 people (63.6%) in 2017.

Items that we would like to use in "Health Support Pharmacy" efforts were in order of "Diabetes Prevention Classroom", "Efforts to Discover Early Detection of Dementia", "Sales and Consultation of OTC Drugs" in 2016. In 2017, it was "Sales and Consultation of OTC Drugs", "Efforts to Discover Early Detection of Dementia", "Nutrition Consultation Meeting".

**CONCLUSION:** In the future, in order to raise the awareness of "Health support pharmacy" and to increase the number of users, "Health support pharmacy" needs to carry out active and continuous efforts in accordance with the needs of local residents.

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## A Study on the Current Situation of Medication Safety Education and the Degree of Awareness of Child care Teachers about Medication Safety Education in National Child Care Centers in Goyang City

Jeongseon Jeong<sup>\*1</sup>

### Abstract

**OBJECTIVES:** The pharmaceutical association of Goyang City, Korea conducted an education & training for safe-use of medication(ETSUM) program for the National Children's Center(NCC) teachers in 2017. Participating in this program, I wanted to know the state of education of the teachers and the degree of awareness of the teachers on ETSUM for infants. The study sought to find an effective way to provide a safe use environment of drugs for infants at NCC.

**METHODS:** The survey was conducted on the NCC teachers working at NCC by the local pharmaceutical association(LPA) in Goyang City. The survey was carried out by mailing, which was distributed to 294 people surveyed and collected 271 copies.

**RESULTS:** First, the frequency of medication accidents was 14 out of 271(5.2%). Most of the accidents was caused by negligent management by teachers or parents. Second, most of the teachers replied they had ETSUM for infants once or twice a month. Some 149 said that ETSUM for infants should be effective only if pharmacists take charge of the program. On the time of conducting ETSUM for infants, 141of the 268 (52.6%) cases were preferred to provide the education accompanied by the care process. Third, only 210 of 270 (77.5%) respondents answered they received ETSUM. 243out of 263 (92.4%) said they would be educated 1~2 times per year.

**CONCLUSION:** It is necessary for pharmacists to actively participate in ETSUM for infants. The LPA will be more practical in providing for the teachers with educational materials. ETSUM should be systematically conducted for the teacher. It is also necessary to increase officially trained teachers.

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## Comparative study on the incidence of potentially inappropriate medications use among elderly people who frequently seek medical treatment

Tzu-Chueh Wang\*

### Abstract

**OBJECTIVES:** Aging is an issue of worldwide concern. In Taiwan, the elder population reached 14.05%, marking the advent of aged society. Aging causes changes in the degradation of organs, and frequently suffer from multiple diseases, and increasing the likelihood of adverse drug reactions. Because of this, potentially inappropriate medication is a serious problem for them. In 2010, the Taiwan Pharmacist Association began to plan and implement home care.

**METHODS:** This study analyzes the 2016 H-Care program database, and uses the Beers Criteria 2015 to evaluate whether PIM prescriptions could be identified. Patients were selected for the experimental group if they had sought medical treatment over 90 times in 2015 and had  $\geq 6$  medications in each prescription or were suffering from  $\geq 2$  chronic conditions. The control group consisted of patients who filled prescriptions at community pharmacies. Logistic regression was used to assess the rate of PIMs in elder.

**RESULTS:** After analysis, the experimental group was formed of 2,035 elderly patients who had received home visits from pharmacists for the purpose of pharmaceutical care. In the control group, a total of 26,196 prescriptions were recorded. The analysis showed that the rate of polypharmacy ( $\geq 5$  drugs in each prescription) among the home care group was 43.8 times higher than in the conventional care group. Among all polypharmacy patients, the rate of PIM prescriptions among the home care group was 15 times higher than for the regular care group. This indicates that more attention needs to be paid to medications prescribed for patients who receive home visits than those who are routinely cared.

**CONCLUSION:** PIM are not totally unsuitable for elderly patients. Pharmacists should pay attention to the possible ADRs, and remind them of what should beware day-to-day. In addition, pharmacists can serve as a conduit for communication between patients and physicians to improve patients' health and well-being.

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## YPG Botika: Pharmacist-led medication reconciliation service and its impact on the identification of drug-related problems in a community setting

Kay Ann Jonatas Tongol\*<sup>1</sup>

### Abstract

**OBJECTIVES:** YPG Botika is a mobile medication counseling station consists of volunteer professional and student pharmacists where locals may visit and discuss about their medications and other health concerns. The project aims to engage pharmacist in the collaborative care of patients, providing them with quality medication reconciliation and review services.

**METHODS:** A total of 17 pharmacists and 51 pharmacy students were divided into groups. The baranggay health workers led the volunteers to the residents of senior citizens. Target participants were senior citizens in which polypharmacy can exist. Following each encounter, students fill up the patient medication counselling documentation form, the pharmacists helped in clarifying discrepancies and identified the presence of drug related problems. The pharmacists gave counseling to the identified patients.

**RESULTS:** The students identified 89 drug related problems out of the 127 patients that were served. The most common type of problem identified was patient compliance to drug therapy. Providers accepted 95% of the pharmacists' recommendations. Interventions related to hypertension and diabetes were the most frequent.

**CONCLUSION:** This paper describes the model for this pilot initiative. With the gathered results from this project, the role of pharmacists in the community is identified as a big collaborator for patient care through medication review, reconciliation and counseling.

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## Improving Consumers' Medication Safety through Learning Pharmaceutical Product Information in Japanese Language

Huang Chin-Shun\*

### Abstract

**OBJECTIVES:** A “Japanese Reading Club” was formed by Taipei Pharmacists' Association (TPA) originally to facilitate the interactions between Japan and Taiwan. This poster is to show a strategy to allow day-to-day work pharmacists, particularly for pharmacists served in clinics and community pharmacies, to understand how to give consultations on medicine items bought back from Japan.

**METHODS:** TPA organizes “Japanese Reading Club” to promote the Japanese language reading activities. To reading pharmaceutical product information in Japanese related to the popular drug products sales in Japanese drugstores, comparisons of consumers’ habits in drug use and the chosen dosage of similar products both from Japan and Taiwan were the main theme of the learning sessions.

**RESULTS:** A total of 10 interactive Japanese language learning sessions were held from October 2016 to November 2017. Initially, 30 trainees were recruited maximally. After received enthusiastic responses from the participants, TPA expanded the accommodation up to 50 trainees per session.

### Conclusion

**CONCLUSION:** To provide regular sessions is our future plan and that competent in speaking basic Japanese level of 50 tones is required to be a member of “Japanese Reading Club” in order to facilitate the advanced learning.

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## MOTHER-TO-CHILD ANTIBIOTIC UTILIZATION IN FLORIDABLANCA, PAMPANGA: DETERMINANTS AND HEALTH OUTCOMES

Louie Fernand D. Legaspi, RPh, MHSS\*

### Abstract

**OBJECTIVES:** The study sought to determine the current antibiotic use for children amongst selected mothers in Floridablanca, Pampanga. It specifically sought to identify the associations of the mothers' personal characteristics, their knowledge on antibiotics, their access to antibiotics, their level of antibiotic utilization, and the association of the level of antibiotic utilization with their child's health outcomes after treatment.

**METHODS:** The cross-sectional quantitative study used a descriptive research design and utilized the survey method using a validated structured self-administered questionnaire among purposively selected mothers from 5 barangays who have given their children any antibiotics for the past 6 months. Non-parametric tests were used for this study due to the nature of non-probability sampling and the relatively small sample size (n=110). SPSS was used to perform all descriptive and inferential statistical tests.

**RESULTS:** More than half of the mothers have a moderate level of antibiotic knowledge (6.83±2.29). The main source of their knowledge are doctors, followed by pharmacists. Almost all acquired antibiotics with the use of a prescription in a community pharmacy. Majority of the mothers' children recovered after treatment, but recurrence were present. The overall antibiotic utilization of the mothers is generally low (1.89±0.77). Only the mother's age (p=0.041), educational attainment (p=0.040), number of children (p=0.027), household income (p=0.024), antibiotic knowledge (p=0.000), and access to antibiotics (p<0.05) have significant and direct associations with their level of antibiotic utilization.

**CONCLUSION:** Findings showed how mother-to-child antibiotic utilization can be influenced by several factors that may often lead to misuse of antibiotics. Overall, the mothers do not engage in self-medication and practices the appropriate use of antibiotics while being adherent to their child's treatment regimen

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## PREVALENCE OF AND ASSOCIATED FACTORS ON HERBAL SUPPLEMENT INCLUSION AMONG PATIENTS ON MAINTENANCE THERAPY IN SAN CARLOS CITY, PANGASINAN

Sandra M. Valentin<sup>\*1</sup>, Rowel P. Catchillar<sup>1</sup>, Rosalyn G. Rosal<sup>1</sup>

### Abstract

**OBJECTIVES:** This study aimed to determine the prevalence of herbal supplement inclusion among patients on maintenance therapy and the predictors of including herbal supplements to drug regimen. Prevalent use of combined therapy highlights the potential drug-herb interactions. A survey using a structured questionnaire was administered to randomly selected individuals with chronic conditions requiring maintenance therapy such as hypertension and diabetes.

**METHODS:** A descriptive survey method of research was utilized to determine the prevalence of and associated factors on herbal supplement inclusion to maintenance therapy.

It concerns respondent's socio-demographic profile, influencing persons to include herbal supplements and the source of information about herbal products. It determines physician's knowledge and awareness on patient's herbal supplement inclusion, as well as patients' belief on the possible occurrence of side effects from herbal use.

**RESULTS:** Prevalence of herb-drug regimen use was highest in people aged 40-59 and with female users. Drugs for hypertension and diabetes have the highest values of drug regimen with herbal supplement inclusion. Many respondents believe that herbal supplements provide no harm when taken with maintenance drugs while others believe that better relief is achieved when herbal supplements are included in the regimen. The prevalence of herbal supplements included in the maintenance therapy include ampalaya tea, malunggay and sambong tea. Many agree that family is the major influencing factor while pharmacists are least likely to influence. Awareness of physicians on herb drug co-use was notably low.

**CONCLUSION:** This study shows that self-medication with herbal supplements or medicinal plants in combination to regular drug regimen use is highly prevalent and is highest for conditions of hypertension and diabetes. Such use is most prevalent in unemployed individuals, female and those aged 40 -59 years old.

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1Virgen Milagrosa University Foundation



## Study on the relationship between drug care, dietary, dietary supplements and debilitating symptoms in community elders

Chang Yen-Yu<sup>\*1</sup>, Yu-Yao Cheng<sup>1</sup>, Yi-Ping Chang<sup>1</sup>

### Abstract

**OBJECTIVES:** Nowadays, Taiwan and the world are gradually stepping into the aging society. Nutrition status is highly related to geriatric syndrome such as frailty and sarcopenia. The nutrition ingestion and lifestyle are extremely important to elder's healthiness. The object of the study is using multiple measurable tools to evaluate the relationship between drug care, dietary, dietary supplements and debilitating symptoms in community elders.

**METHODS:** The study used SPSS22.0 system and statistical analysis of descriptive statistics and independent T-t verification. 24-hour Dietary Review Questionnaire, Community Elderly Dietary Frequency Questionnaire (FFQ), Mini Nutrition Assessment (MNA), the Drug Care Assessment Form, the infirmity assessment table, the fixed ration meal box and the grip strength tester were used for data evaluation. The questionnaires were analyzed separately (ANOVA and independent sample T-Test).

**RESULTS:** There were significant differences in age, postural measurement and dietary assessment ( $p < 0.05$ ). Dietary supplement such as glucosamine, vitamins and minerals, calcium, fish oil are common used in the community elderly and can make posture improvements. However, it was no significant difference between protein uptake and general assessment ( $P > 0.05$ ). The education level is also a key factor between the results. Moderate diet and dietary supplement intake also drug care all decrease the incidence of debilitating symptoms in community elders. ( $p < 0.05$ ).

**CONCLUSION:** Diseases are usually caused by malnutrition in elders. With completed drug care from pharmacists, suitable nutrition plan including moderate diet and dietary supplement intake may reduce infirmity, muscular deficiency and debilitating symptoms in community elders.

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## Factors affecting Consumer behavior towards Spurious/Substandard/Falsely-labeled/Falsified/Counterfeit medicines in selected barangays in Burgos, Quezon

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### Abstract

**OBJECTIVES:** This study aims to identify factors that predict the attitude and vulnerability of the subjects to Spurious/Substandard/Falsely-labeled/Falsified/Counterfeit (SSFFC) medicines.

**METHODS:** The research employed a descriptive, cross-sectional, and correlational research design using a pre-validated questionnaire at seven barangays (districts) in the rural municipality of Burgos in the province of Quezon. The pre-validated questionnaire included Attitude towards SSFFC, Subjective norm, and Motivation to buy, as the factors affecting vulnerability towards SSFFC. The research yielded 237 valid responses (83% of the total respondents).

**RESULTS:** The respondents were mostly female (71%) and has an income ranging from 0-80,000 (57%). The study found out a moderate vulnerability to SSFFC medicines for the respondents. Logistic regression indicated a p-value greater than  $\alpha$  ( $p > 0.05$ ), indicating that the test done on the different factors is non-significant. However, the results of the regression was not conclusive since the power analysis done yielded  $\beta=0.42$ . Causality was not established between the awareness level and the vulnerability of the subjects; however, upon observation, those who have low level of awareness on SSFFC have higher vulnerability to SSFFC medicines as compared to those who are not aware of SSFFC.

**CONCLUSION:** In conclusion, the subjects in the study has a moderate vulnerability to SSFFC medicines ( $\Sigma=132.11$ ). The factor analysis and loading done stated that attitude towards SSFFC, alone, affected vulnerability the most ( $\text{var}=.378$ ). Combination of the other two factors affected vulnerability with  $\text{var}=.446$ .

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## AUF pharmacy graduates' participation in public health activities

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### Abstract

**OBJECTIVES:** This research focused on describing AUF pharmacy graduates' participation in public health activities, their roles, specific type of public health activity they have attended, as well as their motivation in the said activities. Moreover, the researchers determined the association between the participation in public health activities and the nature of work of the graduates.

**METHODS:** A cross-sectional study using a validated self-administered questionnaire was used. Some survey questionnaires were given to the alumni who were personally accessible. On the other hand, for those who were not, the tool was incorporated into an online survey (Survey Monkey<sup>®</sup>) and was sent online through e-mail and social media accounts, like Facebook. The study covered 8 batches of AUF Pharmacy graduates from years 2009 to 2016.

**RESULTS:** Out of 507 graduates, 135 (27%) responded to the survey. Of these, more than half (74) were found participating in public health activities. In this study, it was depicted that the roles of AUF Pharmacy graduates in public health activities were either voluntary or compulsory with a close percentage of 59.25% and 56.3%, respectively. Medical mission was the topmost specific type of activity that the alumni engaged in. Findings showed that there is a significant association between the nature of work of the respondents to their participation in public health activities with a p-value of 0.05.

**CONCLUSION:** AUF Pharmacy graduates have a good level of involvement in public health activities and are seen to be motivated to participate in their activities voluntarily. In spite of their participation, there were still identified important barriers to address upon for possible future intervention.

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## Young Pharmacist's Involvement in Taipei Pharmacists Association

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### Abstract

**OBJECTIVES:** Young Pharmacists Committee (YPC) was established in Taipei Pharmacists Association since 2011. Diverse activities were held to attractive more young pharmacists to join association and grow from off work time. The study aims to realize the young pharmacist's involvement in Taipei Pharmacists Association and find out the correlation between held activities and participant's feedback.

**METHODS:** Total 7 different types of activities were held including baking, electric circuit design, sales and marketing, separation of prescribing and dispensing, long-term care, training camp and riddle city. Questionnaires were used to collect data from participants including participants numbers and feedback to content arrangement.

**RESULTS:** Since 2011, 73 young pharmacists joined YPC as committee members in Taipei Pharmacists Association. Total 410 pharmacists attended activities held by 19th YPC from Sep 2017. 66% of participants are very satisfied with the content arrangement. Baking and electric circuit design let pharmacist experience DIY fun. Sales and marketing course invited employees from global pharmaceutical company for career sharing. Separation of prescribing and dispensing symposium invited pharmacists from other countries to share pharmacy practice and regulation in each country. And long-term care symposium invited pharmacists involved to share their experience from different aspects.

**CONCLUSION:** Activities held by YPC can not only inspire pharmacists but let them relax from off work time. Young pharmacist's involvement in Taipei Pharmacists Association attracted more pharmacists to join and realize the paid efforts. Meanwhile, YPC is also a stage for young pharmacists to grow and shine.

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## Knowledge, Level of Awareness and Non-Compliance of Mothers on Expanded Program on Immunization

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### Abstract

**OBJECTIVES:** The main objective of the study was to evaluate the awareness of mothers ages 18 and above about the importance of these vaccines and its proper immunization schedule. This study used quantitative research design study to find out the level of awareness of mothers on expanded program of immunization of their infants and educate them.

**METHODS:** The overall content validity results from the F-test in finding significant difference between the levels of awareness of respondents when grouped according to their age, religion, marital status, educational attainment, and income.

**RESULTS:** The p-value results from the demographic data collected is not less than  $\alpha=0.05$ . For the test statistic regarding the level of awareness where  $z=-1.57$ . The result of  $-1.57$  is not  $>1.9$  we do not reject the hypothesis that is  $u=3$ .

**CONCLUSION:** It can be concluded that the different age, religion, marital status, educational attainment, and family income groups are not independent on their level of awareness. The test statistic shows that the level of awareness of mothers regarding vaccination is somewhat aware.

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# Poster Presentations: Community Pharmacy



## The Community Pharmacy Practice of Pharmacists in Independent Drugstores in Caloocan City, Philippines

Crislee M. Torio\*<sup>1</sup>

### Abstract

**OBJECTIVES:** This phenomenological study described the practice of community pharmacy among registered pharmacists employed in independent drugstores in Caloocan City. Specifically, it identified the pharmacists' valuation of their role as healthcare practitioners, their view of pharmaceutical care as they render it in the drugstore, and the services they provide. Furthermore, the facilitating and constraining factors in their practice were also identified.

**METHODS:** Semi-structured interview was used to collect data from pharmacists who satisfied the inclusion criteria. Pharmacy assistants (PAs) and clients were also interviewed for data triangulation. Voice records were transcribed, transcripts were coded and analyzed for significant statements that gave rise to themes. A repertory grid was prepared to capture the pharmacists' personal meanings of their experience as pharmacists in independent drugstores. Data collection ceased upon data saturation.

**RESULTS:** A total of 17 voice records from pharmacists were obtained. Statements were corroborated with PAs and clients. The pharmacists see themselves as valuable in the drugstore being the most accessible health practitioners, and as drug information source, counselors, drug dispensers, prescription decoders and PA's guide. To them, pharmaceutical care is addressing clients' needs to ensure their wellness. They perform routine tasks except keep patient records and compound. The pharmacists identified personal and client factors, workload and lack of collaboration with other healthcare practitioners as practice constraints. Positive professional outlook and public patronage facilitate their practice.

**CONCLUSION:** The results show that pharmacists in Caloocan City understood their value as the most accessible healthcare practitioners. They know their roles in the delivery of pharmaceutical care. However, the constraining factors must be addressed to provide excellent care from the pharmacists.

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## Correlation Between Awareness of Community Pharmacists in Bataan of their Dispensing Roles and their Dispensing Service

*Kathleen Michelle Tee Yu\**

### Abstract

**OBJECTIVES:** The general objective of the study is to determine the correlation between the awareness of pharmacists of their dispensing roles as provided in the Philippine Practice Standards for Pharmacists and their perceived performance of dispensing service.

**METHODS:** A total of 42 community pharmacists from eight municipalities in Bataan participated in the study, the sample size was arrived at using purposive and snowball sampling techniques. Questionnaires based on the Philippine Practice Standards for Pharmacists were utilized to gather data from the respondents.

**RESULTS:** It was found that respondents had generally high awareness of the dispensing roles, but had varying levels of perception on their dispensing service performance. Performance criteria that were rated high pertain to implementing good dispensing practices, undertaking prescription validation and assessment, filling of prescriptions accurately, and displaying appropriate care when dispensing. The study also revealed that clients or patients generally had high satisfaction with the service they receive from the pharmacists. A moderately high correlation was computed between awareness and perceived dispensing service ( $r=0.446$ ,  $p$  value= $0.003$ ).

**CONCLUSION:** With the data collected in the study, the awareness as well as the responsiveness of community pharmacists in Bataan of the advancements in the pharmacy practice was evaluated in preparation for the full implementation of the Philippine Practice Standards for Pharmacists standard guidelines.

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## ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF RETAIL PHARMACISTS TOWARDS PATIENT SAFETY IN SABAH, EAST MALAYSIA

*Dr Palanisamy Sivanandy\*<sup>1</sup>, Marikannan Maharajan<sup>1</sup>, Ho Xin<sup>1</sup>*

### Abstract

**OBJECTIVES:** The significance of patient safety has grown worldwide and becoming a focus of clinical care as a major global concern. The increased incidence of patient harm due to unsafe services leading to declined health outcomes and even death. Hence this study was aimed to evaluate and relate the retail pharmacist's knowledge, attitude and perception towards patient safety.

**METHODS:** It was a cross-sectional study with paper-based survey assessing knowledge, attitude and perception of retail pharmacists on patient safety, across Sabah, East Malaysia over a period of four months from October 2017 to January 2018. Two different set of questionnaires consist of 64 items were used in this study, one to analyse the pharmacist knowledge on patient safety and the second questionnaire to analyse the attitude and perception of retails pharmacists towards patient safety.

**RESULTS:** This questionnaire survey received 100% (n=90) response rate from the participants. Out of those 90, 80 were senior and 10 were junior pharmacists. In knowledge assessment questionnaire, the highest positive response rate (95%) was observed for openness in communication but in attitude and perception assessment questionnaire, the highest PRR was noted in patient counselling domain (99.63%). Among all the domains, the PRR score for "staffing, work pressure and pace" was the least (68.63%). Most of the pharmacist were not aware of documenting different types of mistakes that had happened in their pharmacy. However, very few pharmacists said they will rarely or sometimes document the mistakes.

**CONCLUSION:** The current practice of patient safety is good in Sabah. Pharmacists were motivated to practice communication openness in speaking up to errors to prevent it from reoccurring. Their enthusiasm in patient counselling to ensure proper medication usage, and improve patient compliance are appreciable.

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## Patient safety management based on Pharmaceutical Near-miss Event Information at a community pharmacy

Kazuhiro Matsuura\*<sup>1</sup>

### Abstract

**OBJECTIVES:** With a specific focus to understand how to better manage drug therapy administration as part of patient safety practices, we analyzed “near-miss” case examples that have been collected at community pharmacies. Objective of the study is to verify utilization of the Japan Council for Quality Health Care “Pharmaceutical near-miss event Information” and other related materials as key resources to improve patient safety.

**METHODS:** Quantitative and qualitative analysis on three key data sources within the near-miss event information. 1, the annual reports issued by the council. 2, “to be shared events” which originally created by the council. 3, keyword research on the website of near-miss reports. Contributory Factors from the extract events have been sorted by applying to one of the human factor model, P-mSHELL Based on examination of problems generated on pharmacy practice, contribution to patient safety were discussed.

**RESULTS:** Our analysis showed that 14 cases in total were announced as highly noted events in the annual reports; 155 near-miss events were extracted from website of the council; and in keyword researches, specific events regarding a disease such as diabetes were easily available on the website of the council. Contributory factors of each extracted near-miss events were mostly associated with behavior of a person such as “neglecting to check”. System and environmental factors such as computer system or education were relatively low. As a result of applying to P-mSHELL model, three elements: Patients, Management and Environment were less considered than other elements as contributory factors.

**CONCLUSION:** Use of information of Pharmaceutical near-miss events make it possible to reduce dispensing errors. Contributory factors from a perspective of management/system require further research. Necessary to revise the report format and educate each pharmacist to improve their patient safety knowledge.

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## Improving Consumers' Medication Safety through Learning Pharmaceutical Product Information in Japanese Language

Yu Ching Ling\*<sup>1</sup>

### Abstract

**OBJECTIVES:** People lives in Japan and Taiwan are very close in terms of cultural background or living and eating, so the people in Taiwan are very fond of and are accustomed to frequent exchanges and travel to Japan. Drugs and cosmeceuticals are particularly loved in Taiwanese tourism and shopping.

**METHODS:** A “Japanese Reading Club” was formed by Taipei Pharmacists' Association (TPA) originally to facilitate the interactions between Japan and Taiwan. This poster is to show a strategy to allow day-to-day work pharmacists, particularly for pharmacists served in clinics and community pharmacies, to understand how to give consultations on medicine items bought back from Japan.

**RESULTS:** A total of 10 interactive Japanese language learning sessions were held from October 2016 to November 2017. Initially, 30 trainees were recruited maximally. After received enthusiastic responses from the participants, TPA expanded the accommodation up to 50 trainees per session.

**CONCLUSION:** Taiwanese pharmacists can familiar with medicines from Japan and explain how to use drugs correctly after attending Japanese language learning sessions in order to improving consumers' medication safety. To provide regular sessions is our future plan and that competent in speaking basic Japanese lev

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## Clinical Pharmacy Service in a Community Pharmacy in Davao City: A Qualitative Inquiry

Cherrie Gasendo- Muaña\*<sup>1</sup>, Peniel Caminna Ferolin<sup>1</sup>, Martha Louis Damasco<sup>1</sup>, Tricia Marae Cabangal<sup>1</sup>, Thessaly Ngo<sup>1</sup>, Aneeka Palamos<sup>1</sup>

### Abstract

**OBJECTIVES:** The primary objective of this study was to assess patient's satisfaction and identify clinical pharmacy services and facilities offered by the community pharmacy.

**METHODS:** This study employed a descriptive qualitative design and was conducted in a community pharmacy in Davao City. Participants were selected based on randomized purposive sampling technique. Data was gathered through audio-taped in-depth interviews and written field notes. Tape recordings generated were transcribed verbatim. Concepts and categories were established, which form the basic unit of the analysis thru initial coding.

**RESULTS:** Through ServQual Theory of Service Evaluation, the results showed that the five broad dimensions namely reliability, responsiveness, assurance, empathy and tangibles was affected in the involvement of the pharmacist through clinical services. The themes observed were categorized based on the corresponding dimensions. Tangibles consist of the comfort and cleanliness the pharmacy. Assurance comprised the affordability of the products and corrects dispensing of the medications. Responsiveness took account of speed of the service cashier and the attentiveness of the provider. Lastly, empathy kept in check the friendliness and the pharmacists' willingness to go beyond what is expected of them.

**CONCLUSION:** The clinical pharmacy services met the patient's expectations. Thus, the introduction of its services to the community pharmacy has its own way of proving its worth toward better health outcomes through individualized care.

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## The Implementation of new medication bag in Phnom Penh Cambodia

Sophana Chea<sup>\*1</sup>, Sivkheng Kann<sup>1</sup>, Vanny You<sup>2</sup>

### Abstract

**OBJECTIVES:** There are 4 specific objectives, to elaborate satisfaction of pharmacists on project, to seek customer feedback on the project, to find out challenges that pharmacists were facing during implementation of new medication bag and to review the solution that they used to overcome the challenges they faced.

**METHODS:** A qualitative method has been conducted on 30 community pharmacies in Cambodia for 1 month pilot to find out the effectiveness. A series of questionnaire were developed to interview the pharmacist practitioner with new medication bag. The interviewer teams were trained about the question before they could conduct the face to face in depth interview with pharmacists owner. The conversation was recorded, written down in table and cleaned before analysis.

**RESULTS:** Pharmacist satisfaction about the project, they can provide the clearer message to patients and improve the good dispensing practice.

Customer feedback, the result showed that customers know more about their medication. They are happy with the new services and happy to get more information about their drug.

Challenges for pharmacists, the most difficulty is time consuming and sometime got refuse from patients. It is hard to fill in the name of all compounds and there were a lot of information to complete on the small space.

Solution to overcome the challenges, the pharmacists tried to spend time to counseling and explain the important of each information on the label.

**CONCLUSION:** The research confirmed that the new medication bag has good impact on the pharmacy service in the community. Even, the practice is not yet fully functioning the demand can be increasing because of the awareness and the education.

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## Assessment of the Determinants of Pharmacy-based Immunization Prior to Its Utilization in Manila

Ma. Elaine D. Cortes\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The study aims to assess the determinants of Pharmacy-based Immunization (PBI) in different barangays in Manila prior to its utilization, based on the Andersen's Behavioral Services Utilization Model and International Pharmaceutical Federation perceived barriers and challenges.

**METHODS:** A descriptive cross-sectional research design was employed. The study population consisted of residents from the municipalities of each district in Manila. The municipalities taken were Tondo I/II (district 1/2), Quiapo (district 3), Sampaloc (district 4/6), Intramuros (district 5), Paco (district 5/6), and Pandacan (district 6). Through a multi-stage sampling design, a total of 210 respondents were computed from the study population. Binary Logistic Regression and Odds ratio were calculated.

**RESULTS:** Results showed that the determinants of pharmacy of the utilization of PBI as analyzed are the enabling ( $p=0.0058$ ) and knowledge and satisfaction ( $p=0.0160$ ). The specific variable under the enabling determinant that is individually significant is cost ( $p=0.003$ ). For the knowledge and satisfaction determinant, courtesy ( $p=0.048$ ) showed to have an individual significant relationship to the utilization of PBI. Moreover, the respondents' decision of accepting pharmacy-based immunization is 11.745 times more likely when the cost is acceptable (whether high or low) to the people who has allotted money for immunization and is 2.341 times more likely when the immunizer is kind and courteous.

**CONCLUSION:** In conclusion, cost of the immunization service and the courtesy of the immunizer are the determinants for better patient acceptance and increased utilization of PBI.

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## Exploring Pharmaceutical Care Services for Geriatric Clients in Community (centre-based care)

Amy Lay Ching Chan<sup>\*1</sup>, Siew Ann LEE<sup>2</sup>, Kai Zhen YAP<sup>3</sup>, Huei-Xin LOU<sup>2</sup>

### Abstract

**OBJECTIVES:** Pharmacists' medication reconciliation and review services to improve medication safety are not readily available in centre-based care settings in Singapore. This study aims to (i) determine the centre-based client's medication management issues, drug-related problems (DRPs), understanding and adherence to their medications; (ii) refine the framework and workflow for introducing Pharmaceutical Care Services (PCS) in centre-based care.

**METHODS:** This study included clients taking more than 5 medications or more than 12 doses of medications daily. A pharmacist provided PCS comprising of medication management consultation, medication reconciliation, medication optimisation, adherence and knowledge assessments and counselling through a one-time individualised interview with clients or caregivers. The pharmacist captured the client's medication management issues, DRPs, understanding and adherence to medications.

**RESULTS:** The mean service duration per client was 1.7(+/-0.6) hours. Of the 15 DRPs identified in 13 (35%) of the 37 clients, 8 (53%) were resolved at the time of reporting. The pharmacist strengthened the centre-specific medication management processes for successful PCS implementation, by establishing workflows in maintaining an up-to-date record of client's medications and communication with healthcare professional and client/caregiver at transition of care. Feedback from clients, caregivers and centre staff indicated that the individualised service was valuable and necessary for improving medication safety.

**CONCLUSION:** Based on the observed incidence of DRPs at centre-based care settings, PCS can contribute to the centre's multidisciplinary client-centric care by addressing clients' medication-related needs within the centre. Future studies can evaluate the impact of implementing PCS in more community settings.

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## A systemic review on the geriatric pharmacists: system, outcomes and methodology

*You Ran Noh\*<sup>1</sup>*

### Abstract

**OBJECTIVES:** Preparing for the upcoming post-aged society, there is a growing need for the geriatric pharmacists who provide specialized patient-centered care for older patients. This study aims to investigate the geriatric pharmacist system of other countries, assess the effect of pharmacist intervention on elderly patients and suggest study methods for helping the future studies.

**METHODS:** The information about the geriatric pharmacist systems of the U.S., Australia and Japan was collected through the official websites of related institutions. The articles to investigate the outcomes of the geriatric pharmacist interventions were searched through PubMed.

**RESULTS:** The BCGPs provide the medication therapy management in U.S. and the medication management reviews in Australia. In Japan, the pharmacist lifelong training center provide the systemic education system for the geriatric pharmacists. The pharmacist interventions produced positive outcomes such as reducing the number of medicines and drug-related problems.

**CONCLUSION:** By finding improvements through the systems of other countries and emphasizing the necessity of the geriatric pharmacists based on the evidence obtained from the studies, it is necessary to make efforts to legislate the geriatric pharmacist system in Korea.

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## Exploring the interface between complementary medicine and community pharmacy in Thailand – a survey of pharmacists

*Pol. Capt. Asst. Prof. Tanattha Kittisopee<sup>\*1</sup>, Lesley A. Braun<sup>2</sup>*

### Abstract

**OBJECTIVES:** This study aimed to investigate the integration of CMs into Thai community pharmacy practices, taking into account the pharmacists' CM recommendations, pharmacists' confidence in dealing with customer enquiries, their knowledge about the evidence-base of commonly used CM, attitudes about CMs and role of pharmacist recommending CMs, further education and training needs, and information sources used by pharmacists for CM information.

**METHODS:** A cross-sectional study was conducted among community pharmacists in Thailand. The target population was registered pharmacists who currently practice in community pharmacy in every province in Thailand. A self-administered, anonymous questionnaire was completed by 424 Thai community pharmacists.

**RESULTS:** Pharmacist personal use of CMs was common (82.6%). The majority of pharmacists (90%) felt they had a professional responsibility to counsel customers about CMs. Only 22% described their personal pharmacy practice as fully providing integrative care and 34% intended to recommend CMs to their patients. They only asked 20% of patients taking prescribed medicine if they also took CMs. Only 4.8 % reported adverse reactions to FDA. The mean score on the knowledge test about clinically proven benefits of CMs and CM-drug interactions were 62.89% and 53.91% respectively indicating areas for improvement. Most pharmacists (91.3%) were interested in additional education about CM products.

**CONCLUSION:** Most pharmacists are interested to recommend CMs and also advise about safety issues. Based on our knowledge quiz, there is room for improving pharmacists knowledge. Pharmacists believe its part of their professional role to include CM in their practice and provide more integrated care to customer.

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## Dilemma of the TPA Clinic Pharmacist to Provide Integrated Post-Acute Care

Fang Chien-Chung<sup>\*1</sup>, Li-Ming Chen<sup>2</sup>, Tzu-Hua Wu<sup>2</sup>

### Abstract

**OBJECTIVES:** The National Health Insurance Administration (NHIA) of Taiwan began launching the Integrated Post Acute Care (PAC) since 2014. The amended Project implemented as of July 1, 2017 was to enforce the links between hospital and community pharmacy including pharmacy service by introducing a home-based integrated PAC model. This study aimed to collect status of home-based integrated PAC and define the difficulties the clinic pharmacist encountered.

**METHODS:** This study collected achievements of recruited clinics from the online website of PAC project and also interviewed with the physicians to collect their points of view on those issues how the clinic pharmacists of the Taipei Pharmacists Association (TPA) can become a care team member to provide pharmaceutical care including consultation and evaluations.

**RESULTS:** Up to today, 184 health care institutes including 122 clinics were recruited to provide team care. Patients received home-based care from seven of those clinics. Even though government already provided public policy marketing through website, however, the population needs from Taipei to receive home-based integrated PAC are limited. All interviewed physicians believed that in case having a care team including pharmacists to provide medication consultations, of which the expenses cannot be balanced by the project payments.

**CONCLUSION:** There are certain obstacles need to be overcome for clinics to provide team health care with pharmacists to fulfill the requests by the amended project of the integrated PAC promoted by NHIA, Taiwan. The strategy to promote this project to be executed in Taipei urban areas remains to be developed.

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## Evaluation of the Efficacy of pharmacists participating in home health care

Wu Shu Chuan\*<sup>1</sup>, Lih-Chi Chen<sup>2</sup>

### Abstract

**OBJECTIVES:** As the population ages, elders' medical care turns out to be an issue that is becoming concerned. In this research, pharmacists went to communities offering a variety of professional service such as home health care, judgmental service, pharmacloud search, medication integration, medication adherence, medication recycling, medicine delivery to home, medicine packaging and health literacy.

**METHODS:** We adopted retrospective study in our research, whose duration is from 1st, Jan., 2017 to 31th, Dec.,2017. The subjects of this research are the elderly, including the solitary, people with inconvenience. we have the medical team make home visits,the visiting assessment service contains pharmacloud search , the integration of prescriptions, drug Compliance, the delivery of drugs to the house, the separation of drugs, waste drug collection category, amount, medication guidance services

**RESULTS:** During the research we received 125 patients , the average age of the subjects is 86.53 years old. A total of 89 pharmacy care recommendations were provided for 51 patients, the physician's acceptance was 89.9%. We attribute the reason why drug adherence is poor to the condition that consider taking too much medicine terrible so that they reduce the dosage themselves depending on their symptoms, which takes up 35 percent of all the cases, we have solved out the problem after two visits in most of the cases.Special project services to send drugs to the house up to 22 times, the separation of drugs 9 times; drug inspection service 106 years recycling 248 drugs the total amount of 85,093 TWD

**CONCLUSION:** Home health care is a new trend, and we abundantly collected related information in this research, which provides other medical groups the reference so as to improve the medical service quality. Furthermore, we can also assure that people will be able to follow physicians' advice and effectively.

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## Using Google Cloud Forms to establish a real-time assessment process by hospital pharmacists to evaluate home care cases medication

Lee Ya Chi\*<sup>1</sup>, Li Xinru<sup>1</sup>, Ying-kun Huang<sup>1</sup>

### Abstract

**OBJECTIVES:** Taiwanese often take multiple prescriptions at hospitals and clinics at the same time. In addition, the drug is often changed for the factory, and the pharmacist lacks manpower to escort the home caregiver to visit the patient at home to provide a comprehensive drug evaluation. The idea was to use Google Cloud Forms to establish an assessment process that would allow online pharmacists in hospitals to give immediate feedback to home care nurses.

**METHODS:** The home care nurse fills out sex, age, history of illness, medications and health foods on Google Cloud Forms, and notifies hospital online pharmacists. The pharmacist uses Drugs.com to evaluate interactions within 30 minutes. If the patient is intubated, it is recommended Change the dosage form and give it back on the same Forms. The home care nurse educated patients after confirmed the feedback from the pharmacist and confirm the effectiveness of education at the next visit.

**RESULTS:** After the implementation process on June 30, 2016 to April 26, 2018, 63 people have been assessed. After the hospital's online pharmacist assessment, there were 18 patients had suggestions, including serious interactions between drugs and drugs or between drugs and health foods, proposed changes in dosage forms, and special modes of administration, accounting for 28.6%.

According to home care nurses tracking follow-up patient behavior, 9 visits were considered positive. For example, they have more accurate medication knowledge, more accurate management techniques and time, and no negative indicators.

**CONCLUSION:** The assessment time for each case was reduced from 7 days to 30 minutes because it is simple and convenient. The efficiency is 4.1 times that of the previous one.

Google Cloud Forms can be downloaded directly, eliminating the need for manual statistics, so the two nurses are positive feedback.

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## Effectiveness analysis of long-term care institution-type medicine care for a community pharmacy in Taiwan

Zi An Peng<sup>\*1</sup>, Yi-Chi Chen<sup>2</sup>, Jui-Yu Huang<sup>3</sup>

### Abstract

**OBJECTIVES:** There was 1100 registered long-term care(LTC) institutions at the end of 2017, with an occupancy of 48340 people, accounting for 1.479% of the elderly population in Taiwan. The long-term care institution pharmaceutical care operations are mostly administered by community pharmacists in Taiwan. Our project is to explore this pharmaceutical service on the improvement of living qualities for the elderly residents in the LTC institution.

**METHODS:** The project followed Taiwan Food and Drug Administration, Taiwan Pharmacists Association and New Taipei Pharmacists Association revised the community pharmacy pharmaceutical care model in long-term care institutions and information system (HCARE) practice and conducted a descriptive statistical analysis of the results.

**RESULTS:** From the results of our project from May 2017 to October, it is concluded that the three pharmacists of the community pharmacy have invested in the planned visit to 9 long-term care institutions, visiting 191 residents and completing 367 visits. We found 63 suspected pharmaceutical care problems, with a total of 79 follow-up visits, and finally there are 46 cases that the physicians accept the pharmacist suggested that change the treatment strategy and solve the medical problem of the resident in long-term care institutions, the improvement rate of 73.01%.

**CONCLUSION:** We found the community pharmacy pharmaceutical care on the LTC institution is valuable to the residents in Taiwan, we hope there are more community pharmacists can join this service, and expands the LTC pharmaceutical care scope, let more of the elderly life to improve and protect.

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## Mixed use and misused of Lycopi herba (Ze Lan) and Eupatorii herba (Pei Lan) in Taiwan

Chiu Shun-Tsung\*

### Abstract

**OBJECTIVES:** Lycopi herba (Ze Lan).The origin of belongs to *Lycopus lucidus* Turcz. var. *hirtus* Regel. Lamiaceae family, which is widely distributed in China. It's dried aerial parts has been used as medicine for centuries in Traditional Chinese Medicine. It is helps to regulate blood circulation, keep menstrual in good condition, move away stasis, relieve pain. Lycopi Herba has often been confused with Eupatorii Herba since the ages.

**METHODS:** 1. Appearance traits check:

2. Leica CM1860 Cryostat for Standard Applications in the Clinical Histopathology Laboratory

3. High performance thin layer chromatograph

1)Sample extraction method:Take 1.0gm of this product powder, add 10mL of methanol.

2) Standard extraction method:Take ursolic acid and coumarin control standard solution.

3) Development agent:N-hexane: dichloromethane: ethyl acetate: formic acid (20:5:9:0.1)

4)Color & View : It was sprayed with a 10% sulfuric acid ethanol.

**RESULTS:** 1) Appearance trait check :

Lycopi Herba is the *Lycopus lucidus* Turca. Vat. *Hirtus* Regel dry stems and leaves. The stem is in the shape of a square cylinder, with purple at the nodes. Eupatorii Herba is the Compositae Peron *Eupatorium fortunei* Turcz. Dry stems and leaves. Stems cylindrical; aroma, slightly bitter.

2) Tissue microscopy:Lycopi Herba The stem cross-section is square, and the four sides are concave with a "V"shape.

3) High performance thin layer chromatograph(HPTLC): Qualitative alignment was performed by thin layer chromatography. As a result, it was confirmed that 2 pieces were the correct base of Lycopi Herba genuine *Lycopus lucidus* Turczaninow var. *hirtus* Regel.

**CONCLUSION:** In this study, 12 Lycopi Herba samples were randomly purchased from Chinese pharmacies in northern, central, and southern Taiwan. After characterization, histological examination, and chemical identification: HPTLC for qualitative experiments, the results confirmed that only 2 were true.

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## Dilemma of the TPA Clinic Pharmacist to Provide Integrated Post-Acute Care

Chen Li-Ming\*

### Abstract

**OBJECTIVES:** The National Health Insurance (NHI) of Taiwan began launching the Integrated Post-Acute Care (PAC) since 2014. The amended Project implemented as of July 1, 2017 was to enforce the links between hospital and community pharmacy including pharmacy service in clinics by introducing a home-based integrated PAC model. Such home-based integrated PAC model is to encourage more medical institutions to establish service teams made up of experts including

**METHODS:** This study collected achievements of recruited clinics from the online website of PAC project and also interviewed with the physicians to collect their points of view on those issues how the clinic pharmacists can become a care team member to provide pharmaceutical care including consultation and evaluations.

**RESULTS:** Up to today, 184 health care institutes including 122 clinics were recruited to provide team care. Patients received home-based care from seven of those clinics and four of those did not receive care needs from patients living nearby during recent three months. Even though government already provided public policy marketing through website, however, the population needs from Taipei to receive home-based integrated PAC are limited and may be due to hospitals abundance. All interviewed physicians believed that having a care team including pharmacists to provide medication consultations needs to hire another pharmacist since clinic usually has one clinic pharmacists to take care of clinic pharm

**CONCLUSION:** There are certain obstacles need to be overcome for clinics to provide team health care with pharmacists to fulfill the requests by the amended project of the integrated PAC promoted by NHI, Taiwan. The strategy to promote this project to be executed in Taipei urban areas remains to be developed.

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# Poster Presentations: Hospital and Clinical Pharmacy



## Types of drug-related problems observed and reported by clinical pharmacists in an Intensive Care Unit in Jakarta, Indonesia

Benny Wijaya Sunggono\*

### Abstract

**OBJECTIVES:** The aim of this study was to identify and categorize types of drug related problems (DRPs) observed and reported by a clinical pharmacist in an Intensive Care Unit (ICU) at a private specialized hospital in Jakarta, Indonesia.

**METHODS:** A descriptive, retrospective study was conducted in a private specialized hospital in Jakarta, Indonesia. A review of literature was conducted to illustrate types of DRPs. All DRPs observed and self-reported by the clinical pharmacist between January and April 2018 were collected and categorized into ten classes. Classification of DRPs were done by three pharmacists to ensure reliability of the result.

**RESULTS:** There were 79 drug related problems observed and voluntarily reported by clinical pharmacists between January and April 2018. Among the reported DRPs, 21 out of 79 were potential DRPs. There were ten categories of DRPs identified: drug without indication (22.8%); Drug-drug interaction (16.5%); supra-therapeutic dose (16.5%); duplication of therapy (11.4%); adverse drug reaction (10,1%); failure to receive drug (6.3%); nonconformity to guideline (6.3%); sub-therapeutic dose (3.8%); wrong drug (3.8%); and untreated condition (2.5%).

**CONCLUSION:** Clinical pharmacists play an important role to identify potential or actual DRPs in an ICU, thus reducing harms related to medication. The most common DRPs reported voluntarily by clinical pharmacists in the ICU are drug without indication, drug-drug Interaction, and supra-therapeutic dose.

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## Analysis of drug-related problems in acute stroke patients from accepted suggestion

Yen-Chin Chen\*

### Abstract

**OBJECTIVES:** Pharmacists are an important member of the stroke team. Clinical pharmacist aid in management of stroke related risk factor such as hypertension, hyperglycemia, hyperlipidemia and atrial fibrillation. Pharmaceutical care issue including drug choice problem, dosing problem, drug-use problem, adverse drug reactions and drug- or food-interactions.

**METHODS:** The clinical pharmacists participated in therapy of a patient with acute ischemic stroke and offered suggestion. Pharmaceutical care issues were collected from July 2016 to Oct 2017. Drug evaluation for stroke patient is based on variety of guideline such as acute ischemic stroke guideline(2016), JNC 8 guidelines for management of high blood pressure, standards of medical care in diabetes(2017) and beers criterias for potentially inappropriate medication use in old adults(2012).

**RESULTS:** A total of 377 patients with acute stroke were evaluated by clinical pharmacist and a total of 42 recommendations were accepted by physicians. The recommendation rate was 11.9% and the acceptance rate was 93.3%. The first three of these recommendations were changes in drug therapy(59%), dosage adjustment(21%) and drug adverse effect(10%). The most recommended is adjustment of oral hypoglycemic agents(30%). A less stringent glucose control usually be considered in acute stroke patient to avoid hypoglycemia due to poor intake. But harmful effects of hyperglycemia on arterial myocytes, we suggest that blood glucose still should be moderately controlled under intensive blood glucose monitoring.

**CONCLUSION:** Clinical pharmacist provided the pharmaceutical care for patients with acute ischemic stroke to ensure more appropriate drug therapy and optimal drug doses in this study.

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## An analysis of the medication errors in a Taiwan Regional Hospital

Chen Yu Chien\*

### Abstract

**OBJECTIVES:** Pharmacists will evaluate the dosage, frequency, route of administration, drug-drug interaction, compatibility of specific drugs, etc. Although most medication errors could be avoided by current medical systems, some still rely on pharmacists to discover drug problems. This study describes prescribing problems reported by pharmacists in a Taiwan regional hospital and discusses them from an error prevention perspective.

**METHODS:** The retrospective study included the medication errors in a Taiwan regional hospital during 2017 and focused on the problem with prescriptions.

**RESULTS:** The most error involving medications was related to administration of an improper dose of medicine, accounting for 29.76%. Duplicate medications accounted for 16.36% of the errors. 93.83% of the medication errors were amended after pharmacists verify. There is half of overdosing occurred in pediatric patients because the lack of specialty drugs for children. In the medication errors, we found that there are antibiotics, anticoagulants and antiepileptic drugs. Duplicate medications are usually caused by patients who visit to different divisions. Patients will not only take excessive medication but also waste valuable medical resources if a pharmacist does not verify prescriptions.

**CONCLUSION:** Even though our current medical systems can be set to limit the maximum dosage, dose adjustment for individual patients (such as poor liver and kidney function, the pediatrics) still need pharmacists to help verify. It is important to use our pharmaceutical knowledge to communicate with physicians.

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## An analysis of the medication errors intercepted by pharmacists in a Taiwan Regional Hospital

Chen Yu Chien\*<sup>1</sup>, Chi-Ting Tseng<sup>2</sup>, Lih-Chi Chen<sup>2</sup>

### Abstract

**OBJECTIVES:** Pharmacists will evaluate the dosage, frequency, route of administration, drug-drug interaction, compatibility of specific drugs, etc. Although most medication errors could be avoided by current medical systems, some still rely on pharmacists to discover drug problems. This study describes prescribing problems reported by pharmacists in a Taiwan regional hospital and discusses them from an error prevention perspective.

**METHODS:** The retrospective study included the medication errors in a Taiwan regional hospital during 2017 and focused on the problem with prescriptions.

**RESULTS:** The most error involving medications was related to administration of an improper dose, accounting for 29.76%. Duplicate medications accounted for 16.36% of the errors. Improper dosage can be divided into overdosing and underdosing. There is half of overdosing occurred in pediatric patients because the lack of specialty drugs for children. In the medication errors, we found that there are antibiotics, anticoagulants and antiepileptic drugs. Antibiotic resistance may result from insufficient treatment dose. Secondly, underdosing of anticoagulants will increase a person's risk of having a stroke. Finally, duplicate medications are usually caused by patients who visit to different divisions.

**CONCLUSION:** It is important to use our pharmaceutical knowledge to communicate with them. Pharmacists assist doctors with verifying a prescription, which not only can ensure patients safety but also raise the value of pharmacists.

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## Analysis and discussion on the medication errors according to the definition of NCC MERP: experience of a regional hospital in central Taiwan

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### Abstract

**OBJECTIVES:** Medication Error defined by NCC MERP is: "A medication error is a preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is controlled by health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems..." The aim of this study is to improve patient medication safety and reduce medication errors in hospital.

**METHODS:** This study collects outpatient and inpatient prescription data of the hospital medication errors record from October to December in 2017 and analysis separately. Those data then categorized to A to I categories defined by NCC MERP rule. Follow by analysis the cause of medication errors in each category in order to plan an improved program.

**RESULTS:** The amount of prescription in the fourth quarter of 2017 was 225,746. There were 49 medication errors, 13 outpatient and 36 inpatient. Those errors were categorized according to NCC MERP, from A to I: A category was 7(14%), B category was 39(80%), C category was 2(4%) and E to I categories were 0. B category accounts for the largest part. In this category, the most frequent medication error was "Insufficient amount of drugs". The most frequent cause of inpatient medication error was "Similar drug name" and "Insufficient amount of drugs". There was only one error accounted as D category and it was an outpatient prescription and the wrong drug was delivered to patient and had been taken.

**CONCLUSION:** According to this study we set up prevention programs. Firstly, use "role placement" method to double check prescription while working independently. Second, adding picture or marks to alert pharmacists. Third, use bar code identification system to help identify the drug and its amount.

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## Clinical Pharmacist Interventions in a Selected Secondary Hospital: A Phenomenological Study

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### Abstract

**OBJECTIVES:** The study aimed to determine the interventions made by clinical pharmacists in a selected secondary hospital, as well as its strengths and weaknesses.

**METHODS:** A phenomenological-qualitative analysis was employed to have a deeper analysis on the issues surrounding the practice. Interviews were conducted with the hospital's Quality Assurance Officer, Chief Nurse, and Two Former Clinical Pharmacists. Transcript of this interview rendered codes and themes which were used for the discussion.

**RESULTS:** Results reveal the need to set substantial protocol/policies to maximize the potential of the clinical pharmacy service. Further, there is also a need to expose the personnel to trainings to improve the skills needed as a clinical pharmacist, or to employ a personnel with significant work experience, both to render better services for the patients. Dynamic, and open relationship with co-workers should be encouraged as this will promote a fluid exchange of knowledge about the patient's case. Points on investing in high-quality references/resources are encouraged but must be assessed for practicability.

**CONCLUSION:** Implementation of a clinical pharmacy service in a secondary hospital may pose several problems in its early stages. In spite of this, the service still proves to be an effective means of improving patient services and decreasing hospital liabilities.

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## The effectiveness of pharmacist-led intervention to reduce prescription errors at a teaching hospital in Taiwan

Min-Tzu Li\*<sup>1</sup>, Shu-Juan Wu<sup>2</sup>

### Abstract

**OBJECTIVES:** Medication error (ME) has been a hot issue for a long time and there were many studies shown that errors occurred at prescribing step may result in adverse events and harm to patients. Pharmacists provide intervention to identify drug therapy problems (DTPs) related to clinician prescribing and make recommendations to intercept and resolve them. This study evaluates the effectiveness of pharmacist-led intervention to reduce prescription errors.

**METHODS:** This study retrospectively collected and analyzed the DTPs related to inappropriate prescribing identified by pharmacists in a community-based teaching hospital outpatient department services from January 2016 to December 2016. Data were analyzed using SPSS version 19. Descriptive statistics were calculated for the study variables. Categorical variable and continuous variable were expressed as frequency and percentage, means ( $\pm$ standard deviation).

**RESULTS:** There were 541,760 prescriptions received by the outpatient pharmacy during this period. A total of 494 interventions were performed. The rate of prescription errors was 0.09%. The most common DTPs were "overdose" (24.6%), "duplication" (16.6%) and "underdose" (16.4%).

The most common drug classification of these prescribing errors was Non-steroidal anti-inflammatory drugs (34.58%) and Antibiotics (24.02%). Overall, 481 (97.2%) of all recommendations were accepted by clinicians. All of the interventions reduced the medication costs about NT\$196,000 in total. According to the result, pharmacist added 9 alerts to the computerized physician order entry system for preventing inappropriate medications.

**CONCLUSION:** Prescribing error can result in significantly hazardous risk and costly effects if undetected. We found that the implementation of pharmacist-led intervention has made a positive impact on reducing prescribing errors, improving CPOE systems and ensuring patient safety in hospitals.

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## Conducting root Cause Analysis to prevent future medical error incident

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### Abstract

**OBJECTIVES:** If performed Root Cause Analysis (RCA) thoroughly has been shown to reduce medication errors in many health cares. An incident occurred during pharmacist identified a bumetanide (BUSIX®) tablet that was mixed with pyridoxine (BEESIX®), when she checked the drawer of pyridoxine in automated pills dispensing machine. The research is aim to find how to prevent the drug mix-up incident, in order to ensure patients' medication usage safety

**METHODS:** We developed an event story map with workflow process and time series. Conducting cause-and-effect diagramming, identified root causes and contributing factors were followed be discussed and organized in events to find out why an error occurred.

**RESULTS:** The major errors were related to the unused subcontract pills refilled back into dispenser. Contributing factors of mixed drug incidents in the automated pills dispensing tonic process were listed, included unfamiliar of medicine, staff insufficient training, and loose an identified system for withdrawal drug returning process. Root cause was BUSIX and BEESIX are LASA (look-alike/sound alike) drugs in our hospital. Both of their appearances are white tablets with similar shape and trade name which so easy to be confused. Therefore, the original label of the "pyridoxin (BEESIX®)" cartridge is intervened to be changed, labeled only with "pyridoxin". We built an identified barcode system, track

**CONCLUSION:** Identify barriers and risk reduction strategies to prevent root cause from recurring are very important in patient safety. This report is revealed using RCA as an effective and efficient method in pharmacy.

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## The improvement on safety procedures for chemotherapy inpatients

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### Abstract

**OBJECTIVES:** Since chemotherapy treatment has three stages: 1) evaluation 2) drug preparation, and 3) administration, we developed a data-transfer program to control and record chemo drugs preparation for better administration. This program will help pharmacists and nurses have a real-time connection regarding chemotherapy safety procedures.

**METHODS:** The designed program would monitor the whole procedure to decide when to activate the functions. In the first stage, a patient's physiological and nutritional state must be recorded by a nurse. Then, the nurse explains the possible side effects of drugs and obtains medical consents from the patient. As the evaluation was completed, some checkpoints will be set up to ensure the correctness of items, dosages, routes, etc. for subsequent stages until the patient finishes the entire treatment.

**RESULTS:** The Improved program brings two benefits: 1. Drug preparation becomes more efficient and systematic. Pharmacists can receive inpatients' clinical data more easily, which may shorten the lead time of preparing medicines. 2. Patients' physiology and medical consents are confirmed ready before medical treatments start. To authenticate the effectiveness, we collected data from Jan. to Oct. in 2017 (10 months). During this period of time, 9 inpatients (0.29%; n=3099) failed to complete chemotherapy, and 8 medicines were not used. After the program was carried out, no interruption occurred from Nov. in 2017 to Mar. in 2018 (5 months) (0%; n=1154), which means the improvement rate is 100%.

**CONCLUSION:** A "real-time" chemotherapy program enables nurses and pharmacists to communicate more effectively. This provides not only an efficient and systematic workflow but also a platform for these medical staffs to keep up with the ongoing treatment progress so as to offer patients multifaceted care.

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## Using Healthcare Failure Mode and Effect Analysis to improve the safety of high-alert medications insulin

Cheng Sue-Fei<sup>\*1</sup>, Li-Chun Chen<sup>2</sup>, Chun-Ta Huang<sup>2</sup>, Hui-Ting Huang<sup>3</sup>

### Abstract

**OBJECTIVES:** Insulin products are frequently involved in medication errors in hospitals. Therefore, insulin is classified as a high-alert medication by Institute Society of Health-System Pharmacists (ISMP). For promoting safer insulin use, we evaluate risk and vulnerability in the insulin therapy process using healthcare failure mode and effects analysis (HFMEA) method. The hospital has expected a reduction in hypoglycemia incidence with the adoption of proac

**METHODS:** A multidisciplinary team comprised of endocrinologist physician, clinical pharmacists, nurses, information technologists was formed to implement HFMEA. A process diagram was drafted, illustrating the different phases of the insulin prescription, dispensing and administration. The rating scale is displayed in Table 1. Subsequently, to identify high-priority potential failure mode as defined by RPNs (incidence\*detection\*severity) and plan changes in clinical practice to improve safety in the proce

**RESULTS:** In all, 13 potential failure modes and 31 associated causes and effects were identified. The team recommended three actions: (1) developing an appropriate computerized physician order entry (CPOE) system for insulin prescription; (2) establishing the protocol of insulin administration for hospital patient; (3) Creating the protocol for treating hypoglycemia; (4) Building a trigger reminder for nurses to educate patient and automatic print out instruction. After accompanied all action, the HFMEA hazard scores, the mean RPI values before and after the implementation of the process were 52 and 14, respectively. The insulin protocol compliance is 91% by month and the incidence of using 50% dextro

**CONCLUSION:** The intricacy of insulin regimen caused it vulnerable to error, and the consequences can be catastrophic due to high alert medication. HFMEA is a useful tool to evaluate potential risk in healthcare processed. Our study identified the main failure modes and associated corrective measure.

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## Reduce chemotherapy prescribing error rate by utilizing PDCA cycle

Yi-Chun Chen\*

### Abstract

**OBJECTIVES:** Malignant neoplasm has been the leading cause of death during the past decades in Taiwan. Chemotherapy is one of the standard treatment. The standardized chemotherapy-prescribing system had been set up since 2011 in our hospital to reduce human error. There were still some mistakes occurred. Therefore, we made some adjustments to avoid prescribing errors. The purpose of the study is to evaluate the efficacy of the modified prescribing system.

**METHODS:** The standardized chemotherapy-prescribing system was established according to the analysis of 2010 records. The function of the system and prescribing errors had been monitored since 2011. From 2012 to 2016, we revised the system including set-up of the alarm system for abnormal dosage, automated calculation of dosing rate, GFR alarm system for cisplatin and dosage formula adjustment for carboplatin, and the warning system for abnormal dilute concentration.

**RESULTS:** A total of 4,486 chemotherapy prescriptions in 2010 were analyzed retrospectively. The error rate was 0.38% (n=17). The causes of error were abnormal dosage (47%), abnormal laboratory values (12%), chemotherapy regimen error (12%), incorrect interval of chemotherapy (12%), abnormal dosing frequency (11%), and duplicate prescriptions (6%). After revision of the information system, the error rate of 25,007 chemotherapy prescriptions from 2012 to 2016 had reduced annually (0.19%, 0.12%, 0.09%, 0.06% and 0.04% from 2012 to 2016, respectively). The error prescriptions had reduced 88% in 5 years through modified information system.

**CONCLUSION:** The standardized chemotherapy-prescribing system is necessary for hospitals to prevent the human error or negligence. Implementing PDCA cycle to monitor and adjust the prescribing system significantly reduced all types of chemotherapy prescribing errors and improved drug safety for patients.

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## Improving medication safety in the elderly home care patients through the pharmaceutical cognitive service---An Example of a Regional Teaching Hospital in Taiwan

Hsieh Ya-Chiao\*<sup>1</sup>, Pei-Chun Wu<sup>1</sup>, Ying-kun Huang<sup>1</sup>

### Abstract

**OBJECTIVES:** There were 15 drug prescriptions drug events and 7 of them had undesirable pharmacological responses at normal dose (46.7%)accounted for the largest number, repeat medication 4 (26.6%) accounted for the second largest.The others are the dosage form is not suitable 2 (13.3%).Drug events related to potential risks, the differences after and before communication with doctors and patients after a pharmacist's cognitiveservice.

**METHODS:** 1.All home care cases were made by home care nurses to complete the risk assessment of drug use, and the home pharmacists were arranged to visit according to the high-risk screening.

2.After the first visit ,the pharmacist completed the home medicine care sheet and the medicine history file and note are provided to the former doctor .

3.Doctor,nurse and pharmacist and other related care teams refer to the case medicine history file

**RESULTS:** There were 15 drug prescriptions drug events and 7 of them had undesirable pharmacological responses at normal dose (46.7%)accounted for the largest number, repeat medication 4 (26.6%) accounted for the second largest.The others are the dosage form is not suitable 2 (13.3%), no drug treatment issues, but need to follow the disease control or efficacy 1 (6.7%), low dose or insufficient blood concentration 1 (6.7%).Drug events related to potential risks, the differences after and before communication with doctors and patients after a pharmacist's cognitiveservice.

**CONCLUSION:** We found that even doctors diagnosed and prescribed medicine correctly ,the pharmacists evaluated the prescription well then delivered it to the patients , there are still 20 potential drug risks (10.6%), the original 20 potential risks were reduced to 8, with a total improvement of 60%

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## Implementation and Evaluation the Recording System for Chemotherapy-induced Adverse Events

Jen-Hua Kuo<sup>\*1</sup>, Yi-Ping Hsiang<sup>1</sup>, Li-Ching Chang<sup>2</sup>

### Abstract

**OBJECTIVES:** Chemotherapy shows promising outcomes for cancer treatment. However, chemotherapy-induced adverse event also results in dose reduction, delayed or withdrawn therapy.

This study investigates the incidence rates of adverse events after patients receiving chemotherapy in our hospital, a would-be medical center.

**METHODS:** Chemotherapy-induced adverse events such as nausea, vomiting, diarrhea, mucositis, skin lesions, neuropathy, alopecia, etc., were included in the assessment lists in recording system. In addition, laboratory data such as Hb, WBC, PLT, Cr, GOT, TBIL, ALP are automatically imported to recording system and converted to the grading. We study the vomiting incidence after receiving cisplatin-based regimens in 2017 to investigate the incidence rates of adverse events and the registry efficacy.

**RESULTS:** The National Cancer Institute - Common Terminology Criteria for Adverse Events (NCI-CTCAE) V4.03 was utilized for adverse event evaluation and displayed Grades 1 through 4 with the higher level indicated the more severity in vomiting. The recording system for chemotherapy-induced adverse events was established and announced in January, 2017. From January to December 2017, 1806 visits received cisplatin-based regimens. Registered nausea and vomiting as adverse events are 990 visits (54.85%). According to the severity, the incidence rates were 49.20% at Grade 1 (888 visits), 5.48% at Grade 2 (99 visits), 0.17% at Grade 3 (3 visits), and no observations in Grade 4 .

**CONCLUSION:** The cisplatin-based regimen (>50mg/m<sup>2</sup>) presented high incidences on vomiting. Evidences indicated 90% patients received chemotherapy showed nausea and vomiting, and thus the 54.85% incidence rate in our hospital seems under estimated.

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## TO INVESTIGATE DRUG-INDUCED SEIZURES BETWEEN VALPROIC ACID AND CARBAPENEMS- EXPERIENCE IN A REGIONAL HOSPITAL

Meng-Yi Ou\*

### Abstract

**OBJECTIVES:** Valproic acid (VPA) is a widely used antiepileptic drug. When carbapenems are concomitantly used with VPA, the serum levels of VPA may decrease and aggravate seizures. The aim of this study was to evaluate the risk factors associated with decreased serum VPA levels and clinical use analysis in patients being treated with a combination of carbapenems and VPA.

**METHODS:** We used a retrospective statistics collected inpatient prescriptions concurrent administration of VPA and carbapenems, such as imipenem, doripenem or ertapenem. 71 patients were enrolled in the January 2016 to April 2018 in a single hospital in Taiwan were identified. 89 cases had been simultaneously treated with VPA and a carbapenem. Demographic variables, VPA plasma levels, changes in prescription, and seizures were analyzed. The data was examined by the paired t-test.

**RESULTS:** The total analysis of 71 patients included 7 events from 89 cases (incidence 7.9%), and 44.9% patients whose VPA plasma levels were closely monitored in concomitant use of VPA and carbapenems, 71.4% cases in seizure were monitored VPA plasma levels. There was 42.9% switched to another antibiotics, and 42.9% was added other antiepileptics. No statistically significant association in drug-induced seizures was noted between age ( $p=0.684$ ), sex ( $p=0.594$ ), renal function ( $p=0.976$ ), different carbapenems used (incidence imipenem 8.0% vs. doripenem 7.1% and ertapenem 8.0%,  $p=0.994$ ), and monitored VPA plasma levels ( $p=0.142$ ).

**CONCLUSION:** The concurrent administration of VPA and carbapenems decrease VPA plasma concentration and develop seizure is well documented. In reviewing all cases, we hope to bring attention to clinician who could use more caution when co-administrate VPA and cabapenems.

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## Is there any clue for paclitaxel-induced hypersensitivity reactions?

Roongthip Tangsahasakri\*

### Abstract

**OBJECTIVES:** One of the most potentially serious toxicities of paclitaxel, an increasingly used agent in the management of malignant diseases, is the development of hypersensitivity reactions (HSR). Mostly HSR occur at the first or second cycle of paclitaxel infusions. So far we still don't have any clue to determine risk factors for paclitaxel-induced HSR. The aim of this study is to identify factors affecting patients.

**METHODS:** All patients treated with paclitaxel at our hospital between January 2014 and December 2015 were retrospectively evaluated. All the patients were treated to prevent hypersensitivity reactions, with prophylactic regimens. Data collected include patient demographic, BMI, cancer type, concurrent disease, allergy history, chemotherapy regimens, paclitaxel doses, premedication regimens and documented events of hypersensitivity reactions and severity.

**RESULTS:** A total of 1132 patients received paclitaxel 5152 times. 48 patients (4.24%) 70 times found to have HSR from paclitaxel. The severity of HSR mostly was grade 2. Premedication used in this study was divided into 2 groups. Group 1 dexamethasone was given orally 6-24 hr before treatment. Group 2 iv dexamethasone 10-20 mg was given 30 minutes before paclitaxel. In HSR group, HSR occurred 29.17% (14 from 48 patients, 20 times) in group 1 and 70.83% (34 from 48 patients, 50 times) in group 2. Agriculture patient had higher incidence of HSR (OR 2.55, 95%CI: 1.20-5.43). Lung (14 from 187) and cervical (9 from 141) cancer patients had higher risk of HSR than other cancer.

**CONCLUSION:** An agriculture career patients, lung and cervical cancer patients had higher risk to HSR. Premedication regimen, given oral dexamethasone 6-24 hour before paclitaxel had less HSR.

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## A comparative study between International and Local Hospital Accreditation Standard Criteria for Acute Myocardial Infarction on medication safety and quality management

Meng-Yi Ou\*

### Abstract

**OBJECTIVES:** Clinical Care Program Certification (CCPC), demonstrates their commitment to quality patient care and fostering better outcomes for treatment of acute myocardial infarction. We hope meet both international and domestic standards in giving quality and care for patient. This study explores the differences between the international and domestic accreditation standards and provides reference for hospital to improve drug safety and quality management.

**METHODS:** This is a retrospective study during the year 2016 and collect the informations from Joint Commission International Standards of CCPC for acute myocardial infarction [JCI CCPC-AMI] 3rd Edition (184 measureable elements) and from Joint Commission Taiwan (JCT) of acute myocardial infarction disease certification (JCT-AMI) assessment provisions (127 measurement items). We compared the safety and quality management aspects of cardiovascular medications then do relevant interpretations clauses.

**RESULTS:** The articles related to drug safety management accounted for 23.6% of the JCT-AMI measure and 16.3% of the CCPC-AMI measure. 73% of their articles correspondence to each other (of which 9 corresponded completely, 13 items were almost similar ), while 8 items did not corresponded (27%). The section completely corresponded is International patient safety goal 33%, followed by Delivering or Facilitating Clinical Care 24% , Performance Measurement and Improvement 14% and Support self-management 14%, Program Leadership and Management 10% and Clinical Information Management 5%. Differences between the two organization major items regarding prescribing medical procedures etc.

**CONCLUSION:** There is a great similarity between JCT-AMI and CCPC-AMI regarding drug safety and quality management. JCT focus on prescription procedures while CCPC-AMI is more on adverse reactions and near miss events. Although JCT and CCPC have different methods of assessment but their goal are all the same.

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## The Impact of Joint Commission International-Clinical Care Program Certification for Acute Myocardial Infarction on the safety of medications usage

Ju-Shiuan Tsai\*

### Abstract

**OBJECTIVES:** Objectives: Because time is the essence in providing treatment in AMI based on proven clinical guidelines and patient-specific individual drug treatment can improve the prognosis and prevention of recurrence of AMI. We were certified by Joint Commission International(JCI) for its Clinical Care Program for AMI. This study examines the impact and our approach to care after we were certified on promoting patient medication safety management.

**METHODS:** Method: This is a retrospective study. Data collected and analyzed from our Bureau of Pharmacy from December 2014 to March 2016. All patients were proven with AMI. We compared the services provided by our pharmacists and AMI care indicators before and after CCPC-AMI certification.

**RESULTS:** Results: We performed ratio analysis for patients who were given Aspirin, Clopidogrel or Ticagrelor, and  $\beta$ -blocker within 24 hours of hospitalization. The average monthly rate of achievement was increased from 97.04% to 100% ( $p=0.016$ ). The number also increased from 97.19% to 98.98% ( $p=0.086$ ) for discharged patients. The prevalence of pharmacist medication instruction up from 95.99% to 97.86% after certification ( $p=0.41$ ). However, no difference were noted regarding monthly visits ( $p=0.235$ ), medications knowledge ( $p=0.235$ ), drug purposes ( $p=0.4$ ), near-miss ( $p=0.739$ ). Patient satisfaction increased from 86.04% to 86.37% with regards to services rendered by pharmacists.

**CONCLUSION:** Conclusion: Improvement in quality indicators, compliance with treatment guidelines, medical services and patient care also proved the impact of certification. Certification also have a positive impact on safety management quality indicators and risk safety management.

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## Establishing Hospital Medication Quality Sampling Inspection Methods

Ta-wei Wu\*

### Abstract

**OBJECTIVES:** Due to cases of therapeutic inequivalence or side effects reported by medical staff and patients after switches of pharmaceutical manufacturers, this study aims to analyze the quality of drugs that were reported therapeutically inequivalent so as to establish the mechanism and inspection process for quality monitoring when this hospital calls for tenders for generic drugs.

**METHODS:** Assay, uniformity of dosage units and dissolution test were performed to determine drug quality of test products and reference materials.

**RESULTS:** Carvedilol and Atorvastatin, the two drugs that were often reported to be therapeutically inequivalent, were tested preferentially. In the assay test, the results of the comparison between generic drugs (test products) and brand-name drugs (reference materials) were as follows: 98.12 +/- 0.25% vs. 97.69 +/- 0.73% (Carvedilol), and 104.10 +/- 0.44% vs. 101.79 +/- 0.4% (Atorvastatin). In the test for content uniformity, the test products and reference materials of both Carvedilol and Atorvastatin were  $\leq 15$ . In dissolution test, the results also showed similar dissolution profiles for the test product and reference material of Carvedilol and Atorvastatin.

**CONCLUSION:** The brand-name drugs and Taiwanese generics of Carvedilol and Atorvastatin all conform to the United States Pharmacopeia. Though the differences in statistics are not significant, brand-name drugs are better than generics in assay and uniformity of dosage units.

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## Correlation analysis between High-Strength Pharmacy Services Models for the Intermediate-Care Effect Evaluation

Kuo-Fang Ma<sup>\*1</sup>, Yu-Hsu Hu<sup>1</sup>

### Abstract

**OBJECTIVES:** The intermediate care is an integrated medical model, and has been implemented by a regional teaching hospital which residents are elderly veterans. The pharmacists have involved in this plan, and established a pharmacy service mode.

**METHODS:** The subjects are 102 intermediate care patients in 2017. The clinical pharmacists used Beer's Criteria, STOPP, START Criteria integrated assessment of drugs and high-frequency drug guidance. We used "correlation coefficient analysis" and "simple linear regression analysis" to do significance test and verify the effectiveness of pharmacy services.

**RESULTS:** When analyzing the relationship of two independent variables of "drug evaluation" and " medication guidance " with the relevance and significance of progress of ADL, however, when combined with caretakers, it has achieved satisfied positive correlation. The correlation coefficient test:  $r=0.337$ ,  $t=3.581$ ,  $p=0.0005$ . Pharmacists used the MICROMEDEX data base and clinical treatment experiences to find the lower side effects of drugs and adjust the frequency of drug use. The risk of STRATIFY assessment had been significantly reduced, and so was positively relative to the performance. The correlation coefficient test:  $r=0.299$ ,  $t=3.135$ ,  $p=0.002$ .

**CONCLUSION:** Pharmacy services can be implemented through (1) powerful health education to caretaker (2) evaluation of proper drug use for the elderly (3) adjusting multiple medications and potential inappropriateness medications (4) analysis and disposal of drug interactions.

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## Effectiveness of pharmaceutical care from clinical pharmacists: A single center experience

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### Abstract

**OBJECTIVES:** Prospective prescribing intervention is composed of active proposal on medication use, frequency, and dosage among ICU care team. Prescription Appropriateness Review System for ICU patients (ICU-PARS) can not only provide documentation platform from clinical pharmacists (CPs), but also quantify as base for further analysis. Effectiveness of pharmaceutical care (PC) from CPs is the main purpose of this research.

**METHODS:** We constructed the choosing list of PC categories on 2016, and further built up the acceptance column from clinicians on 2017 to strengthen ICU-PARS. We collected the PC cases to understand the effectiveness of CPs intervention. Service quantity, prescription suggestion categories, and acceptance condition from clinicians were analyzed. Further discussion would focus on the cases without acceptance from clinician, proposing improving strategies toward medication errors.

**RESULTS:** 9903 people have been visited by CPs, while 2602 people have been intervened from 2016 to 2017. Dosing adjustment (34.1%), prospective prescribing suggestion (21.4%) and inappropriate medication use (10.1%) are the top three sub-categories among medication recommendation. There are 0.03% prescriptions without acceptance by clinicians, the main cause is prescribing course of post-operation antibiotics prophylaxis. CPs help build up the guidelines on prophylactic antibiotic use to strengthen the rationality from CPs recommendation, and further decrease the irrational antibiotics prescription through computerized prescribing order entry restriction.

**CONCLUSION:** Newly add-on function of acceptance from clinicians can further focus on the specific cases, minimizing the discrepancy toward clinical care between clinicians and CPs, and achieve optimal improvement ultimately. This study can prove the effectiveness of newly add-on function on ICU-PARS.

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## The effect of Enhancing Medication Adherence program for Type 2 Diabetes Mellitus network.

Miss Tadarat Pholchai\*

### Abstract

**OBJECTIVES:** The record of Rayong hospital in Tapong Branch between October 2015 - September 2016 showed that there were 399 patients with HbA1C  $\geq 8\text{mg}\%$  and mean 14.72% among total patients. The hospital team discovered this problem and created the program to educate patients and give them consult case by case. The aim of this study was to assess medication adherence and knowledge of type 2 diabetes mellitus patients upon completion of proposed program.

**METHODS:** The study was conducted from November 2016 to August 2017 and obtained IRB from Rayong Hospital. There were 30 purposively selected patients and educated them on topic pathology of type 2 DM, medication management, the important of medication, side effects, ADR, managing of drug related problems and diet control. The questionnaire were using evaluate medication adherence and knowledge by pretest-posttest design. The statistics used were average, percentage, Shapiro-Wilk test and Paired-T test.

**RESULTS:** When comparing between the pre-test and post-test medication adherence levels among those patients with high medication adherence scores, 53.33% of patients have improved significantly. When comparing between the pre-test and post-test the knowledge levels among those patients with high knowledge scores, 73.33% of patients have improved significantly. After attended the program, patients have improved their medication adherence and knowledge statistically significant ( $P < 0.01$ ). The patients' HbA1C values reduced 2.72% on average after attending the program. So this study can reduce their HbA1C clinically significant.

**CONCLUSION:** This study result shows that medication adherence and knowledge of patients is effect to HbA1C control. Pharmacist intervention can help patients understand their pathology and medication management, that can improve their medication adherence and contribute to increase blood sugar control.

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## Assessment of medication adherence among diabetic patients with hypertension as comorbid condition

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### Abstract

**OBJECTIVES:** Type 2 diabetes mellitus is a chronic illness associated with high rates of morbidity and mortality. Effective medications and proper counseling is a cornerstone for disease management. However, very few patients take their medications as prescribed, resulting in reduced compliance and poor health outcome. Thus this study was aimed to assess the medication adherence among diabetic patient with hypertension as comorbid condition.

**METHODS:** A cross sectional study was carried out among the patients visiting the diabetic care center in Pokhara, Nepal. Information like socio-demographic profile, clinical characteristics, medication consumption behavior was assessed during the study. Morisky 8 item Medication Adherence Scale was used to assess the level of medication adherence. Data were analyzed using Statistical Package for Social Sciences (SPSS) software version 17.

**RESULTS:** A total of 350 patients were enrolled in the study, among which one half of them were male (n=177) and the most predominant age group was 50-59 years. Around 52% of the patients (n=182) have controlled fasting glucose level. However, only 41.1% of the patients (n=144) had controlled glycosylated hemoglobin (HbA1c). Medication adherence assessment revealed that 46.3% of patients (n=162) were non adhere to the medication whereas high adherence and medium adherence were observed among 24.6 % and 29.1% of the patients respectively. Significant association was found between the level of medication adherence to HbA1c (p= 0.01), blood pressure (p=0.01) and number of drugs consumed (p=0.005).

**CONCLUSION:** Medication adherence among patients with chronic disease is a major issue and the pattern diverges among individuals. Identifying the cause for non-adherence and implementing the standard strategy to enhance the medication adherence in patient with chronic disease would enhance health outcome.

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## PREVALENCE OF ANTIMICROBIAL RESISTANCE IN PATIENTS HOSPITALIZED WITH COMMUNITY-ACQUIRED PNEUMONIA IN MALAYSIA AND PHILIPPINES

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### Abstract

**OBJECTIVES:** Pneumonia is among the infectious disease with highest mortality and morbidity rates. In 2013, 34,000 cases alone were reported as pneumococcal pneumonia and 30% of them were resistant to one or more antibiotics. This study aims to determine and compare the prevalence of antimicrobial resistance in warded patients with community-acquired pneumonia (CAP) in selected hospitals in Malaysia and Philippines

**METHODS:** An observational retrospective study design was used to gather clinical data from 2016 to 2017. Linear regression was used to identify the significant relationship ( $p < 0.05$ ) between patient's demographic factors and antimicrobial resistance.

**RESULTS:** A total of 162 patients were included based on the research criteria. Incidence of CAP was higher in Filipino females (65.7%,  $n=46$ ) whereas 64.1% ( $n=59$ ) of Malaysian patients were males. Klebsiella pneumonia was the main CAP causative agent in both countries with prevalence of 42.9% and 34.8% respectively. Result showed that ampicillin-sulbactam was the antibiotic with the highest resistance rate in Philippines at 85.1%, a trait shared by Malaysia (50%). Resistance rate for amoxicillin/clavulanate and azithromycin reached 50% in Malaysia. Culture site and endocrine diseases were found to have significant relationship with the resistance of fluoroquinolones with  $p$  value of less than 0.05. Sta

**CONCLUSION:** In conclusion, institutional prevalence of resistance and patient demographic profile should be used as a basis in selecting appropriate empirical antibiotic in treating CAP to safeguard antimicrobial effectiveness.

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## The difference in the epidemiology between Multidrug-Resistant *Acinetobacter baumannii* and *E. coli* infection

Yi-Chun Chen\*

### Abstract

**OBJECTIVES:** In developed countries, infection of *A. baumannii* and *E. coli* are difficult to both control and treat because of its propensity to accumulate mechanisms of antimicrobial resistance that lead to multidrug resistance. Therefore, we performed a study to evaluate the potential risk factors for all kinds of infection caused by multidrug resistance *A. baumannii* and *E. coli*.

**METHODS:** During the study period, multidrug-resistant isolates of *A. baumannii*(MR-AB) and *E. coli*(MR-E coli) were detected in 355 and 608 patients, respectively. We compared the factors of demographic characteristics, the antibiotics used, and underlying diseases of patients between the two groups. All statistical analyses were performed by use of SPSS. Odds ratios(ORs) and 95% confidence intervals(CIs) were also calculated.

**RESULTS:** Patients who stay in ICU or RCW(OR, 2.50; 95% CI, 1.84 to 3.40; p=0.000) and previous received surgery within 1 month was significantly higher in MR-AB group(OR, 4.46; 95% CI, 3.34 to 5.96; p=0.000). Also compared with MR-E coli, patients with culture of MR-AB were more in rate to have been exposed to beta-lactams/beta-lactamase inhibitors(OR, 3.86; 95% CI, 2.49 to 5.97; p=0.000), 3rd-generation cephalosporins(OR, 3.49; 95% CI, 2.20 to 5.53; p=0.000), carbapenems(OR, 6.54; 95% CI, 3.20 to 13.38; p=0.000), quinolones(OR, 1.70; 95% CI, 1.06 to 2.72; p=0.027), aminoglycosides(OR, 2.94; 95% CI, 1.49 to 5.79; p=0.002), glycopeptides(OR, 4.61; 95% CI, 2.11 to 10.08; p=0.000) within 3 months.

**CONCLUSION:** As compared with infection of MR-E coli, the results in our study suggest that the occurrence of MR-AB infection in our hospital is strongly more related to an ICU or RCW stay, previous received surgery within 1 month and exposed to certain antibiotics during hospitalization or in the clinic.

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## Patient-associated risk factors between acquisition of antibiotics-resistant *Acinetobacter baumannii* and *Klebsiella pneumoniae*

Ju-Shiuan Tsai\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Objectives: Antibiotics-resistant *Acinetobacter baumannii* and *Klebsiella pneumoniae* is an emerging threat for the healthcare system. The objective of our study was to determine the difference in risk factors between infection due to antibiotics-resistant *Acinetobacter baumannii* (R-AB) and antibiotics-resistant *Klebsiella pneumoniae* (R-KP).

**METHODS:** Methods: A total of 322 patients with R-AB infection and 264 patients with R-KP infection was included. Both R-AB and R-KP cultures were resistant to at least two different classes antibiotics. We compared the demographic characteristics, use of antibiotic, and comorbidities of all patients between the two groups.

**RESULTS:** Results: The percentages among R-AB group in male patients, patients who stay in intensive care unit (ICU) or respiratory care ward (RCW) and previous received surgery within 1 month was 71.3%, 51.0% and 33.2%, and is significant higher than R-KP group (53.8%, 27.2% and 20.8%, respectively) ( $P \leq 0.001$ ). Previous use of steroids, beta-lactams/beta-lactamase inhibitors, 3rd-generation cephalosporins and quinolones was significantly higher in patients with infection caused by R-AB than by R-KP ( $P = 0.001, 0.007, 0.001$  and  $0.002$ , respectively).

**CONCLUSION:** Conclusion: As compared with infection of R-KP, our data indicate that previous exposure to beta-lactams/beta-lactamase inhibitors, 3rd-generation cephalosporins and quinolones can predispose individuals to infect with R-AB.

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## A comparison of the epidemiology between infections caused by ESBL-producing *Klebsiella pneumoniae* and ESBL-producing *Escherichia coli*

Yen-Chin Chen\*

### Abstract

**OBJECTIVES:** Objectives: The ESBL-producing organisms are commonly seen in *E. coli*(ESBL-*E. coli*) and *Klebsiella pneumoniae*(ESBL-*K. pneumoniae*). The epidemiology of ESBL-*E. coli* and ESBL-*K. pneumoniae* infection is changing during the past decade. The objective of our study was to determine the differences in epidemiology between infections due to ESBL-*E. coli* and ESBL-*K. pneumoniae*.

**METHODS:** Methods: The data of age, sex, underlying disease, antimicrobial therapy prior to the onset of infection, admission to the ICU, use of immunosuppressive agents, surgical procedures within 1 month were collected from 319 patients with ESBL-*E. coli* and 71 patients with ESBL-*K. pneumoniae* infection. Comparisons of epidemiological variables between two groups were done by use of chi-square test.

**RESULTS:** Results: Previous surgery within 1 month was present in 15.4% of the patients with ESBL-*E. coli* and 29.6% of the patients with ESBL-*K. pneumoniae* infection( $P=0.005$ ). The rate of ESBL-*K. pneumoniae* infected patients with pulmonary disease(46.5%) was significantly higher than ESBL-*E. coli* infected patients(34.2%)( $P=0.036$ ). Previous use of penicillins(non-combination formulations), 3rd-generation cephalosporins and carbapenems were significantly higher in patients with infection caused by ESBL-*K. pneumoniae* than in ESBL-*E. coli*(9.9%, 14.1%, 12.7% and 1.6%, 3.4%, 0.9%, respectively;  $P=0.002$ , 0.001 and 0.000).

**CONCLUSION:** Conclusion: Compared with ESBL-*E. coli*, our study indicate that previous exposure to certain classes of antibiotic over 7 days during hospitalization can predispose patients to be infected with ESBL-*K. pneumoniae* in our hospital.

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## Antibiotic treatment of carbapenem-resistant Enterobacteriaceae infection

Supawit Sutthakitphaiboon<sup>\*1</sup>

### Abstract

**OBJECTIVES:** The question of the infection of CRE is still not clear whether combination or monotherapy is better in antibiotic treatment or if there are any other antibiotic that can use to treat CRE effectively and safely, leads to the gather of the information and analyze the data by the researcher, so the research that involve treatment of CRE infection or the report of efficacy and safety of antibiotic is now very concern.

**METHODS:** This study is a retrospective descriptive study which done by collecting the data about antibiotics for treating CRE from original article, review article, or systematic review that published and can be accessed between year 2011 to 2015.

**RESULTS:** The first line treatment recommendations for treating CRE are colistin and tigecycline. However, a combination therapy with at least two antibiotics together has shown better outcome and lower mortality rate than a single therapy. Recommendation antibiotics for combination therapy are fosfomycin, carbapenem, and aminoglycosides. Regimens for each antibiotics for treating CRE are colistin 300 mg IV loading dose then 150 mg IV q 12 h, tigecycline 200 mg IV loading dose then 50-100 mg IV q 12 h, fosfomycin 2-4 g IV q 6 h, meropenem 2 g q 8 h administration for 3 h (MIC  $\leq$  8 mg/L), and gentamicin 4-7 mg/kg/day.

**CONCLUSION:** A combination therapy is necessary for treating CRE because it has synergistic effect help lowest the mortality rate. Using colistin, tigecycline, fosfomycin, meropenem and gentamicin for treating CRE are resulted in better outcome of treatment and lower the mortality rate of patient.

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## Is intravenous combined with aerosolised colistin beneficial in the treatment of pneumonia caused by multidrug-resistant pathogens?

Chen, Ciao-Ru\*<sup>1</sup>, Chia-Ling Wang<sup>1</sup>, Yu-Xing Chen<sup>1</sup>, Pei-Ying Chen<sup>1</sup>

### Abstract

**OBJECTIVES:** The prevalence of multidrug-resistant GNB is relatively high in the ICU. Colistin has been used to treat nosocomial or ventilator-associated pneumonia caused by multidrug-resistant GNB via different administration routes. Whether patients may benefit from aerosolised colistin as adjunctive treatment was contradictory. The purpose of our review is to clarify the safety and efficacy of administering aerosolised +IV (IV-AS) colistin versus IV alone.

**METHODS:** We systematically searched PubMed, Cochrane Library, Clinical key, Ovid for all studies published in 2012-2017. We revealed and appraised the paper published on 2015, intravenous combined with aerosolised polymyxin versus intravenous polymyxin alone in the treatment of pneumonia caused by multidrug-resistant pathogens

**RESULTS:** 1. Clinical response rates (improvement and cure rate) differed significantly between IV-AS and IV groups. (OR=1.81, 95%CI : 1.30–2.53; p = 0.0005)

2. IV-AS colistin treatment achieved a higher rate of pathogen eradication compared with the IV group. (OR =1.66, 95%CI : 1.11–2.49; P = 0.01)

3. Mortality differed significantly between IV-AS and IV groups. (OR=0.69, 95%CI : 0.5–0.95; P = 0.02)

4. Nephrotoxicity did not differ significantly between the IV-AS and IV groups. (OR =1.11, 95%CI : 0.69–1.80; P = 0.67)

**CONCLUSION:** The data from the above study indicated that IV-AS colistin can significantly improve clinical response rates and microbiological clearance rates and may decrease mortality in critically ill patients with NP or VAP caused by MDR-GNB without increasing adverse effect.

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## Infection control team (ICT) role in appropriate use of antimicrobial agents

Takako Morita\*<sup>1</sup>

### Abstract

**OBJECTIVES:** In 2015, the World Health Organization endorsed the Global Action Plan on Antimicrobial Resistance (AMR). In Japan, Ministry of Health, Labour and Welfare (MHLW) has announced Action Plan on AMR based on data from 2013 and 2014 to show outcome indices for 2020. And MHLW has decided to pay for AMR performance to the hospital which sets up Antimicrobial Stewardship Team and acts against AMR.

**METHODS:** ICT in our hospital has been monitoring cases which are positive blood culture, joint fluid and cerebrospinal fluid, taken specimen on administered broad spectrum antimicrobials, long term administration (over 14 days) of parenteral antimicrobial and therapeutic drug monitoring (TDM) of vancomycin. A retrospective study was conducted, based on the analysis of amount of broad spectrum antimicrobial agents and anti-MRSA usage and rate of AMR from 2013 to 2017.

**RESULTS:** Antimicrobial use density (AUD) of Carbapenems, PIP/TAZ and anti-Methicillin-resistant Staphylococcus aureus (MRSA) agents in 2013 and 2017 were 0.966, 0.791, 0.662 and 1.299, 0.674, 0.465 respectively. TDM of vancomycin has kept almost 100% from 2015. The rate of taken specimen on administered broad spectrum antimicrobial agents was 93% in 2017. Rate of MRSA and 3rd Generation Cephalosporin resistant Escherichia coli in 2014 and 2017 were 35.4%, 37.1% and 21.4%, 18.0%. While the average of MRSA and 3rd Generation Cephalosporin resistant Escherichia coli in 2016 from Japan Nosocomial Infections Surveillance were 48% and 17%.

**CONCLUSION:** This study showed that we have effected on appropriate use of antimicrobial agents. However, we aim to 2020 AMR action plan. We need to strengthen the activity, for example more intervention in administrated antimicrobial for appropriate use of antimicrobial agents.

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## “It Stops in Me!” Understanding Davaoños Living with HIV Today and the Relevance of Clinical Pharmacy in the Management of the Disease

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### Abstract

**OBJECTIVES:** The objective of this study was to gain relevant personal insights based from the participants' experiences with HIV. The study used several factors such as the influence and perspective of gay lifestyle, medication management, and support systems to assess the quality of the overall management of the disease in order to formulate interventions and recommendations to improve the clinical pharmacy practice.

**METHODS:** This study involved a descriptive, qualitative case study research design to assess overall impact of HIV to patients' life and identify the importance of pharmacists in the management of the disease. After ethical review, interview was conducted among five, male homosexuals infected with HIV. The data gathered was used to make recommendations to improve clinical pharmacy practice and roles of pharmacists in the community in the prevention of HIV & promotion of better outcomes for HIV patients.

**RESULTS:** Based on the research conducted, participants strongly cited the relevance of education about the disease to promote prevention and halt spread of HIV. Alongside, participants suggest strengthening of Pharmacists' role during the entire course of therapy/program because noncompliance are affected by misconceptions and lack of education on optimum drug utilization. Support groups (family, LGU, NGOs) are much valued by the participants to increase self-drive to fight the disease and participate in anti HIV awareness campaign in the community.

**CONCLUSION:** The lack of prior knowledge on HIV & continuing stigma that has haunted this disease, has led to the rapid rate of HIV cases & the community's inept approach about the disease. Continuing education & support groups are keystones in helping HIV patients and promote better health outcomes in community.

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## Risk factors of contrast induced nephropathy after lower doses contrast computed tomography scan (CT) at a Hospital in Southern Taiwan.

Chih-Jen Cheng<sup>\*1</sup>, Lin, Jung-An<sup>1</sup>

### Abstract

**OBJECTIVES:** Contrast induced nephropathy is one of hospital acquired acute renal failure, but preventive measures are borderline statistical significance. Highest risk contrast induced nephropathy in order to take suitable prevention measures.

**METHODS:** Medical records of hospitalized who received lower doses contrast computed tomography scan from July 2017 to December 2016 were reviewed. Clinical outcome development or progression of acute renal failure hospitalization, Hematocrit, Blood serum creatinine level, Diabetes, Congestive heart failure, Hypotension, nephrotoxic drug were considered for comparisons. Outcomes measured were as follows increase in serum creatinine  $\geq 0.2$  mg/dl.

**RESULTS:** The study included 126 patients (male: 72.22%), The average of age were 76.992. The risk of Pre-SCr (before lower doses contrast computed tomography scan is 11.53% (6/52 cases), Hematocrit 6.66% (5/75 cases), Age 11.53% (9/78 cases), diabetes mellitus 7.5% (3/40 cases), nephrotoxic drug 5.49% (5/91 cases).

**CONCLUSION:** Age and Pre-SCr are the main risk factors of contrast induced nephropathy in this study.

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## A Retrospective Study of Renal Impairment after Oral sodium phosphate solution Preparation for Colonoscopy at a Regional Hospital

Hsiao-Hsuan Tsai\*

### Abstract

**OBJECTIVES:** Oral sodium phosphate solution (OSPS) was one of the most widely used bowel cleansing agents before colonoscopy. But there were still rare cases of nephrotoxicity have been reported.

**METHODS:** We collected total 188 outpatients for colonoscopy prepared with OSPS from 2015 to 2017 in our hospital. Everyone took one single dose of OSPS before colonoscopy, after that we followed all patients six month, and identified five cases were OSPS induced nephropathy.

**RESULTS:** We analyzed the 5 cases with phosphate nephropathy, male : female was 4:1, the age was between 64-87 y/o. Only one patient was be confirm acute renal failure and needed hemodialysis at diagnosis without subsequent recovery. The remaining four patients had chronic renal injury and one of them fully recovered his previous renal function. The four patients serum creatinine were between 1.13-1.78 mg/dL.

**CONCLUSION:** In Taiwan study, the incidence of OSPS induced renal impairment was about 1to 4%, and the average incidence was about 2.99% in this study. Prevention of OSPS induced nephropathy was best achieved by avoiding OSPS in high-risk patients, aggressive hydration before, and after OSP administration.

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## Evaluation of Pharmacist Provided Counseling in Improving Knowledge, Attitude and Practice (Kap) Towards Chronic Kidney Disease Among Dialysis Patients

Anurodh Ghimirey\*

### Abstract

**OBJECTIVES:** • To evaluate the KAP about CKD in patients suffering from the same before and after pharmacist provided counseling.

- To study the demographic details of all the CKD patients involved in the study.
- To assess their baseline knowledge, attitude and practice levels.
- To counsel the case group of CKD patients about their disease, medications, diet and lifestyle modifications.
- To compare KAP outcomes of case and control groups.

**METHODS:** • 64 patients with CKD were enrolled into the prospective, pre–post study based on the inclusion and exclusion criteria.

- KAP scores of patients regarding CKD were assessed and recorded via baseline questionnaire.
- Case group patients were counseled regarding CKD, their medication, diet, and lifestyle, and they were also provided with informative leaflet, whereas the control group patients were not intervened.
- After 1-month intervention, KAP scores of patients of both groups were measured

**RESULTS:** The study found that mean knowledge score of the case group after intervention was found significantly higher than that before intervention, i.e. from  $8.16 \pm 4.378$  to  $13.75 \pm 3.510$  (P value  $< 0.001$ ). Similarly the mean attitude score changed from  $38.19 \pm 3.21$  to  $39.78 \pm 3.03$  after the intervention (P value  $< 0.015$ ) and mean practice score was also significantly higher than before, i.e. from  $6.69 \pm 0.896$  to  $7.15 \pm 0.777$  (P value  $0.017$ ).

In case of control group patient, the attitude and practice scores were not statistically significant changed i.e.  $37.94 \pm 2.31$  to  $38.03 \pm 2.23$  (P value  $0.325$ ) for attitude and  $6.50 \pm 0.80$  to  $6.59 \pm 0.66$  (p value  $0.083$ ).

**CONCLUSION:** The study concludes that the pharmacist provided counseling is effective in improving KAP of patients towards the disease management. This study also suggested that implementation of proper health literature program in developing countries like Nepal is in great need.

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## Enhancing medication adherence in Chronic Kidney Disease (CKD) patients at Pathum-Thani hospital, Pathum-thani province, Thailand.

*Mrs. Suwipa Lueangaram\**

### Abstract

**OBJECTIVES:** To enhance Chronic Kidney Disease patients medication adherence to 80% within 9 months.

**METHODS:** A survey research was started using a questionnaire to interview patients, with data collected every 3 months. The questionnaire was constructed with questions concerning the number of medication received, medication storage including herbal medicines and food supplements. Verification was done of current medication use from their home medication including the number of medication used, frequency. Clarification was made of patients' perception in cases of medication misuse.

**RESULTS:** After first 3 months (March to May 2017), patients adherence increased from 51% to 72%, after August 2017 increased to 77% and after final phase of implementation, the adherence increased up to 83% and met target criteria. The most frequent cause of medication non-adherence was self-adjustment medicine (20%) followed by unread the instruction on label which led to misuse (13%) and aging factors (poor vision and dementia) that caused medication non-adherence (7%).

**CONCLUSION:** Results of this study revealed the importance of the pharmacist's role in improving patients medication adherence at the Chronic Kidney Disease clinic in order to meet the standard criteria and maximize medication efficacy for patients to delay kidney disease progression, the aim of CKD care.

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## Efficacy of Pharmaceutical Intervention for out-Patient hemodialysis unit in a Community Hospital

Tsung Wei Chang<sup>\*1</sup>, Wen-Jin Tung<sup>1</sup>

### Abstract

**OBJECTIVES:** The objectives are to determine the effects of pharmacists' intervention on out-patient hemodialysis patients, including the number and the type of drug-related problems.

**METHODS:** This study was conducted from January to June 2018. Pharmacists examined the prescription rationality according to patients' lab data and drug record, participated in the ward rounds with nurse practitioners and physician. We provided medicine information and health education for patients, family members and other medical staff. We collected the result we found during pharmacists' intervention.

**RESULTS:** Tree in twenty three new dialysis patients had poor medication adherence and low medicine awareness according to our evaluation A total of 55 drug-related problems were identified. The types of drug-related problems were identified as follow: contraindication in hemodialysis patients(65.45%); medication reconciliation(10.91%); polypharmacy(9.09%);side effects(3.64%); and others(10.91%). The physicians received 31 recommendations, and they 100 % accepted the suggestions from pharmacists.

**CONCLUSION:** Pharmaceutical care could solve drug-related problems in hemodialysis unit.

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## A Retrospective Study of Clinical Outcomes in Patients Receiving Warfarin Therapy: a Comparison between Warfarin Clinic Participant and Non-participant Groups at Ayutthaya Hospital

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### Abstract

**OBJECTIVES:** This observational retrospective study aims to compare the primary and secondary outcomes between warfarin clinic participant group, which were provided a pharmaceutical care by pharmacists and multidisciplinary team, and non-participant group.

**METHODS:** Data collection was reviewing the medical records and electronic database of patients prescribed warfarin between Oct 2014 - Oct 2015 for median period of 1.6 years. Statistical analysis is chi square test, independent t-test and Mann-Whitney U test.

**RESULTS:** All 220 participants were reported average age as 65 years old. The indication was atrial fibrillation 64.09%. Primary outcomes revealed that the incidence of minor bleeding ( $p=0.518$ ), major bleeding ( $p=0.440$ ), and thromboembolism ( $p=0.097$ ) were not significantly different between both groups. For secondary outcomes, percent of time in therapeutic range of warfarin clinic participant group was lower than non-participant group 51.66% vs 52.64% ( $p=0.786$ ). Nevertheless, patients in warfarin clinics presented with significantly lower prevalence of drug-drug interactions than the patients who were not participated in the clinic 8.37% vs 21.4% ( $p<0.001$ ).

**CONCLUSION:** The clinical outcomes measurement did not show favorable result toward multidisciplinary care in warfarin clinic, in which it may be due to insufficient follow up time. Nevertheless, significant lower prevalence of drug-drug interactions was concurrent with warfarin clinic participant.

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## Effectiveness of Clinical Pharmacy Anticoagulation Service for Warfarin Management

Chung, Huei\*<sup>1</sup>, Mei-Hsiouh Guan<sup>1</sup>

### Abstract

**OBJECTIVES:** The importance of anticoagulants to stroke prevention has been clinically proven. Through the implementation of clinical pharmacy anticoagulation service (CPAS) and case management tracking system, which will help improve the safety, efficacy as well as the patient's anticoagulation knowledge. This study aims to investigate the effectiveness of CPAS for warfarin management.

**METHODS:** Patients who filled prescription with warfarin from the Outpatient Pharmacy were enrolled in this study. The CPAS for warfarin management were established for the improvement of warfarin therapeutic indicators and anticoagulation knowledge. The study was approved by the International Review Board (IRB) of Taipei City Hospital (TCHIRB-10602106-E).

**RESULTS:** 50 patients enrolled in this study from March 1, 2017 to December 31, 2017. The result for anticoagulation knowledge improvement, average correct rate was found to have significantly increased from 33.1 ± 25.9% (before intervention) to 77.9 ± 7.3% (after intervention). As for therapeutic indicators, 7 patients (14%) met the target time-of-therapeutic range (TTR > 60 %) after intervention, and 14 patients (28%) switched to novel oral anticoagulants (NOACs), which have wide therapeutic index compared with warfarin.

**CONCLUSION:** Current study demonstrated that the establishment of CPAS for warfarin management would help to improve the outcome of anticoagulation knowledge. However, there is a gap for therapeutic indicators on the basis of only 42% patients in this study having positive improvement.

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## Development of System to Identify and Prevent Warfarin- Related Problems in an Outpatient Pharmacy Setting At Maharat Nakhonratchasima Hospital, Thailand

Amornrat Paengthaisong\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Background: A large number of patients may not be covered by anticoagulant clinic due to a limited number of pharmacist at the clinic. Pharmacists who are doing dispensing function may have an important role to capture those patients. However dispensing pharmacists had difficulty to access a laboratory results and previously drug regimen. This study aimed to develop a system that can systematically identify and prevent warfarin-related problems.

**METHODS:** Standard dispensing guideline form was designed. Mandatory training sessions were provided to all participating pharmacists. They were allowed to access to the latest INR value and drug regimen. Which had to check INR value, adjusted dosage of warfarin related to criteria management for INR values both in and out of target. Problems, if existed, will be prevented by discussing with prescribing doctors. Data collected for 12 months both before and after implementation of the system.

**RESULTS:** Before implementation, there were 28 warfarin-related problems identified from 9,784 prescriptions (2.86 events/ 1,000 prescriptions). After system was implemented, outpatient pharmacists were able to identify 125 warfarin-related problems from 9,487 prescriptions (13.18 events/1,000 prescriptions). The top three most common warfarin- related problems were dosage too high (53.6%), dosage too low (32.8%) and need for additional drug therapy (8%). Doctors accepted pharmacists' interventions to resolve warfarin-related problems at a high level (95.6%).

**CONCLUSION:** Outpatient pharmacists functioned based on the developed system can effectively identify and prevent warfarin-related problems, and leading to a better healthcare for patients. Implementation of this system may be useful for other facilities, to service all patients requiring warfarin therapy.

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## Outcome of Paraquat Poisoning Treatment with 14-Days Course Intravenous Cyclophosphamide, Dexamethasone and Vitamin C Combination Therapy in Takuapa Hospital, Phang-nga, Thailand: A Hospital-based Study

Miss Daruni Sithhikan\*<sup>1</sup>

### Abstract

**OBJECTIVES:** To investigate clinical features and outcomes of cyclophosphamide, dexamethasone and vitamin C combination therapy in paraquat poisoning.

**METHODS:** A retrospective review of medical records in paraquat poisoned patients who were treated with intravenous cyclophosphamide 5 mg/kg/day in divided dose, dexamethasone 8 mg every 8 hours and vitamin C 6 gm/day at Takuapa Hospital in Phang-nga, Thailand during 2007 to 2017. The collected data were analyzed by statistic with level of significant set at P value < 0.05.

**RESULTS:** 50 patients (62.0% men) were studied. All patients received therapy with intravenous cyclophosphamide 5 mg/kg/day in divided doses, dexamethasone 8 mg q 8 hr and Vitamin C 6 gm/day for 14 days. 44% (22 patients) died. Comparing death and survival, death was significantly higher in patients with positive paraquat testing (90.91% vs 9.09%, P=0.000), renal dysfunction (81.82% vs 35.71%, P= 0.001), eGFR in death cases were lower than survival cases (36.09 + 35.46 vs 100.71 + 36.74 ml/min/1.73 m<sup>2</sup>, P=0.000), respiratory failure (68.18% vs 3.57%, P=0.000), and WBC count in death case were higher than survival cases (18,270 + 11,060 vs 10,850 + 5,040 cells/ml, P=0.016).

**CONCLUSION:** Although paraquat poisoning treatment with cyclophosphamide, dexamethasone and vitamin C combination improve survival, mortality rate was greater in the paraquat poisoned patients who presented positive paraquat testing, renal dysfunction, respiratory failure and high WBC count.

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## Outcomes after hospitalization in Idiopathic Pulmonary Fibrosis Patients: A Taiwanese Cohort Study

Sheau Ning Yang<sup>\*1</sup>, Mei-Ing Chung<sup>2</sup>, Diahn-WarnngPerng<sup>3</sup>, Yuh-Lih Chang<sup>4</sup>

### Abstract

**OBJECTIVES:** The acute respiratory worsening requiring undergoing hospitalization with Idiopathic Pulmonary Fibrosis (IPF) is common. The outcomes after hospitalization has not been well characterized. We sought to determine the all cause and respiratory-related hospitalization and to evaluated their impact on subsequent course and survival of patients with IPF

**METHODS:** The records of patients with IPF evaluated at a tertiary center from January 2001 to January 2015 were examined for the cause and duration of hospitalization. Data on subsequent patient outcomes were collected

**RESULTS:** The IPF Cohort consisted 53 patients, 20.7% of whom were hospitalized subsequent to their diagnosis. Respiratory-related cause accounted for 74.4% of these hospitalizations. The median survival after hospital admission was much lower for patients with respiratory hospitalization ( median survival, 2 months, [IQR, 0.07-3.93] vs 14 months [IQR, 0.5-28.03];  $p= 0.04$ ).

**CONCLUSION:** Hospitalization are common events in patients with IPF. Most hospitalizations are respiratory related and associated with high in-hospital mortality and limited survival beyond discharge.

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## A prospective study of continuous versus intermittent proton pump inhibitor regimen after endoscopy treatment at a regional teaching hospital in Taiwan

Chen-Yu Huang<sup>\*1</sup>, Sue-Fei Cheng<sup>2</sup>, Hui-Ting Huang<sup>2</sup>

### Abstract

**OBJECTIVES:** Our retrospective study aims to compare and evaluate whether intermittent proton pump inhibitor (PPI) therapy can generate similarity in use and prognosis with continuous PPI therapy following endoscopic arresting of bleeding in a regional teaching hospital.

**METHODS:** Our retrospective study was conducted using electronic medical record for data collection. This study included patients from January 1st, 2016 to October 30th, 2017 in a regional teaching hospital. To identify suitable cases, patient was enrolled if a gastric ulcer was presented, and was treated with PPIs after endoscopic therapy. The primary outcomes were rebleeding rates within 3 days and 7 days; additional outcomes include mortality and second-time endoscopy treatment.

**RESULTS:** Of all 43 participants included, 17 were treated with esomeprazole and 26 were treated with pantoprazole. Based on treatment course, 23 received intermittent regimen and 20 underwent continuous therapy. The rebleeding rates within 3 days were 8.7% (n=2) for intermittent regimen and 25.0% (n=5) for continuous regimen, bringing out no significant differences (p=0.156). In addition, results of second endoscopy showed no significant differences (p=0.076), 8.7% (n=2) in intermittent therapy and 30.0% (n=6) in continuous regimen. The mortality of two groups also indicated no significant differences (p=0.185). Furthermore, we found intermittent regimen cost NTD 1498.9±180 lesser per treatment.

**CONCLUSION:** Our study indicated that there were no significant advantage in the efficiency of continuous PPI therapy over intermittent PPI therapy and also showed less cost in the intermittent regimen. As a result, we may suggest to revise our protocols to recommend intermittent PPI therapy.

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## A retrospective study on the clinical impact of Acid Suppression Agents (AS) and Tyrosine Kinase Inhibitors (TKIs) in Advanced Non-Small Cell Lung Cancer (NSCLC)

Pei-Ying Chen<sup>\*1</sup>, Chun-Yen Wang<sup>1</sup>, Chun-Liang Hu<sup>2</sup>

### Abstract

**OBJECTIVES:** AS medications might reduce the bioavailability and efficacy of EGFR-TKI agents when they are concomitant use on the treatment of advanced NSCLC patients. Several studies have been reported a negative clinical impact of co-administration of both agents. The aim of this study is to determine the clinical impact of AS and TKI interaction in advanced NSCLC patients.

**METHODS:** We collected the clinical outcome from our electronic medical records from January 2007 until December 2017. The advanced NSCLC patients received TKIs  $\geq 1$  week were included in the study, concomitant use with AS should be  $\geq 1/3$  periods of TKIs therapy. Progression free survival (PFS) and overall survival (OS) were analyzed between two groups, utilized by the Kaplan-Meier methods and Log-Rank test.

**RESULTS:** 53 of advanced NSCLC were included, 28 patients had combined with AS agents (AS group) and 25 patients without AS agents usage (no AS group). The median PFS and OS in AS versus no AS group were 14.5 versus 13.5 months ( $p=0.514$ ) and 25.9 versus 21.6 months ( $p=0.620$ ), respectively.

**CONCLUSION:** AS agents prescribed on advanced NSCLC patients is very common due to GI disorder. Our retrospective study concluded that the concomitant of AS and TKIs did not appear a significant impact on the progression free survival and overall survival outcome.

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## Analysis of causes of patient with myocardial infarction who were not given guideline directed medical therapy during and after discharge from hospital

Ju-Shiuan Tsai\*

### Abstract

**OBJECTIVES:** According to the standard AMI therapy guideline, patients need to take their medications after percutaneous coronary intervention to prevent the recurrence of myocardial infarction or in-stent restenosis. We follow-up these patients who were not prescribed guideline directed medical treatment [GDMT] during and even after discharge from the hospital. We performed cause analysis and also probe its relation with the length of hospital stay.

**METHODS:** This is a retrospective study. Data collected during the year 2015. A total of 107 patients diagnosis of AMI were enrolled in this study. Criteria for include patients were given at least one of the five standard guidelines medications composed of the following drugs: aspirin, Clopidogrel/Ticlopidogrel,  $\beta$ -blocker, angiotensin II converting enzyme-inhibitor (ACEi) or Angiotensin receptor blocker(ARB) and statin. Patient were followed on the first and third month after discharge.

**RESULTS:** ACEi or ARB (24%) is the most common medication not prescribed, mainly due to hypotension. This was followed by  $\beta$ -blocker (21%) due to bradycardia, clopidogrel or ticlopidogrel came in third (10%), due to patient receiving bare metal stent needs to take clopidogrel or ticlopidogrel for 3 months. Aspirin(9%), due to upper gastrointestinal bleeding and the least was statin (8%), mainly due to myalgia. After 3 months, stopped prescribing clopidogrel/ticlopidogrel (28%) was the highest followed by beta-blocker plus ACEi or ARB (19.6%). The number of hospital days was shorter if only one of the five guideline directed medical therapy was not prescribed compare to two or more ( $p=0.013$ ).

**CONCLUSION:** Doctor believes that the condition of the patient is stable and only needs lifestyle modifications. Patient should received optimal GDMT due to its proven benefits to reduce morbidity and mortality. Our health insurance system should follow the latest therapy guidelines when restricting drugs usage.

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## Evaluation of the the use of SGLT2 inhibitors in patients with type 2 diabetes in a regional teaching hospital in Taiwan.

Cheng Sue-Fei\*<sup>1</sup>, Ching Ying Liao<sup>2</sup>

### Abstract

**OBJECTIVES:** Sodium glucose co-transport 2 (SGLT2) inhibitors lower blood glucose by increasing urinary glucose excretion. This study is to assess the effectiveness of SGLT2 inhibitors (dapagliflozin and empagliflozin) in achieving metabolic therapeutic goals.

**METHODS:** A retrospective, observational study. Inclusion criteria for patients were diagnosis of type 2 diabetes mellitus, patients receiving either dapagliflozin 10 mg or empagliflozin 10 mg at least 24 weeks from April 1, 2016 to March 31, 2018. Baseline characteristics (age, gender, insulin requirement, combination of antihyperglycemic agents) were reported. Changes in body weight, glycated hemoglobin (HbA1c), estimated glomerular filtration rate (eGFR), and the incidence of urinary tract infection we

**RESULTS:** 233 patients taking dapagliflozin and 48 taking empagliflozin were identified in this study. Mean age for both groups was 56.7±10.4 years and 65.8% was male. An average on the body weight loss was 1.47±2.41 kg, HbA1c reduction was 0.68±1.05%, eGFR was decreased 0.84±16.60 ml/min and the incidence of urinary tract infection was 3.56%. Overall HbA1c goals were met in 74 patients (26.33%) with similar results with dapagliflozin or empagliflozin. Metformin was the most frequent antihyperglycemic agents (94.30%) combined with SGLT2 inhibitors. 72 (25.62%) patients required insulin. Most patients used at least 2 additional different antidiabetic drugs (46.98%). Combination with sulfonyleureas and t

**CONCLUSION:** No difference between dapagliflozin and empagliflozin was observed. SGLT2 inhibitors were used as combined therapy. The use of SGLT2 inhibitors in patients with type 2 diabetes to reach metabolic goals is low.

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## Efficacy analysis of direct-acting antiviral agents (DAAs) treatment for chronic hepatitis C genotype 1 infected patients: Experience in a regional teaching hospital in Southern Taiwan

Hsu, Yung-Chia<sup>\*1</sup>, Hsiang, Yi-Ping<sup>2</sup>

### Abstract

**OBJECTIVES:** The prevalence of hepatitis C virus infection in Taiwan is around 3~5 % and the major genotype is genotype 1 (GT1), followed by genotype 2, among which the subgenotype GT1b and GT1a accounts for approximately 50% and 5%, respectively. Oral direct-acting antiviral agents (DAAs) which has been in development since 2010 achieves SVR higher than 90%. The objective of this study is to assess real-world effectiveness of DAAs for chronic hepatitis C.

**METHODS:** This study utilized retrospective analysis and collected patients diagnosed with hepatitis C genotype 1a or 1b outpatient between January 2017 and December 2017; the patients were assigned to either the DCV/ASV group or ProD group.

The primary endpoint was to observe the RVR, ETVR and SVR12 rate; the secondary endpoint was to observe: 1. whether treatment effectiveness will be affected by comorbidity, and 2. the change in liver function test data before and after treatment.

**RESULTS:** This study enrolled a total of 54 patients and the overall RVR/ETVR/SVR12 were 98.1%/96.3%/91.8%, DCV/ASV group and ProD group achieved a SVR12 rate of 89.5% and 93.3%. Secondary analysis of the change in liver function test results before and after treatment, AST(before:65.44±42.18 U/L, after:34.11±30.67 U/L; p<0.001), ALT(before:69.98±47.40 U/L, after:33.61±56.62 U/L; p<0.001), indicating significant decrease in AST and ALT levels. Comorbidity analysis of the treatment effectiveness of patients without other diseases showed no significant differences when compared with the patients with cirrhosis and hepatitis C (p=0.588) or patients with hepatitis B and hepatitis C (p=0.297).

**CONCLUSION:** This study demonstrated that GT1 (1b/1a) HCV patients treated with DCV/ASV and ProD achieved RVR/ ETVR/SVR12 higher than 90% which is similar to the results obtained from other studies and the liver function test results obtained after receiving treatment also showed significant improvements.

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## The effectiveness of improving inadequate fluconazole loading dose in candidemia patients at a medical center in southern Taiwan

Liang Shin Yi<sup>\*1</sup>, Yung-Jun Hung<sup>1</sup>, Yi-Ping Hsiang<sup>1</sup>

### Abstract

**OBJECTIVES:** From Jan 2012 to Oct 2015, the rate of initially inadequate loading dose of fluconazole (<800mg or 12mg/kg) was 60.4% in E-DA hospital. In addition, inadequate loading dose of fluconazole had higher in-hospital and 30-day mortality with statistically significant differences. This study aim to improve the guideline adherence rate of fluconazole loading dose in candidemia patients and analyse the intervention effectiveness.

**METHODS:** We arranged various intensive education training from May 2016 till Mar 2017. For Physicians, the course about the importance of adequate fluconazole loading dose in candidemia patients was provided to ensure the prescription appropriateness. For pharmacists, we offered e-learning educational propaganda and emphasized the need of reviewing fluconazole prescriptions for candidemia. The performance indicator was evaluated by post – educational prescription accuracy.

**RESULTS:** We enrolled 29 adult inpatients whose blood culture yielded yeast and were treated with Fluconazole initially from Apr 2017 to Nov 2017. Mean age were 60±15 years and 61.5% were male. The guideline adherence rate of fluconazole loading dose has improved from 40.3% to 81.8% (p=0.00). Except *C.glabrata*, *C.krusei* and unidentified yeasts, in-hospital mortality rate has decreased from 46.1% to 36.6% and 30-day mortality rate has decreased from 38.7% to 31.8% (p>0.05). 10 prescriptions were intervened by pharmacists. The completion rate of e-learning tests was 100% and the average score was 93.6±5.3.

**CONCLUSION:** The guideline adherence rate of fluconazole loading dose in candidemia patients has dramatically improved after intervening various educational propaganda. A trend towards reduced mortality was observed, though there were no statistically significant differences due to small sample size.

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## The Management of Hepatotoxicity due to Antituberculosis Therapy in a Patient with Cerebral Tuberculosis: Case Report and Literature Review

Frenky Hartono\*<sup>1</sup>, Emilia Sidharta<sup>2</sup>, Lidya Karina<sup>3</sup>, Hanny Cahyadi<sup>4</sup>

### Abstract

**OBJECTIVES:** To evaluate the outcomes of rechallenge for anti-tuberculosis drug in order to manage hepatotoxicity due to antituberculosis therapy in a patient with cerebral tuberculosis.

**METHODS:** A female patient (45yo, 45 kg, 145 cm) was diagnosed with cerebral tuberculosis and had been treated with 5 regimens of antituberculosis drug (RHZES). For approximately 4 days of the drug administration, patient had been experiencing abdominal discomfort, nausea, and vomiting. These symptoms persisted for several days and thus a laboratory test for ALT and AST was conducted. A sequential rechallenge method was then used while also monitoring the liver function and the clinical condition

**RESULTS:** Patient's AST and ALT before administration antituberculosis drug was 33.6 U/L and 32.5 U/L. After four days, the patient felt several adverse reactions such as abdominal discomfort, nausea, and vomiting. Following this, a liver function test was conducted on day 9. The levels of AST and ALT elevated to 596.7 U/L and 273.7 U/L respectively. A sequential rechallenge method was performed by suspending RHZ. On day 12 still showed the increasing levels of AST and ALT, and therefore the administration of E was discontinued. On day 21 the ALT and AST decreased then E was reinitiated. On day 24 RH were readministered. On day 56 AST and ALT showed 55.4 U/L and 30.3 U/L then Z was readministered

**CONCLUSION:** Sequential rechallenge to manage hepatotoxicity induced by antituberculosis therapy was successful. It should be carried out cautiously by monitoring liver function test in patients receiving antituberculosis drug to prevent morbidity and mortality

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## The Impact of Innovative Pre-Printed Orders and Drug Labels Development on Safe Use of Vasopressor and Inotropic Drugs

Sukanda Denjanta\*<sup>1</sup>, Sasivimon Jai-ae<sup>1</sup>

### Abstract

**OBJECTIVES:** To assess the impact of using innovative pre-printed orders and drug labels of four drugs that are norepinephrine, adrenaline, dopamine and dobutamine in 16 wards in the department of internal medicine. The aim of these orders and their labels was to raise awareness among healthcare professionals to these high alert drugs and use as guidance to help improve patient safety in terms of appropriate drug prescribing, administration, and monitoring.

**METHODS:** There was an adverse drug event of norepinephrine extravasation (category G) in November 2015. The multidisciplinary team in the hospital performed a root cause analysis to create preventative measures. One of the preventive actions was the development of pre-printed order and drug labels for a group of high alert drugs that have some similarities. This innovation was first implemented in 5 wards in the department of internal medicine in May 2016 and another 11 wards later in June 2016.

**RESULTS:** We evaluated the outcomes in 4 aspects: 1. No recurrence of extravasation events related to these four drugs since June 2016. 2. Cooperation of doctors and nurses using the orders were 100% (data collected from retrospective chart review in January 2017). 3. Satisfaction survey among doctors and nurses about the easiness of using the orders rated in satisfied to very satisfied level was 88.0%. 4. This innovation was presented in the conferences of the hospital resulting in broadly use in other departments. Utilization of these orders and labels were accepted and implemented throughout the hospital in January 2017. These were also applied in some community hospitals in Chiangrai province.

**CONCLUSION:** The development of innovative pre-printed orders and drug labels of common high alert drugs could help improve patient safety and be the model to other departments and hospitals for further application in their settings.

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## The impact of electronic-based program to the duration of pharmacist-consulting medication reconciliation process in Siriraj hospital

Mr. Wisit Surawadee<sup>\*1</sup>, Wuttirat Thummawut<sup>2</sup>, Busaya Kulabusaya<sup>2</sup>

### Abstract

**OBJECTIVES:** The pharmacist role in medication reconciliation team is a consultant. When nurses notify cases, pharmacist will prepare, verify, and record the data in case record form, then the data were analyzed manually (paper-based) which take a long time. In this study, we evaluate the impact of electronic-based program to alert pharmacist via e-mail to the duration of pharmacist-consulting process and to assess the user satisfaction.

**METHODS:** The duration of pharmacist-consulting process (from case notification step to the end of analysis step) by paper-based method were collected prospectively during January, 2018 and by electronic-based method during March, 2018. Both were compared by using the independent t-test or Mann-Whitney U test depend on the data distribution. Statistical significance was defined by  $p < 0.05$ . The user satisfaction was assessed by using questionnaire rating from 0 to 5; unsatisfied to very satisfied.

**RESULTS:** The data from 138 patients were included in this study. 59 patients (42.8%) were from the paper-based method and 79 patients (57.2%) were from the electronic-based method. The median (IQR) of the duration used in the paper-based and electronic-based were 366 (284, 481) and 186 (95, 290) minutes per patients, respectively. The duration in new process is significantly shorter than the standard one ( $p < 0.001$ ). The satisfaction score from electronic-base method is higher than paper-based method (4.9 versus 2.3) with the level of "very satisfied".

**CONCLUSION:** The electronic-based program reduces the duration of pharmacist-consulting medication reconciliation process in Siriraj hospital especially in the report generating step. However, the program still has some limitation and need further development.

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## Establishment of an electronic medication tracking system that optimizes inpatient drug delivery workflow and improves patient safety at a regional hospital.

Chun Ta Huang<sup>\*1</sup>, Sue-Fei Cheng<sup>1</sup>, Kuang-Liang Cheng<sup>1</sup>

### Abstract

**OBJECTIVES:** The aim of this study is to evaluate medication delayed delivery rate and missing episodes before and after implementation of an electronic medication tracking system, also to observe the change in the number of phone calls querying medication delivery status. Further to access the impact on patient safety and practice quality.

**METHODS:** This study was conducted from September 2017 to March 2018, using medication tracking system, hospital information system (HIS), nursing information system (NIS) and manual inquiry call records for data collection. The medication tracking system combines quick response code (QR code), barcode scanners and mobile devices. This study collected delayed delivery events, missing medication episodes, turnaround time, and inquiry calls from nursing station and all data was processed with Excel 2016.

**RESULTS:** A total of 25351 orders were collected during the study. The medication tracking system was implemented from January 2018. Delayed delivery incidents before implementation of medication tracking system (September 2017 to December 2017) were 108 among 13040 orders (0.828%) and 67 incidents among 12311 orders (0.544%) afterward (January 2018 to March 2018). Missing medication episodes reduces from 1.67 per month to zero. Besides, the number of phone calls querying medication status declines from 432 to 234. Comparing the previous standard operation process, average 21 seconds were saved in turnaround time for every order throughout the inpatient pharmacy workflow after the implementation.

**CONCLUSION:** The medication tracking system reduces medication delayed delivery rate and missing episodes, thus increases the quality of intra-professional communication and pharmacy workflow. Furthermore, the implementation improves patient safety by reducing delayed administration events

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## Improving Replenishing Process of the Automated Dispensing Devices with HFMEA

Meng-Yi Ou\*

### Abstract

**OBJECTIVES:** OBJECTIVES: Automated dispensing devices (ADDs) could provide accurate distribution of medications to patients timely. However, if ADDs are not used appropriated, their complexity, variations, and other factors could compromise patient safety. In our out-patient pharmacy, 3 replenishing-error events occurred in March, 2017. We examined the replenishing process with HFMEA and expected to decrease the dispensing-error ratio of ADDs ultimately.

**METHODS:** METHODS: First, we charted the flow of ADDs replenishing process and examined it with HFMEA. Then, we determined 9 potential failure modes which warranted further action. Finally, 5 strategies had been executing to against the failure modes. 1. To establish replenishing barcode system. 2. To stick drug pictures on its cabinets. 3. Making drugs picture list. 4. Painting labels of high alert medications in red. 5. Double-checking cabinet position.

**RESULTS:** RESULTS: After improvement, all stuffs had received barcode system operating lesson. Hazard Score declined from 7.56 to 4.78. The reductions were 36.77%. The dispensing-error ratio of the ADDs was reduced to 0%, which decreased by 100% ( $p < 0.005$ ).

**CONCLUSION:** DISCUSSION: From the feedback of the vendors and pharmacists, the process of barcode system is too cumbersome to be done in time and accurately. In the next step, we will streamline the replenishing process by lean to solve this problem.

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## Physical Stability of Pediatric Extemporaneous Suspensions: The Influence of Temperature and Sunlight

Emilia Sidharta<sup>\*1</sup>, Ivon Sindu Wijaya<sup>2</sup>, Lidya Karina<sup>3</sup>, Hanny Cahyadi<sup>3</sup>

### Abstract

**OBJECTIVES:** To evaluate the physical stability of pediatric extemporaneous suspensions under varying factors are temperature and light conditions.

**METHODS:** The cough and common cold extemporaneous suspensions contained: 6tablets glyceryl guaiacolate, 7tablets Polacel<sup>®</sup>, 5tablets Rhinofed<sup>®</sup>, 4tablets Mucera<sup>®</sup> in 100 ml Peppermint Cough Syrup(OBP). 4 bottles of the suspension were stored at: 22-25 oC and protected from sunlight –Suspension A(SA), 2-6 oC (SB), 28-34 oC and exposed to sunlight- SC, 22-25oC and exposed to sunlight– SD. Physical characteristics: appearance, colour, odor, precipitation, and sedimentation were evaluated daily up to 150 days.

**RESULTS:** Changes in colour were observed in SA after 6 days. Particle sedimentation and insoluble precipitates can be seen at the bottom of the bottle in day 5. The same condition occurs in SB, but the precipitates were more hardly resuspended than SA. The sedimentation volume increased on Day 6 in both suspensions but these characteristics remained constant until the end of the study. Changes in colours and sedimentations in SC and SD were observed within 24 hours. No notable changes in odor were observed in all of the suspensions under various conditions.

**CONCLUSION:** Temperature and sunlight affect the physical stability of the extemporaneous suspensions by changes in colour, sedimentation volume increased and precipitation. Further research is needed to know about chemical stability this extemporaneous suspensions.

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## Smart Bin – Safer, Reliable and Accurate

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### Abstract

**OBJECTIVES:** Prescription filling process in pharmacy relies heavily on human input, combining with high items load increases the risk of medication errors. Patient safety is the core of our professional practice. The Smart Bin system was conceptualized to eliminate wrong drug picking errors and enhance patient safety. The system offers a novel approach to handling prescriptions safely and offering consistent drug picking accuracy.

**METHODS:** Our team reviewed the drug picking workflow and gathered feedback from pharmacy staff. Ishikawa Cause and Effect Diagram was used to analyze root causes for incidence of wrong drug picking errors. Final solutions to eliminate wrong drug picking errors were selected using a Prioritization Matrix. Implementation of the Smart Bin system was done in two phases using Plan-Do-Study-Act. A Run chart was used to monitor the number of near miss involving wrong drug picked from Smart Bin per month.

**RESULTS:** Pre-implementation analysis from Aug 2015 to Mar 2016 showed that the number of medication near misses due to wrong drug picked was 4.8 per 10,000 items picked. After the Smart Bin system implementation, the number decreased to 0.3 per 10,000 items picked (93.5% reduction) over project duration from Apr 2016 to July 2017. With assurance of correct medication prepared, dispensers are able to spend more quality contact time with patients, translating to better optimization of drug therapy. LED-guided pick incorporated in the Smart Bin system also proven to improve productivity of picking process. Accurate drug picks translates to cost avoidance from service recovery due to medication errors.

**CONCLUSION:** The Smart Bin system is highly suitable for pharmacies with high picking load facing space and budgetary constraints for setup of costlier and bulkier robotic picking system. Using innovative technology to improve drug picking, the system has translated to better and quality service to our patients.

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## A Study of the Association of Job Design and Retention of the Hospital Pharmacists

Lin, Liang-Yi<sup>\*1</sup>, Chiu Chiung-Hsuan<sup>2</sup>

### Abstract

**OBJECTIVES:** In the health care system, the shortage of health care workers had been one of the serious problems. Controlling the loss of manpower of practicing pharmacists shall be an important and urgent issue. Studies had shown that job design can regulate work outcomes and increase retention. This main purpose of this study was to describe pharmacist's retention by job design to identify any differences in retention.

**METHODS:** This was a cross-sectional survey on the pharmacists working in four major hospitals in Taipei area. Inclusion criteria were full-time pharmacists except director of pharmacy department. Questionnaires were adapted from Job Diagnostic Survey, which evaluated skill variety, task identity, task significance, autonomy, and feedback from job itself. The study use SPSS 22.0. Data analysis included reliability and validity check, descriptive statistics, bivariate analysis, and Pearson correlation.

**RESULTS:** Among respondents, 55% of them were women. There were 10%, 35%, 10%, 20%, 10% of respondents working at the OPD, UDD, SPA, CP, and PM. The mean age of respondents was 32.94 ( $\pm$  9.2) years, and mean seniority was 7.06 ( $\pm$  6.2) years. There were significant differences in the "task significance" at ages group ( $p = 0.01$ ), PGY or not ( $p = 0.00$ ) and at CLS ( $p = 0.00$ ). The single respondents got more "feedback" than the married respondents. There was a significant difference in the "task identity" at different divisions ( $p = 0.02$ ). Task identity was evaluated higher in other division ( $6.17 \pm 1.2$ ) than in UDD ( $3.57 \pm 0.5$ ). Job design correlated positively with the retention ( $r=0.62$ ).

**CONCLUSION:** The PGY pharmacist evaluated task significance higher than the non-PGY pharmacist. It might be explained by the transformation role from novice to experts. This study pointed out that job design itself can be a good predictor to retention. The key is to redesign the jobs to enhance its significance.

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## Evaluation and Assessment of drug prescription patterns in pediatric patients in Pakistan

Faraz Ashraf\*<sup>1</sup>

### Abstract

**OBJECTIVES:** objective of the study is to evaluate and assess the prescribing patterns of the physicians in pediatric patients of Pakistan and to observe the rationality of the prescription will be observed as well. Moreover, the prescription writing trends as well as the routine of mentioning the dose, frequency and other related things will be observed to evaluate the final assessment of the prescription.

**METHODS:** An observational and questionnaire survey based study was conducted in pediatric hospital in Pakistan this was done to evaluate the level of compliance to prescription patterns at the level of public health facilities. the sample size is 100 pediatric prescriptions collected with convenient random sampling collected over one month. The inclusion criteria was the outdoor patients aging from 1 month to 14 years.

**RESULTS:** Results were demonstrated graph wise with reference to the difference in ages of these 100 patients, number of drugs prescribed, drugs prescribed either generic or brand wise, distribution of patients according to diagnosis, types and number of antibiotics prescribed, either dose is mentioned or not, duration of treatment, body weight mentioned or not, prescription is signed or not and few others.

**CONCLUSION:** A huge proportion of the population of many developing countries are youngsters. infants and youngsters are the most accessible pool of population that suffer from numerous but usually non infectious illness. the pediatric dosage is more vigilantly observed as compared to adults.

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## Analgesia Practice Through Morphine: A Data Study About Usage and Dosage

Sameer Ali\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The Aim/Objectives of the present study is to evaluate the right dosage of pain killer {morphine} among the patients and also inform the patients or people about the critical hazard , side effect's and give information about the particular right use and avoid/stoped misuse of morphine among the people.

**METHODS:** The Pattern/Method was followed in the present study to evaluate the use of morphine along with dose among ICU patients and post operative cases, suggesting by the physicians, Surgeons and on duty doctor.

**RESULTS:** Result's purposes of total analysis three hospitals were selected in Karachi, one was tertiary care and another was general hospital. 100 individuals are the sample size population. Comprehensive questionnaire was provided along with an informed consent form and data was collected by interviewing on duty nursing staff and doctor.

**CONCLUSION:** The Outcome/Conclusion of the study helped to understand the overuse of morphine by the patients in hospitals according to the opinion of healthcare practitioner of pain killer , although the pain could be controlled by the NSAIDS.

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## Insulin pen therapy an effective medication: The judgments of facts through DAWN study in emergency care

Sameer Ali\*

### Abstract

**OBJECTIVES:** The aim of the present study is to evaluate ETSM (Emergency Time Safe Medication), efficacy and acceptability of insulin pen in emergency and to identify the impediments also for adopting the method. These all investigations were done through the (DAWN) study, to overcome the hindrances or to achieve the recommended glycemic level control. The DAWN (Diabetes Attitudes Wishes and Needs) the largest diabetes study scheme developed by involving Nov

**METHODS:** ] The Method study was conducted in the OPD of two different diabetic centers in Karachi. Fifty patients participated in a randomized cross-over study with two 6-week treatment periods using the insulin pen or conventional syringes. The limitation of age was sixty years.

**RESULTS:** Result Hypoglycemic episodes did not differ significantly between both kinds of treatment and no severe hypoglycemia was recorded. The insulin dosage and blood glucose profiles were also observed. Thirty five patients found the functioning of the insulin pen easy to understand in emergency and preferred it for future treatment because the conditions of insulin administration with insulin pen are quicker and easier than with conventional syringes. Furthermore, the opinion of healthcare professionals including physicians and pharmacists was also the part of study

**CONCLUSION:** Conclusion The two parameters that patients and health care experts helped to conclude that the durable insulin pen is safe, efficacious and is highly accepted in emergency and over 60 years old diabetic patients.

Key words: Insulin Pen , Conventional Syringes , Reluctance (Psychological Insulin Res

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## Complications and drug-related problems in hemodialysis patients at Burapha University Hospital, Chonburi, Thailand

Thiyapha Werayachankul\*

### Abstract

**OBJECTIVES:** To identify the complications, drug-related problems (DRPs) and evaluate the effectiveness of pharmaceutical care in hemodialysis patients at Burapha University Hospital, Chonburi, Thailand.

**METHODS:** Prospective study was performed at Burapha University between July 2017-June 2018. Hemodialysis patients (HD) were enrolled to the study. The baseline characteristic including gender, age, comorbidity, cause of ESRD, complications were recorded. Pharmacist identify the DRPs and solve problems by intervention. Knowledge improvement and patients satisfied were recorded. Knowledge improvement were compared by the paired t-test. P-value <0.05 was considered statistical significance.

**RESULTS:** From 36 HD patients, there were 17 males and 19 females. Mean age was 58 years old (21-88 years old). The major cause of ESRD was hypertension (63.9%). Complications were including acidosis (88.9%), anemia (77.8%), hyperphosphatemia (75%), secondary hyperparathyroidism (72.2%), intradialytic hypertension (27.8%), and hyperkalemia (13.9%). There were DRPs 77 events including, untreated indication 25, sub-therapeutic dosage 16, non-compliance 15, over dosage 11, improper drug selection 6, and adverse drug reaction 5. Patients have improved knowledge with mean difference 3.06 (p-value < 0.001) after the pharmaceutical care. Moreover, the satisfied index has an excellent level (9.83/10).

**CONCLUSION:** Thus, pharmacist is the one health care professional who can take patients and improve the outcomes. And there are the best in multidisciplinary care team working to reduce DRPs and improve treatments.

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# Poster Presentations: Industrial Pharmacy and Marketing



## Peels of *Solanum tuberosum* and *Dioscorea alata* as disintegrant in paracetamol tablet formulation

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### Abstract

**OBJECTIVES:** Peels are known to be major wastes generated in the extensive use of agricultural crops for food and industrial production. This necessitates their utilization to reduce environmental pollution and increase their economic value. This study investigated the potential of *Solanum tuberosum* (ST) and *Dioscorea alata* (DA) peel starches as disintegrant in the formulation of paracetamol tablet.

**METHODS:** The isolated starches were characterized for their physicochemical properties and their characteristics as disintegrant in paracetamol tablet were assessed based on United States Pharmacopeia (USP) specifications.

**RESULTS:** ST and DA peel starches displayed off-white to light brown color, fine powder with characteristic odor, and starch yields of 16.50% and 21.82%, respectively. Both have acceptable LOD, pH and limit of iron, in conformance with USP specifications. Their small to medium, slightly smooth and globular granules resulted in fair to passable flow property and acceptable solubility. The formulated paracetamol tablets passed the acceptance criteria for all the quality control tests of USP paracetamol tablet monograph.

**CONCLUSION:** ST and DA peel starches demonstrated acceptable physicochemical properties and their quality as disintegrant in paracetamol tablet conformed to USP paracetamol specifications. This suggests that these can be utilized as alternative sources of disintegrant in pharmaceutical preparations.

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## MICROCRYSTALLINE CELLULOSE DERIVED FROM RICE (*Oryza sativa* L.) STRAW WASTE AS BINDER FOR TABLET FORMULATIONS

Virgilio Y. Tan II\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The purpose of this study is to derive Microcrystalline Cellulose (RS-MCC) from rice straw that will be used as tablet binder.

**METHODS:** Freshly collected rice straws were milled, processed and hydrolyzed using multistage pulping method to produce microcrystalline cellulose. Physicochemical tests were performed to characterize the extract.

**RESULTS:** The result yielded 20% w/w of MCC from the starting material. It is odorless, white, fine powder, which are irregularly shaped fibrous particles, with passable flow properties that turns violet-blue with iodinated ZnCl<sub>2</sub>, and insoluble in water. Tablet hardness containing 5% RS-MCC (p=0.715) as binders showed no significant difference to the tablets with the reference MCC (p=0.715). As to its Friability, reference MCC tablets were less friable (0.59%) when compared to the rest of the formulations, and significantly differs (p=0.000) with that of the 5% (0.70%) (p=0.119) and 7% (0.67%) (p=0.119) formulations. All formulations significantly differs in terms of disintegration time.

**CONCLUSION:** RS-MCC obtained from the straw of rice conformed to the official specifications in the National Formulary 32. The powder and tableting properties indicate that RS-MCC and the reference MCC are comparable, hence RS-MCC, is a potential binder in tableting.

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## Phospholipid Stabilized Nanoemulsions in Small Scale

Dr. Shila Gurung<sup>\*1</sup>

### Abstract

**OBJECTIVES:** Nanoemulsions are kinetically stable, transparent or translucent systems typically in the range of 20-200 nm. They are not thermodynamically stable and cannot be formed spontaneously. Instead they require high energy input, provided by using high-shear stirrers, high pressure homogenizers or ultrasound generators which are large scale methods. The main objective is to develop a method to prepare nanoemulsions in small scale (< 1 mL).

**METHODS:** A combination of hand extrusion and detergent removal methods was used in this study. Sodium cholate was used as a detergent and later removed via dialysis after extrusion. Extrusion was performed in two steps through the polycarbonate membranes of 400 nm and 200 nm. Nanoemulsions were characterized by measuring their particle size, size distribution and zeta-potential using Photon Correlation Spectroscopy and Cryo-TEM pictures. Nanoemulsion stability under refrigeration was also studied.

**RESULTS:** Extrusion through the polycarbonate membranes (51x400 nm and 153x200 nm) produced nanoemulsions having particle size below 200 nm (diameter). The polydispersity index (PDI) value below 0.1 explained that the nanoemulsions were homogenous. Similarly, the zeta-potential was measured to be above -30 mV which is sufficient to keep nanoemulsions stable for as long as 7 months when stored under refrigeration. The Cryo-TEM pictures revealed that the use of sodium cholate at a concentration of 30 mM not only increased the number of nanoemulsions but also reduced the number of spontaneously formed liposomes drastically.

**CONCLUSION:** It was concluded that this method could be established as small scale method of preparing nanoemulsions which will reduce the cost of preparation as well as the cost of disposal of toxic chemicals (radioactive substances) used for specific targeting of nanoemulsions in scientific research.

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## Optimization of ibuprofen hydrogel-based matrix tablet formulation

Giselle Clarisse Celiz\*<sup>1</sup>, Leaño, Catherine Joy B.<sup>2</sup>, Arollado, Erna C.<sup>2</sup>

### Abstract

**OBJECTIVES:** Ibuprofen, a nonsteroidal anti-inflammatory drug, is poorly soluble leading to its slow systemic absorption. This study aimed to optimize the formulation of ibuprofen hydrogel-based matrix tablet to improve its dissolution for better oral bioavailability.

**METHODS:** Raw material of ibuprofen was subjected to quality control test and compatibility test with the excipients. Six trial formulations were performed, with polyethylene glycol (PEG) 6000 as the matrix for the first three trial formulations and carbopol for the rest of the trial formulations. Finished product quality control (FPQC) tests were conducted to choose the best formulations to be compared against the marketed products using comparative dissolution and stability studies.

**RESULTS:** Among the trial formulations, Formulation 3 and Formulation 4 displayed highly satisfactory results from FPQC. Formulation 4 was chosen to be the best formulation since it passed the stability tests. Also, the results of disintegration tests, comparative dissolution, and stability studies suggested carbopol as the better polymer over PEG 6000 which made Formulation 4 as the best.

**CONCLUSION:** Based on the percent drug release and similarity factor, it was concluded that the formulation optimized in this study was considered to be similar with the standard liquigel.

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## Formulation and Evaluation of Topical Gel from Crude Ethanolic Extract of *Plantago major* Linn. (Plantaginaceae)

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### Abstract

**OBJECTIVES:** The aim of the study was to formulate *Plantago major* Linn. (*P. major*) ethanolic leaf extract into a topical gel. Furthermore, the researchers investigated the crude extract regarding its excipient-extract compatibility followed by dosage form evaluation.

**METHODS:** Six different gel formulations of extract (1%, 2%, 3% w/v) were prepared with varying antimicrobial excipients. F1 to F3 contain Sodium metabisulfite (SM) while F4 to F6 contain Methylparaben & Propylparaben (MP/PP). Two negative-control gels are prepared with SM or MP/PP. These formulations were evaluated for drug content, swelling index, spreadability, pH, rheologic study, and organoleptic evaluation. Excipient-extract compatibility was analyzed through Differential Scanning Calorimetry (DSC).

**RESULTS:** Excipient-extract compatibility was presented through DSC thermograms. Peaks of both extract and excipients were assessed using a Relative Percent Deviation (RPD) of not more than 5% to indicate compatibility. Methylparaben and Propylparaben had RPD above 5% (Peak 1 & 2: 13% & 6.65% for the Methylparaben RPD while 34.16% & 7.87% for the Propylparaben RPD). Sodium metabisulfite had a 2.70% RPD which was below 5%. Formulations were considered similar with regards to physical parameters in the gel formulation evaluation. The pH values of the formulations were found to be in the range of 6.5 to 7.1 which is appropriate for normal skin pH.

**CONCLUSION:** The parabens were not suitable as antimicrobial agents for *P. Major*. However, compatibility was shown in the formulation containing Sodium metabisulfite. The research supported the notion that *P. major* ethanolic extract showed signs of acceptability in the formulation as a topical gel.

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## DEVELOPMENT AND CHARACTERIZATION OF HYGROSCOPICITY CONTROLLED SUSTAIN RELEASE FORMULATION OF DIVALPROEX SODIUM

*Uttam Budhathoki\*<sup>1</sup>*

### Abstract

**OBJECTIVES:** 1. Development of hygroscopicity controlled free flowing granules of Divalproex sodium using solid dispersion technique

**METHODS:** The present work focuses on the role of PEG 8000 as a polymer to control hygroscopicity of an API using solid dispersion technique and incorporation of HPMC K 100 M in the solid dispersion to obtain a sustained release profile of the drug

**RESULTS:** In the study a solid dispersion was obtained using PEG 8000 and HPMC K 100 M as polymer for matrix formation. The obtained granular solid dispersion was studied for their hygroscopicity using moisture uptake studies. FTIR and DSC analysis of the API and solid dispersion did not show any significant interaction between API and components of the solid dispersion.

**CONCLUSION:** the API and a final optimized formulation was developed and tested. It was observed that the polymers significantly controlled the hygroscopicity of the API to work in the normal RH of any Pharmaceutical Industry (RH 52%) without any problem. They were also successful in creating an excellent contro

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## Double-Coated Nanoparticle of Ribosome Inactivating Protein (RIP) from *Mirabilis jalapa* L. Prepared from Chitosan-Sodium Tripolyphosphate and Alginate-Calcium Chloride, The New Strategy for Protein

Hilda Ismail<sup>\*1</sup>, Amalia Miranda<sup>1</sup>, Ronny Martien<sup>1</sup>, Ummi Hadiba Ciptasari<sup>1</sup>, Ariyani Kusniasari<sup>1</sup>, Dewa Ayu Arimurni<sup>1</sup>, Made Dwi Pradipta Wahyudi S.<sup>1</sup>, Sismindari<sup>1</sup>

### Abstract

**OBJECTIVES:** Nanoparticle formulation is known as a promising strategy in drug delivery system to ensure the drug bioavailability. However, this strategy still need improvement as regard to the drug-unstability risk in the GI tract during oral administration. The objective of this research is to make a double coated nanoparticle system to overcome the problem. Ribosom Inactivating Protein from *M. jalapa* (RIP MJ-C) which has been proven to have anticancer acti

**METHODS:** Double coated nanoparticle was prepared in a two-steps ionic gelation coating method. The core nanoparticle (NPMJ-1) was prepared in a pH range of 3,5-5,5 using Low Molecular Weight chitosan (0,3-0,5%) and 0.03% tripolyphosphate as crosslinker. Particle stability and entrapment efficiency were used as parameters to decide the best formula. The second layer was prepared by coating NPMJ-1 with 0,3% alginate and 0,1-0,3% calcium chloride. The obtained nanoparticle (NPMJ-2) was then analyzed for its

**RESULTS:** The results showed that the optimum formula for the first coat layer of the nanoparticle (NPMJ-1) was a mixture of LMW chitosan (0,5%) and tripholyphosphate (0,03%). The best pH for the medium was 5,5, resulting in NPMJ-1 nanoparticles with entrapment efficiency (EE) of  $57,10 \pm 0,04\%$ . Observation on nanoparticle stability revealed that NPMJ-1 stable during 7 days storage. The obtained NPMJ-1 was then coated with the second layer, mixture of alginate (0,3%) and calcium chloride (0,1%), which succesfully produce the double coated nanoparticle (NPMJ-2). This promising double coated nanoparticle has particle size of 729.8 nm and zeta potential of -14,4 mV. Observation on the nanoparticile stabili

**CONCLUSION:** The double coated nanoparticle of RIP MJ-C has been succesfully prepared from chitosan and tripolyphosphate at pH of 5.5 as the first coat layer, covered by alginate-calcium chloride coat for the second layer. The double coated nanoparticles shows good stability, with EE value of 54%, particle diamet

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## COMPARISON OF FORMULATION AND IN-VITRO EVALUATION OF COLON SPECIFIC MESALAMINE TABLET USING DIFFERENT POLYMERS

Saraswati Dangol\*<sup>1</sup>, Panna Thapa<sup>2</sup>, Uttam Budhathoki<sup>2</sup>

### Abstract

**OBJECTIVES:** Colon targeted drug delivery system is highly desirable for local treatment of a variety of inflammatory bowel diseases such as ulcerative colitis, Crohn's disease, amebiasis, colonic cancer, local treatment of colonic pathologies, and systemic delivery of protein and peptide drugs. The aim of this study was to develop the formulation using different polymers which could target the delivery of mesalamine in the colon efficiently.

**METHODS:** Two different approaches were used for the development of the formulation. One approach involved the coating of the mesalamine tablet with Eudragit S 100 & Eudragit L 100 mixture in different ratio. The other involved coating the tablet with Hydroxypropyl methyl cellulose (HPMC) (15 cps) and then with Eudragit S 100. In-vitro dissolution of the tablet was carried out in 0.1 M HCl, buffer pH 6.0, buffer pH 7.2 and buffer pH 6.4 mimicking the pH of the stomach, duodenum, terminal ileum and colon.

**RESULTS:** Among the 18 different formulations, 4 formulations coated with HPMC (15 cps) and Eudragit S 100 were found to be successful for the delivery of mesalamine to phosphate buffer pH 6.4. There was the premature release of the drug in buffer pH 7.2 in the formulation coated with Eudragit L 100 and Eudragit S 100 mixture. It was found that the outer coat of Eudragit S 100 i.e. pH dependent polymer and inner coat of HPMC i.e. time dependent polymer is required to target the release of drug in buffer pH 6.4. This might be due to prevention of the drug release in 0.1 M HCl and buffer pH 6.0 by Eudragit S 100 layer and buffer pH 7.2 by HPMC layer due to the creation of lag time of few hours.

**CONCLUSION:** Therefore, the formulation coated with time dependent polymer i.e HPMC (15 cps) and then with pH dependent polymer i.e Eudragit S 100 was found to be successful for the release of the drug in buffer pH 6.4 which resemble the pH

of the colon than coating with Eudragit S 100 & Eudragit L 100 mixture.

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## Ofloxacin Tablets Degradation Study Using Acid-Base Media

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### Abstract

**OBJECTIVES:** Since there are still no data on the degradation products and patterns of drugs in the pharmacopeia the objective of the study is to identify the degradation pattern of the commercially available ofloxacin tablets and the ofloxacin reference standard on acid-base media using forced degradation study.

**METHODS:** Ofloxacin tablets were pulverized and dissolved. pH2, pH4, pH6 and pH8 was used to dilute a 20ug of the sample, standard and blank in one milliliter concentration. Each batch of samples were triplicated and analyzed using HPLC (Shimadzu Nexera X2) every 48hrs. Peak area, peak height and retention time were observed in the study for 6 days

**RESULTS:** An isocratic method was done for the analysis. Triplicate testing were done and based on the results gathered the observation shows that the Retention time for Ofloxacin is 17.786 at the flow rate 1ml/min and the trend shows that the Area of the Reference standard increases as the height decreases while the tablets shows the same trend except for pH 8. The Reference standard shows degradation as the pH lowers wherein less degradation is seen in pH 4 and 6 while at pH 2 the average increase in area of 2.071% and average decrease in height of 2.958% which shows degradation for 6 days. While the ofloxacin tablets showed a high degree of degradation.

**CONCLUSION:** Based on the results gathered, Ofloxacin tablets degraded in the method employed and that the sample is more susceptible in degradation when having it exposed in acidic and to a lesser extent in basic environment as seen on the HPLC data and showed different degradation pattern with the reference

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## Biowaiver Study of Levofloxacin Tablet, its formulation and in-vitro evaluation with varying concentration of excipients

Rajiv Dangol<sup>\*1</sup>, Rajani Shakya<sup>2</sup>, Shailendra Shrestha<sup>2</sup>

### Abstract

#### OBJECTIVES: General Objective

To perform biowaiver study of the marketed and innovator product of Levofloxacin Tablets and to formulate bioequivalent product.

#### Specific Objectives

- Formulation of Levofloxacin tablet using varying amount of excipients and its in vitro evaluation.
- Biowaiver study of formulated tablet, innovator product and marketed products.

**METHODS:** Sampling was done on the basis of highest sale of Levofloxacin and was compared with innovator brand. The study also selects the excipients from the innovator product list and formulate drug using Plackett Burman design. There were 12 formulations under study and in vitro dissolution study was performed and then analyzed by UV spectrophotometer at 326nm. The dissolution and permeability study was carried out in both criteria of WHO and US FDA using USP apparatus 2 and three dissolution media.

**RESULTS:** The release pattern of the innovator when compared to other 3 test products shows significant difference. Though the 3 marketed test products has meet the biowaiver criteria for dissolution testing ( $\geq 85\%$  within 15 min), the release pattern has significant difference when compared to innovator. The data complies with the biowaiver criteria and no similarity factor testing is required further, because drug release is more than 85% within 15 minutes. The release has been decreased by around 5-10 % when agitated with 50 rpm. So, the use of paddle speed 75 rpm is found to be representative for the study as mentioned in WHO guideline.

**CONCLUSION:** The drug release profile of marketed sample compared with innovator brand was found satisfactory as per WHO and US FDA Guidelines. The formulation was then optimized and results were obtained so on. Hence, the effect of surfactant and other parameters can be optimized for the desired release of drug

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## Brand loyalty: A study on skin care products among residents of Klang Valley, Malaysia

Nagashekhara Molugulu\*

### Abstract

**OBJECTIVES:** Asia-pacific cosmeceuticals market contributed nearly 63.1% to the global market. Expansion of this market showing that people giving more interest in maintaining a youthful appearance. There are various factors affecting an individual's repeat purchasing behavior and being brand loyal. In this study, the relationship between the factors and brand loyalty was examined with the help of research model generated from the Theory of Planned Behaviour.

**METHODS:** A cross-sectional study was conducted in Klang Valley, by involving a total of 272 respondents. A pre-tested structured questionnaire was distributed via stratified random sampling technique and collected data analyzed by using SPSS version 17.0. A non-parametric test was carried out to analyze the data.

**RESULTS:** Residents of Klang valley found brand loyal towards the brand of skin care products they use. This study revealed that past experience with a brand, brand trust, formulation aspects and packaging aspects influence an individual towards brand loyalty. Brand loyal consumers were found less-price sensitive. Subjective norms do not show any significant relationship towards brand loyalty in this study.

**CONCLUSION:** Understanding the factors influence an individual towards brand loyalty is an important strategy for the scientist and marketing professionals in cosmeceutical industry to create an innovative skin care products that fulfill the customers need and enhance the company's brand growth.

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## Formulation, Evaluation and Optimization of Repaglinide Gastroretentive Drug Delivery System Using 24 Factorial Designs

Bandameedi Ramu\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The objective of the present work is to design and evaluate gastroretentive bioadhesive drug delivery systems of repaglinide improves the type II diabetic mellitus therapy by using 24 factorial design employing hydrophilic polymers such as hydroxy propyl methyl cellulose K4M (HPMC K4M), hydroxy ethyl cellulose (HEC), Chitosan and effervescent material sodium bicarbonate (NaHCO<sub>3</sub>).

**METHODS:** The hydrophilic matrix system was designed by selecting of HPMC K4M, HEC, Chitosan, NaHCO<sub>3</sub>; the effects of all formulation variables will influence the drug release. 24 factorial studies were designed to determine the interactions of four independent variables at two levels (low and high concentrations). Minitab® 15, version was used to study the factorial effects and investigates the one, two, three, four way interactions upon t50% of drug release as a response factor.

**RESULTS:** Hydrophilic systems with sodium bicarbonate were chosen to fabrication of gastroretentive drug delivery system. These systems absorb water, causing to swell. The evolved CO<sub>2</sub> gas will be entrapped in hydrated gel causing them to float, promotes gastric retention and allows the drug to dissolve and followed by diffuse and erode the system. The amount of the drug to diffuse and erode depends upon the water penetrability and energy required to relax the polymeric chains. Polymeric chain length, cross linking ratio influences the gel strength of the polymer, higher the viscosity of the gel system, more retards the drug release. The aqueous solubility of the polymers will decide the drug release.

**CONCLUSION:** Gastroretentive drug delivery systems were optimized by 24 factorial designs of four variables at two levels. The main and combined effects of four variables were studied by drawing of normal effects charts. One-way and two-way interactions were significantly affects the drug release mechanism.

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# Poster Presentations: Pharmaceutical Education



## Curriculum Mapping and Assessment of the Bachelor of Science in Pharmacy Program of the University of Santo Tomas

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### Abstract

**OBJECTIVES:** Assess whether the Program Intended Learning Outcomes (PILO) and the Thomasian Graduate Attributes (THOGA) are integrated within the pharmacy curriculum through mapping of the learned and assessed curricula; to create a visually accessible means of presenting the mapping data through the use of radar plots; and to be able to have recommendations and identify any deficiencies related to the learning objectives of the pharmacy program based on the results of the study that would help improve the pharmacy curriculum.

**METHODS:** This study employed a qualitative and quantitative study design. A survey questionnaire with a 5-point Likert-type scale and a close-ended question was utilized to gauge the extent to which the students perceive the graduate attributes and learning outcomes of the curriculum are integrated within each course. Data was collected and interpreted in the form of radar plots using Microsoft Excel.

**RESULTS:** Each course targeted different learning outcomes or competencies, therefore each attribute generated its own shape in the radar plot. The general weighted average for each Graduate Attribute was given specific ranges of value for verbal interpretation. The graduate attributes and the learning outcomes suggest concordance with the pharmacy curriculum. "Servant-Leader" appeared to receive less relative emphasis at the course level compared to the three other attributes.

**CONCLUSION:** The mapping process allowed an evaluation of the attributes and learning outcomes. The radar plots provided visual representation of the data, and the respondents' feedback was generally positive. Recommendations are made for the improvement of the pharmacy curriculum.

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## GAP ANALYSIS ON INTERPERSONAL SKILLS OF GRADUATING PHARMACY STUDENTS IN A PRIVATE UNIVERSITY IN METRO MANILA

*Crislee M. Torio\*<sup>1</sup>, Emilie P. Pamplona, PhD<sup>1</sup>*

### Abstract

**OBJECTIVES:** The study identifies priority gaps in the interpersonal skills of graduating pharmacy students from a private university in Metro Manila for the purpose of developing an interpersonal skills enhancement program.

**METHODS:** Eighty-one Pharmacy students satisfied the study's inclusion criteria. A 21-item valuation form was subjected to Cronbach- $\alpha$  for validation and reliability test prior to use. The students' perception on the importance of the interpersonal skills element and their present skills level were rated using a 6-point Likert scale. The difference was taken as the gap. Significant differences in the responses were determined using ANOVA at p-value 0.005. Priority gaps were identified using quadrant plot.

**RESULTS:** Out of the 21 interpersonal skills element, self discipline was ranked as "most important" and visual presentation was the "least important." Mean rating for all elements was "very important." Pleasant attitude was considered as "strength" and oral presentation skills as "weakness." The mean rating for the students' present skills ranged from "good" to "slightly good." The greatest gap was on oral presentation skills while empathy had the least gap in the interpersonal skills element. Quadrant plot showed oral communication skills, decision making, critical thinking and self-confidence were considered "highly important" but the respondents felt those were where they have low performance.

**CONCLUSION:** Oral communication skills, decision making, critical thinking and self-confidence are the interpersonal skills element that need immediate enhancement. Programs that expose Pharmacy students to constant communication and clinical training should be included in the learning strategies.

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## Postgraduate Year 2 Community Pharmacy Residency Program Pilot Plan

Hung-Yu Huang<sup>\*1</sup>, Chien-Chiang Chiu<sup>2</sup>, Shu-Yuan Hsieh<sup>2</sup>

### Abstract

**OBJECTIVES:** At present, the Postgraduate Year (PGY) for pharmacists in hospitals of Taiwan was on track. However, the Community Pharmacy Residency Program (CPRP) for community pharmacists has not yet been established. In view of this, a pilot plan is developed to guide the new pharmacists practicing systematically. The two-year period would be followed by a review to provide a reference for the future CPRP development by the Pharmaceutical Society of Taiwan.

**METHODS:** Use the self-scoring questionnaire to understand the learning status of CPRP pharmacist. Self-scoring questionnaire is conducted semiannually from the beginning of the program for a period of two years with five self-scoring. At last, evaluate the differences between the pre-training and post-training status.

In the meantime, a pharmacist with the similar background is assigned to practice in a community pharmacy without CPRP. At last, evaluate the differences between the two pharmacists.

**RESULTS:** After five times self-scoring, the final scores of CPRP pharmacist in the four competencies have grown compared to the initial scores. (Delivery of patient care competencies: 3.5 vs. 1.1; Personal competencies:3.4 vs. 1.1; Problem solving competencies:3.5 vs. 1.3; Management and organization competencies:3.2 vs. 1)

The comparison of final scores between the two pharmacists, for the delivery of patient care competencies, the self-scoring scores are not significant different (3.5 vs. 3.6). Additionally, the self-scoring scores of other competencies are significant differences. (Personal competencies:3.4 vs. 2.8; Problem solving competencies:3.5 vs. 2.4; Pharmacy management ability:3.2 vs. 2.2)

**CONCLUSION:** In the future, if the Community Pharmacy Residency Program (CPRP) can be widely promoted, new pharmacists who want to develop into community pharmacy can obtain more complete and solid competence, hold the “person-centered care” spirit to care for patients and enhance the patients' quality of life.

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## A multi-modal approach to inter-professional training program for postgraduate pharmacists

Chiu Ku Huang<sup>\*1</sup>, Yi Nong Lin<sup>1</sup>

### Abstract

**OBJECTIVES:** Patients who access medical service from the hospital often require the involvement of members from a multi-disciplinary team. Collaboration with other professionals is necessary for undergraduate pharmacists. The aim of this study was to examine the effects of an inter-professional training program developed for postgraduate pharmacists to promote holistic health care.

**METHODS:** Junior pharmacists were planned to participate cross-disciplinary case discussion meetings that held every three months. Before that, consensus meeting were conducted to set the learning goals of inter-professional practice (IPP). Before the end of PGY training period, they needed to pass the cross-disciplinary objective structured clinical examination (OSCE).

**RESULTS:** The total number of participants from 2014 to 2017 was 36. Post-course questionnaires were used to collect attitudes toward IPP and degree of satisfactions. Participants were highly satisfied (average satisfaction score was  $9.1 \pm 0.6$ ) and achieved the goals that were set before every course. All participants had passed the assigned OSCE on schedule. Through the multi-discipline interactive meetings, participants obtain a practical view of holistic health care. But large amount resources were required to carry out the OSCE exam, even it worth.

**CONCLUSION:** Through the multi-modal training program, junior pharmacist could learn about professional expertise in other disciplines and the different roles necessary in the health care process.

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## The effect of Kahoot web-based learning on learning skills of Pharmacy Students: The trend in Clinical Pharmacokinetic Course for 2 generations

Karunrat Tewthanom\*

### Abstract

**OBJECTIVES:** Kahoot is a web-based learning that use worldwide in the education field. From the review literature, lecture with a Kahoot web-based learning will improve the learning skill. However, there have been a few study of using Kahoot web-based learning in pharmacy education. Therefore, the aim of this study is to compare pre-and post -learning skill using Kahoot web based learning and observe the trend of effect for 2 generations.

**METHODS:** : Pre-Post test was establish in Clinical Pharmacokinetics class of 4th year Pharmacy Students for 2 consecutive generations. Before class, the students were did the questionnaire to evaluate learning skill and then this group was beginning to enroll the class using Kahoot web-based learning. The 8 dimensions of learning skills; Literacy, Numeracy, Reasoning, Creative problem solving, Critical thinking, Collaborative, Communication and Computing were evaluated. The trend of effect was observed.

**RESULTS:** The data from 21 Pharmacy Students (11 from year 2016, 10 from year 2017 ) who enroll Clinical Pharmacokinetics course in topic "Therapeutic Drug Monitoring of Aminoglycosides" shown that improved of 8 dimension skills scores after learning with Kahoot web-base as follow (Mean+ SD) ; Literacy (3.29 + 0.64 vs 4.19+ 0.40), Numeracy (3.24 + 0.83 vs 4.05+ 0.50), Reasoning (3.29 + 0.56 vs 4.19+ 0.40), Creative problem thinking (3.05 + 0.59 vs 4.19+ 0.60), Critical thinking (3.10 + 0.70 vs 4.10+ 0.62), Collaborative (3.19 + 0.75 vs 4.19+ 0.40), Communication (3.24 + 0.62 vs 4.24+ 0.44), and Computing (3.14 + 0.73 vs 4.00+ 0.62). The separate analysis results had the same trends.

**CONCLUSION:** From the results, Kahoot web-based leaning could improve learning skill in Pharmacy Students. The effects consist in 2 generations. However, the confirmation study in large group also needed.

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## Effective Learning of Clinic-based Pharmaceutical Care for pharmacists through the Application of Cloud Continuing Education Program

Yung-Jun Hung<sup>\*1</sup>, Yi-Ping Hsiang<sup>1</sup>

### Abstract

**OBJECTIVES:** In the generation of information explosion, the knowledge of pharmacy grows rapidly. Hospital pharmacists have to receive continuing education program and follow the latest professional knowledge at all times for providing better pharmaceutical care.

Therefore, it is an important issue to help the pharmacists with a heavy workload to get effective learning methods. In our department, we have tried to use cloud continuing education program for the

**METHODS:** To design a short clinic-based cases lesson plan (10 minutes), several clinical pharmacists have discussed what elements an easy lesson plan should have and then design them into a lesson plan model, so that it is easier for the learners to understand. We combined google cloud, video lectures and tests to conduct e-learning in this education program. The effect of our execution of teaching pattern improvement are presented through the score and the learning satisfaction of the learners.

**RESULTS:** We have designed 65 lesson plans, and these plans were separated into 2 parts, which the basic lesson plans accounted for 80% (n=52) and the advanced lesson plans accounted for 20% (n=13). We mainly use multiple choice as the way we evaluate the learning effect, the average score(hundred mark system)is  $93.5 \pm 10.2$ . Self-learning satisfaction of the e-learning (Likert's scale) includes (1) content of lesson plans:  $4.55 \pm 0.35$  (2) difficulty of lesson plans:  $3.00 \pm 0.56$  (3)level of help to clinical work:  $4.72 \pm 0.23$  (4) self-learning satisfaction:  $4.65 \pm 0.30$

**CONCLUSION:** With the shortage of pharmacists among hospital pharmacy, it is important to provide effective learning methods. The e-learning pattern has improved the limitation of the time and space the pharmacists faced. We can minimized the learning time to achieve the goal of effective learning.

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## Massive Open Online Courses of Good Pharmacy Practice

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### Abstract

**OBJECTIVES:** According to the joint statements of “Good Pharmacy Practice (GPP) - Standards for Quality Services” issued by the FIP and WHO in 2011, the mission of pharmacy practice is to contribute to health improvement and to help patients with health problems to make the best use of their medicines. This research aims to evaluate improvements of understandability of GPP concept via massive open online courses (MOOCs) among worldwide pharmacists.

**METHODS:** These courses provide three stages of GPP: basic, moderate and advanced. The targets of basic course for pharmacists are to understand the current situation of GPP and to realize the standards and preparation of sterile products and chemotherapy drugs. As for the moderate GPP course, we aim to introduce the drug delivery system and the clinical pharmacy services. Finally, pharmacists will understand the overall roles of the pharmacist in the practice field and the continued education.

**RESULTS:** A questionnaire was conducted to measure the understandability of GPP concept. The survey and data collection are in process. Detailed results will be presented in the FAPA Congress.

**CONCLUSION:** A positive effect of the understandability of GPP concept by MOOCs is expected.

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## Knowledge Level Study of Pharmacy Students on the Role of Pharmacists in Center of Maternal and Child Health for Safety Nutrition

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### Abstract

**OBJECTIVES:** Center of Maternal and Child Health (CMCH) is a health activities conducted from, by and for the community. CMCH is aimed to reduce infant mortality, maternal mortality, and information for health care and nutrition. Hazardous ingredients are often added to food. Therefore, pharmacists as one of the health professional should be involved in the activities of CMCH. The purpose of this study is to obtain the knowledge of Pharmacy students on CMCH.

**METHODS:** A total of 216 respondents consisting of Indonesian pharmacist's students have been asked to fill in validated questionnaires.

**RESULTS:** The result showed that 74.07% knew the existence of CMCH in residence area, 100% were informed for the definition and all of the respondents were aware of its function. However, only 16.00% mentioned that the pharmacist were involved in CMCH. Fortunately, 97.69% still stated the need of pharmacists and 97.22% percent mentioned to provide counseling about safety nutrition.

**CONCLUSION:** It is concluded that introduction of CMCH to pharmacy students are urgently needed. Furthermore, this result becomes the basis for the implementation of community service with theme of pharmacist empowerment in CMCH.

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## Competencies for certified pharmacist in palliative drug therapy according to ibstpi® method

Kazumi Kawamura\*<sup>1</sup>, Hiroshi Nakano<sup>2</sup>, Shigeki Tsuzukur<sup>2</sup>, Katsuaki Suzuki<sup>2</sup>

### Abstract

**OBJECTIVES:** There are various definitions of competencies, and the recent development is mainly based on qualitative inductive content analysis method. We followed the competencies development procedure under this ibstpi® definition according to The ibstpi® Competency Development Model.

**METHODS:** Specifically, we have reviewed the practice and the literature in all chapters of the text "Palliative Medical Medicine" that is standard textbook for the qualification exam of the Board Certified Pharmacist of the JPPS. Next, I repeated the identification and verification of the competency proposal by the responsible members. This competency proposal was evaluated conformity by members of the JPPS, then I have tied up with the educational training provided by the JPPS.

**RESULTS:** The developed "Competencies" are as follows.

1. Base Competency of Palliative Pharmacotherapy Pharmacists certified by JPPS
  - 1.1. Professionalism / Ethics
  - 1.2. Related system / regulation
  - 1.3. Self-study and education
2. Introduction to palliative care / competency on basic knowledge of cancer
  - 2.1. Introduction to palliative care
  - 2.2. Basic knowledge of cancer
3. Competency on palliative drug therapy
  - 3.1. Pain management
  - 3.2. Mental symptom management
  - 3.3. Other physical symptom management
4. Interpersonal Competency of Palliative Pharmacotherapy Pharmacists Certified by JPPS
  - 4.1. Communication skills
  - 4.2. Team Medical · Health care worker Collaboration
  - 4.3. Comprehensive Assessment

**CONCLUSION:** Originally, certification/professional qualification must be established to provide high service to citizens. Based on the results of present study, I hope that the certification/professional qualification system for special pharmacists will be reviewed, integrated and widely accepted by society.

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## The Communication Educational Program for Pharmacist on Sensitive Topics

Dr. Etsuko Arita\*<sup>1</sup>, Miku Ogura, Rieko Takehira<sup>2</sup>

### Abstract

**OBJECTIVES:** The purpose of this study is to develop the communication educational program for pharmacist on sensitive topics using the medicine instruction scene of the drug with the teratogenicity.

**METHODS:** We prepared two scenarios with different patient backgrounds, one is female patient who can pregnancy, the other is an older male patient. Then we took the role-play medicine instruction scenes of drug with the teratogenicity, and made an audiovisual teaching material (DVD). After that we received the evaluation of DVD by the specialists of the pharmaceutical communication education to have answered the questionnaire about good use for pharmacist communication education.

**RESULTS:** The specialists of the pharmaceutical communication education evaluated this DVD so good. They suggested to use this DVD not only in the lecture but also to combine with role play by simulated patients in the workshop.

**CONCLUSION:** This audiovisual teaching material was appreciated by specialists to learn how to communicate with patients about sensitive topics. So we intend to use this DVD in the workshop for pharmacist.

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## Training For Safe Use of Medicines Through Experiential Learning

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### Abstract

**OBJECTIVES:** The Korean Pharmaceutical Association of Appropriate Drug Use(PAADU) developed a new experiential learning program for safe use of medicine. Students and their parents are expected to know the types of medicines and their working principles that are frequently encountered in their daily lives, and learn how to use medicines properly in everyday life through safe use education. Also give them a full understanding of the pharmacist's role.

**METHODS:** For the 5th grade of elementary school, 1st grade students of junior high school, and their parents, the experiential learning program was divided into 6 kinds according to the theme as follows. 1) What is a medicine 2) How long the medicine is used and how to keep it 3) How to use it correctly 4) How to use household first-aid medicine 5) How to use medicines safely (Ten Commandments) 6) Field study as a pharmacist

**RESULTS:** It is an efficient educational method because it can understand more effectively through experiential learning about the principle of action of drugs and proper use of drugs, rather than simply conveying the contents of drug safety use to the students and their parents by lecture.

**CONCLUSION:** It is important to provide and understand accurate information about the role of pharmacists and pharmacies in the public. This program for safe use of medicines can improve the communication and understanding of medicines and can be a good means of promoting the social function of pharmacists.

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## Effectiveness of Non-Technical Skills Training Program for the Hospital Pharmacists

Shu Fen Huang\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Junior pharmacists often felt anxiety and depression when start to face patients directly, although they had passed numerous written and oral exams.

The reason is the amount of training focus more on knowledge and technical skills, from pharmacy school curricula to postgraduate training. The aim of this study was to evaluate the efficacy of a mixed-methods training course on non-technical skills (NTS).

**METHODS:** The course consisted of an introductory lecture, role play scenarios, group discussions and debriefings. It held once every three months in 2017, different scenario arranged for training NTS of hospital pharmacists, such as social skills, affective attributes, and error awareness. We used the cloud-based interactive response system to collect opinions from participants and facilitators.

**RESULTS:** The average number of participants per time is 39. Quantitative analysis of pre- and post-course questionnaires showed a significant improvement of self-reported confidence in managing the scenarios difficult to deal with (mean improvement 53.2%;  $p < 0.01$ ). 96% of participants “strongly agreed” or “agreed” that they had learned the NTS available following this training course. 99% of participants willing to apply what they learned in the future. The average satisfaction score is 98%. According to questionnaire answers, the course resulted in a high degree of participant satisfaction and increased confidence in managing the trouble events.

**CONCLUSION:** NTS is cognitive and interpersonal skills, complement an individual’s professional and technical knowledge, facilitation of effective delivery of a high-quality patient care. Acquisition and retention of NTS is necessary but a challenge in postgraduate pharmacy education.

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## Effects of a Chinese Medicine Education Program on the Concentrated Scientific Chinese Medicine Knowledge of the Consensus for Clinical Training System of Chinese Medical Physicians in Taiwan

Tsai-Hsuan Lei<sup>\*1</sup>, Zong-Xiu Wu, Lih-Chi Chen<sup>2</sup>

### Abstract

**OBJECTIVES:** This “Establishing Specialists” Consensus for Clinical Training System of Chinese Medical Physicians” is to condense and establish the consensus of clinical training system of Chinese Medical Physicians in Taiwan. This research aimed to understand the 2-year Physicians’ understanding of Concentrated Scientific Chinese Medicine after program.

**METHODS:** The general concentrated Chinese medication knowledge of the physicians was evaluated before and after the course on 2017. SPSS 20 was used as statistical software.

**RESULTS:** The total evaluation of this study included 27 2-year Physicians who participated in the education program. To evaluate the effects of the lessons, this study was a single group pre- and post-comparison. The average of pretest is 67.12(±16.59), and the posttest is 98.27(±5.13). All participants showed significant improvement (  $p < 0.05$ ) after the program.

**CONCLUSION:** Concentrated Scientific Chinese Medicine is widely used in Taiwan. Through the investigation of the effectiveness of the education program, the teaching lessons can be effectively deliver the knowledge of Concentrated Scientific Chinese Medicine usage to the PGY.

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## Determination of the prooxidant activity of Guyabano (*Annona muricata* L.) leaves through modified antioxidant assays and DNA

Sheena Jasley Samonte\*

### Abstract

**OBJECTIVES:** The study aims to confirm the prooxidant and antioxidant activity of *Annona muricata* L. leaves through DPPH Radical Scavenging, CUPRAC Assay and •OH-Mediated DNA Oxidative Degradation, to perform pharmacopeial assays for articles of botanical origins, to semi-purify components by Kupchan partitioning, to test for presence of metabolites by phytochemical screening and TLC, and to determine total flavonoid content using AlCl<sub>3</sub> Colorimetric Method.

**METHODS:** *Annona muricata* L. leaves were macerated and subjected to Kupchan partitioning resulting into dichloromethane, ethyl acetate and aqueous fractions. Prooxidant activity of each fraction and the crude extract at different concentrations were determined through DPPH Radical Scavenging, Modified CUPRAC assay, and Hydroxyl radical-mediated DNA oxidative degradation. For all the prooxidant activity assays, Ascorbic acid was used as the positive control while ethanol was the negative control.

**RESULTS:** The three assays suggested prooxidant activity. A possible plateau was observed in the DPPH assay, as seen in the absence of significant difference at the various concentration points. With the sample extract, DNA degradation manifested which was greater than that of the standard, ascorbic acid. The degradation was observed through the reaction with thiobarbituric acid. The CUPRAC assay showed protein damage caused by prooxidant activity of the extracts. The relative total prooxidant activity of the crude and ethyl acetate extracts are 0.2150 and 0.1281, respectively. The values represent the amount of ascorbic acid needed to produce equivalent prooxidant activity to 1 mg of extract.

**CONCLUSION:** The assays showed the presence of prooxidant activity for *Annona muricata* L. leaves through the DNA and protein damage. High concentration of the extract is needed to produce an equivalent effect of prooxidation of the standard. It is recommended that the effects of chronic use be studied as well.

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# Poster Presentations: Pharmaceutical Legislation, Regulatory Science and Pharmacopeia



## Biosimilars in global market and role of pharmacists

Seonmin Yoo\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Cancer, diabetes, and autoimmune diseases are the TOP 3 diseases leading the pharmaceutical market, and biologics are used as first-line treatment for many cancers and autoimmune diseases. The disadvantage of biologics is that they are expensive. Biosimilars are solution for this problem, although there are some challenges to be solved. We have presented the international trend of biosimilars and the role of pharmacists in biosimilar field.

**METHODS:** We compared market structure and policies about biosimilars in Europe and USA, the major area of biosimilars. In addition, we presented the role of pharmacists in biosimilar field based on analysis about the challenges of biosimilars.

**RESULTS:** Europe promotes the use of biosimilars through diverse policies. (e.g. they give incentives to prescribers, or they have a minimum prescription quota for biosimilars.) Although the US has the hurdle for biosimilars to enter the market because of oligopoly by few PBMs, wholesalers, and manufacturers, the FDA is looking for ways to activate biosimilar markets. However, biosimilars have 3 challenges that should be solved by pharmacists; pharmacovigilance, pharmacokinetic/pharmacodynamic profiling and nocebo effect.

**CONCLUSION:** Pharmacovigilance about large molecular biosimilars is essential because they don't have long-term use data. PK/PD in biosimilars are more complicated than chemical drugs, so for research, more pharmacists are required in this field. Finally, we have to solve nocebo effect by diverse strategies.

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## A Cross Sectional Study on the Awareness towards Pharmaceutical Products Registration among Medical Practitioners and Pharmacists in a Tertiary Hospital of Malaysia

Tan Meng Hsiung\*

### Abstract

**OBJECTIVES:** The main objective of this research is to study the awareness of medical practitioners and pharmacists working in Miri General Hospital (a tertiary government hospital) towards pharmaceutical products registration. Specific objectives are to compare the awareness level between both professions and to investigate the influence of other factors such as age, gender, grades, years of servicing on the awareness level.

**METHODS:** A self-administered questionnaire was developed based on previous study. The questionnaire was pre-tested. Pilot study was adopted to determine the reliability and validity of the developed questionnaire. Universal sampling was employed to recruit medical practitioners and pharmacists working in Miri General Hospital. Permission to collect data and ethics approval were obtained. Descriptive analysis, independent T test, Pearson correlation and Kruskal-Wallis were used to analyse the results.

**RESULTS:** A total of 50 pharmacists and 70 medical practitioners were sampled (75% response rate). The overall mean score for pharmacists and medical practitioners is 7.66( $\pm$ SD 2.61) and the individual mean scores are 9.40( $\pm$ SD 1.95) and 6.41( $\pm$ SD 2.3) respectively. The awareness of the pharmacists towards pharmaceutical products registration are significantly higher than the medical practitioners( $p < 0.05$ ). Significant relationship is established between variable gender and awareness level ( $p < 0.05$ ). There is weak positive correlation for both variables age and years of servicing in respect to level of awareness( $p < 0.05$ ). No significant relationship between grades and awareness level( $p > 0.05$ ).

**CONCLUSION:** There is difference in level of awareness towards pharmaceutical products registration between pharmacists and medical practitioners. Age, gender and years of servicing influence the awareness level. Continuous professional development courses are essential to enhance their understandings.

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## EVALUATION OF THE PHARMACEUTICAL SUPPLY CHAIN MANAGEMENT IMPLEMENTATION PROCESS IN THE RURAL HEALTH UNITS OF REGION XI: A BASIS FOR FORMULATION OF STRATEGIC PLAN

Merry Bandao Gringco\*<sup>1</sup>, Santillana, Joan B.<sup>2</sup>

### Abstract

#### OBJECTIVES: Purpose of the Study

The main purpose of this qualitative research is to evaluate the implementation process of the Pharmaceutical Supply Chain Management (PSCM) in the Rural Health Units utilizing the strengths and weaknesses analysis. The findings of this research are the basis in formulating a strategic plan. This would give feedback to the policy maker, proponent of PSCM and implementing health facilities for advance development of the PSCM.

**METHODS:** The research design was qualitative approach through in-depth interview. Inclusion and exclusion criterion was the basis in purposively selecting the 5 participants, coming from different provinces of Davao Region. Thematic analysis was used in merging the strengths and weaknesses into essential themes. In supplement, the secondary quantitative data from the Department of Health - XI official monitoring reports, covering 2016- 2017, was used for validation. Frequency was used to measure.

**RESULTS:** Results revealed the identified strengths as categorized into five themes generated and these are: all out involvement of the local government unit in the medicine management, compliant to government mandate: Philippine National Formulary (PNF) use, transparency in receiving medicines, follows First Expiry, First Out Policy (FEFO), and proper drug dispensing. On the other hand, the distinguished weaknesses were generated into five themes and these are: constraints of resources, availability of non-PNF medicines, stock outs of medicines, expired medicine due to unwanted stocks, and non- existence of Standard Operating Procedure (SOP) for drug use.

**CONCLUSION:** The result of the study has revealed me that there is still much we need to appreciate the practice of pharmacy, - public health pharmacy. As I have realized that the integration of the pharmacy profession must engage. The formulated strategic plan would somehow guide the policy maker and LGU staff.

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## NATIONAL HEALTH INSURANCE (JKN) MEDICINES MANAGEMENT AT THE PRIMARY HEALTH CARE IN 4 PROVINCES IN INDONESIA

Dr. Raharni, Apt, Mkes\*<sup>1</sup>

### Abstract

**OBJECTIVES:** National Health Insurance Program (JKN) in January 2014 provided many changes to aspects of the national health system including medicine. Capitation funds from BPJS are directly to primary health care and managed by primary health care with a capitation fund distribution of at least 60% for services and 40% for health service operations including medicines. Changes in financing at the primary health care changed the pattern of procurement of medicine

**METHODS:** The research design is qualitative by in-depth interviews and collected documents related to JKN medicines. The study was conducted in 4 provinces in Indonesia, namely Yogyakarta, Bali, East Kalimantan and East Nusa Tenggara covering 30 BLUD and Non BLUD public health centers.

**RESULTS:** The results of the study related to JKN medicines management has not been implemented yet, there is only PERDA related to capitation services. Drugs management includes medicines planning derived from the proposed primary health care called medicines needs plan (RKO) prepared based on needs and disease patterns. Procurement of medicines refers to a national formulary with e-purchasing mechanisms with e-catalogs, but JKN medicines ordered in 1st trimester are often late in coming. The provision of JKN medicines is also carried out by the district health office for primary health care that do not have procurement officers. Medicines outside the procurement e-catalog through direct nominal app

**CONCLUSION:** The conclusion of national health insurance (JKN) drugs management constraints in primary health care is that the medicines ordered by e-catalog come late, the storage facilities are not yet in accordance with the requirements of humidity, monitoring and evaluation not yet periodically.

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## Quality Surveillance Study on the Marketed Pharmaceuticals in Taiwan from 2013 to 2017

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### Abstract

**OBJECTIVES:** In order to safeguard the health of the general public in Taiwan, this study has been conducted to monitor the quality and the safety of the marketed pharmaceuticals.

**METHODS:** Based on the assessment of risk factors, different items of pharmaceuticals were selected for quality surveillance every year. Samples were acquired from hospitals, clinics, pharmacies, wholesalers and pharmaceutical manufacturers in Taiwan by local health authorities. Tests of the collected samples were carried out according to the method of pharmacopoeia. The items of analysis included assay, dissolution, identification, organic impurities, uniformity of dosage units and water content.

**RESULTS:** From 2013 to 2017, total 449 random samples including analgesics, antipyretics, antibiotics, anti-diabetic agents, corticosteroids, circulatory system agents and nervous system agents, were collected for testing. The results showed that 438 samples were compliant with compendial specifications while 11 were found to be nonconforming, where the conformity rate was 97.6%. It was found that most of the nonconforming samples failed to pass the dissolution test, followed by assay, organic impurities, and water content.

**CONCLUSION:** The high conformity rate reflected the good effectiveness of pharmaceutical quality management in Taiwan. Nevertheless, manufacturers of the nonconforming products should investigate the cause of quality failures and take corrective action to prevent recurrences.

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# Poster Presentations: Pharmacoepidemiology and Pharmacoeconomics



## Drug use evaluation of Daklinza/Sunvepra and Zepatier for hepatitis C

Yun-Chin Hsu<sup>\*1</sup>, Ya-Ling Ko<sup>1</sup>, Tien-Yuan Wu<sup>2</sup>, Chi-Hua Chen<sup>1</sup>

### Abstract

**OBJECTIVES:** With the significant progress in the development of new direct-acting antiviral agents (DAAs) for anti-hepatitis C virus (HCV) therapy in recent years, new DAAs with high cure rates have come onto the market. In Taiwan, the prevalence rate of Hepatitis C exceeds 3%. Therefore, the aim of this study is to investigate the effectiveness and adverse effects of the hepatitis C DAAs, Daklinza/Sunvepra or Zepatier for genotype 1 hepatitis C patients.

**METHODS:** Patients' medical records were obtained from January 2017 to December 2017 in a regional hospital in Taichung, retrospectively. The inclusion criteria were hepatitis C patients taking Daklinza/Sunvepra or Zepatier (Elbasvir/Grazoprevir) followed the guidelines of National Health Insurance (NHI) in Taiwan. Assessment included viral genotype, drugs, duration, liver function (ALT, AST, TBI, AFP), renal function (ClCr), other adverse effects, monitoring for viral load after treatment completed.

**RESULTS:** 1. Daklinza/Sunvepra :

The average age of the 24 patients was  $63 \pm 10$  years old. 24 patients (100%) completed the treatment without serious adverse effects, DDIs, or liver dysfunction to discontinue. For the viral load at 12 weeks after completion of treatment, 21 patients (87.5%) had undetectable serum HCV RNA level.

2. Zepatier :

The average age of the 15 patients was  $65 \pm 8$  years old. All patients' viral loads reduced more than 100 times at the 4th week after completion of treatment. 15 patients (100%) completed the treatment without severe adverse effects, DDIs, or liver dysfunction to discontinue. All patients' serum HCV RNA level was undetectable, which achieved SVR12.

**CONCLUSION:** The results showed the good cure rate after DAAs therapy. Although there's no significant liver dysfunction case in this study, liver function may need to be tested regularly to avoid liver decompensation and liver failure.

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## Drug use evaluation of Exviera/Viekirax for hepatitis C

Shu-Min Lin<sup>\*1</sup>, Chi-Hao Hung<sup>1</sup>, Tien-Yuan Wu<sup>2</sup>, Chi-Hua Chen<sup>1</sup>

### Abstract

**OBJECTIVES:** Hepatitis C virus (HCV) has 6 major genotypes and approximately 100 subtypes currently. HCV genotype 1 is the most prevalent type. In Taiwan, HCV genotype 1 (50-70%) was the most common type, followed by HCV genotype 2a. Conventional ribavirin combined with interferon therapy has no significant effect on Hepatitis C virus genotype 1. Therefore, this study assess the outcomes of Exviera with Viekirax to treat HCV genotype 1 infection recently.

**METHODS:** All cases were collected in a regional teaching hospital between January 2017 and December 2017, retrospectively. The assessment included virus genotypes, drug selection, and the course of treatment. The therapeutic index included rapid viral response (RVR), liver function (AST, ALT, TBI), tumor marker serotype A fetal protein (AFP), sustained viral response (SVR12, SVR24) after the completion of the treatment course. The assessment also included adverse effects and withdrawal rates.

**RESULTS:** The average age of the patients was 64±11 years old. Thirty-seven non-cirrhosis HCV genotype 1b patients received the EVT for 12 weeks. One non-cirrhosis genotype 1a patient received EVT combined with Ribavirin for 12 weeks. Four compensated cirrhosis genotype 1a patients received EVT combined with Ribavirin for 24 weeks. The average AST before treatment was 85±58 IU/L in all patients and declined to 23±7 IU/L after the therapeutic courses. The average ALT reduced from 114±84 IU/L to 27±14 IU/L. 8 patients' AFP were higher than normal range (>20 ng/mL) before treatment, and 7 out of 8 patients' AFP dropped after treatment. The RVR in 42 patients decreased more than two logarithm values.

**CONCLUSION:** This study evaluated the efficacy of Exviera + Viekirax in the treatment of hepatitis C with a successful rate of higher than 95%. The combination of oral DAA drugs without interferon results in higher hepatitis C cure rate and shortens the course of treatment.

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## Drug Utilization Evaluation of Empagliflozin

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### Abstract

**OBJECTIVES:** Empagliflozin is a newly developed therapeutic agent for patients with type 2 diabetes mellitus (DM). This mechanism could result in a therapeutic effect in patients with hypotonic hyponatremia as in syndrome of inappropriate antidiuresis (SIADH). The study aims to evaluate the utility of empagliflozin performing a retrospective drug utilization evaluation (DUE).

**METHODS:** We recruited 183 type 2 DM patients who visited our outpatient clinic taking empagliflozin for at least 3 months between October 2016 and September 2017. We performed analysis including the dose adjustment by renal function, HbA1c, hypoglycemia, urinary tract infection, ketoacidosis, the effects of the combinations of empagliflozin with dipeptidyl peptidase 4 inhibitors (DPP4-I), and the change of serum electrolytes, particularly sodium and potassium.

**RESULTS:** Among the 183 recruited patients, 88 (48.09%) were females and 95 (51.91%) were males. The average age was 70±11 years old. During the period of empagliflozin administering, HbA1c was 8.26% (before) vs. 7.81% (after). HbA1c reduced by 0.81% in the patients taking empagliflozin and DPP4-I combinations, but 1.6% of patients developed hyponatremia. There was no occurrence of hypoglycemia, urinary tract infection, or ketoacidosis in patients taking empagliflozin only. However, 8 % of our recruited patients did not check HbA1c regularly during the period.

**CONCLUSION:** This study summarized the rationale of the empagliflozin usage and showed the efficacy and safety of empagliflozin. Physicians should remind patients of the importance of diet controls and exercises and the compliance of blood sugar control medications.

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## A study on psychiatric drug utilization of outpatient in a Regional Teaching Hospital in Taiwan as an example

Ying-kun Huang\*<sup>1</sup>, Chun-Pin Kao<sup>1</sup>, Chuan-Sung Chiu<sup>2</sup>

### Abstract

**OBJECTIVES:** to understand the trend of clinical medication through statistics of the association of psychotic drugs (antipsychotic drugs and antidepressant drugs), Defined Daily Doses (DDDs) and Drug Utilization Research (DUI) with disease; and it is helpful for hospital medication management and teachers' teaching practice.

**METHODS:** Estimate the drug use on 18~80 years old outpatient clinics in a regional teaching hospital in 2016. DDD recommended by WHO was adopted as a unit to determine the daily dose of drugs, DUI was used as an indicator to analyze and compare the use of drugs in various psychiatric departments.

The calculation formula is:

$DDDs = \text{Items issued} * \text{Amount of drug per item} / \text{DDD}$

$DUI = DDDs / \text{total number of days}$

**RESULTS:** 1. The most frequency 5 items were Imipramine, Fludiazepam, Alprazolam, Prochlorperazine, Chlorzoxazone.

2. DUI value is obviously larger in Prochlorperazine, Phenobarbital, Doxepin, Venlafaxine, Imipramine, Chlorpromazine, Triazolam, Trazodone, Quetiapine, Fludiazepam, Sulpiride, Flunitrazepam, Chlorzoxazone, Alprazolam, Flupentixol/Melitracen.

3. The relationship between primary diagnosis: Estazolam is most used in other depressive episodes and mild depressive disorder. Alprazolam is most used in primary hypertension, anxiety disorder and IHD. Fludiazepam is most used in the unidentified diagnosis of CVD. Zolpidem is usually used for other insomnia caused by immaterial or physiological and primary insomnia.

**CONCLUSION:** 1. DDDs the highest is 684,110, the lowest is 12. The sum of DDDs of the top 10 drugs accounted for 91.46% of the total DDDs.

2. ATC classification Oxazol, thiazine and triazine derivatives is the most commonly used under skeletal muscle medication. The Psycholepts BZD derivatives used under nervous.

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## A Retrospective Medication Use Evaluation of Renal Impairment after Oral sodium phosphate solution Preparation for Colonoscopy at a Regional Hospital

Hsiao-Hsuan Tsai\*

### Abstract

**OBJECTIVES:** Oral sodium phosphate solution (OSPS) was one of the most widely used bowel cleansing agents before colonoscopy. But there were still rare cases of nephrotoxicity have been reported.

**METHODS:** We collected total 188 outpatients for colonoscopy prepared with OSPS from 2015 to 2017 in our hospital. Everyone took one single dose of OSPS before colonoscopy, after that we followed all patients six month, and identified five cases were OSPS induced nephropathy.

**RESULTS:** We analyzed the 5 cases with phosphate nephropathy, male : female was 4:1, the age was between 64-87 y/o. Only one patient was be confirm acute renal failure and needed hemodialysis at diagnosis without subsequent recovery. The remaining four patients had chronic renal injury and one of them fully recovered his previous renal function. The four patients serum creatinine were between 1.13-1.78 mg/dL.

**CONCLUSION:** A review showed that the renal injury incidence who received OSPS was between 1.29-6%, include five retrospective observational study. In Taiwan study, the incidence of OSPS induced renal impairment was about 1to 4%, and the average incidence was about 2.99% in this study. Although patient education

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## Case Report Hemopericardium Related to Dabigatran Use Reversed by Idarucizumab

*Setthaphong Khajornchaikul\**

### Abstract

**OBJECTIVES:** We report a 95-year-old man with history of atrial fibrillation and pulmonary hypertension on dabigatran, presented to the medical ward with prolonged fever. One week later, the patient still febrile and no response to antibiotic. Septic work-up was negative. CT imaging demonstrated hepatocellular carcinoma (HCC). The patient became hemodynamically unstable with further respiratory failure.

**METHODS:** Within 24 hours, his BP dropped to 96/55 mmHg. ECG revealed AF with RVR rate 130-160 bpm. A TTE indicated signs of cardiac tamponade. He was unable to find a pulse and noticed respiratory distress though the patient remained unresponsive to voice. Cardiopulmonary resuscitation was begun. The patient was emergently transferred to the ICU for cardiogenic shock and multiorgan failure and subsequently started on norepinephrine for hemodynamic support.

**RESULTS:** A 5-g dose of Idarucizumab was administered. aPTT was 25.5 sec PT was 19.6 sec after idarucizumab administration 4 hours (baseline 36.9 and 22.3, respectively). The patient underwent successful pericardiocentesis drainage. aPTT after pericardiocentesis remained normalized at 30.2 sec. Initially 1200 ml of grossly hemorrhagic fluid was removed. Cytology was negative for malignant cells. RBC count by volume of the pericardial fluid was greater than 50% of serum, consistent with hemopericardium. Suspected cause due to bleeding from raw surface from dabigatran. No adverse reactions related to idarucizumab were reported.

**CONCLUSION:** Our report highlights a rare case of dabigatran-induced hemopericardium and tamponade in a patient who had no history of pericarditis or trauma. Clinicians should evaluate patient age, bleeding risks, and renal function before prescribing these agents and closely monitor renal function.

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## Piperacillin/tazobactam induced hemolytic anemia: Case Report

Wipa Wachiratreeerat<sup>\*1</sup>, Kongwatcharapong J.<sup>1</sup>

### Abstract

**OBJECTIVES:** Piperacillin-induced immune haemolytic anaemia (PIHA) is regarded as an acute and severe haemolytic anaemia resulting into life-threatening events. Here we report on a patient with mild PIHA due to piperacillin/tazobactam, which required necessity for treatment.

### METHODS: -

**RESULTS:** A 90-year-old women was admitted to the medicine ward with urinary tract infection. On admission, She was treated with piperacillin/tazobactam. Five days later, Hgb of 7.1 g/dL and Hct of 23% (baseline 9.6 g/dL and 32.5%, respectively). The reticulocyte count 2.5%, LDH 287 units/L, haptoglobin 119.67 mg/dL, TB 0.45 mg/dL and DB 0.29 mg/dL. The direct antiglobulin test was positive for immunoglobulin G. Peripheral blood smear seen poikilocytosis/anisocytosis, microspherocyte, polychromasia were positive.

After the discontinuation of piperacillin/tazobactam and received PRC 2 units, All laboratory tests returned to normal levels.

**CONCLUSION:** A Naranjo ADR Probability Score of 4 indicates possible association of piperacillin-tazobactam induced hemolysis in this case. Patients undergoing this drug should be closely monitored with prolonged follow-up.

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## A case of fatal retroperitoneal hemorrhage post PCN insertion In patient with dual antiplatelet for stent post MI

Yen-Chin Chen<sup>\*1</sup>, Su-chen Yen<sup>2</sup>, Yi-Chun Chen<sup>2</sup>

### Abstract

**OBJECTIVES:** The most of dual antiplatelet induced bleeding tends to be minor complication, including easy bruising, petechia and ecchymosis. Percutaneous trans-renal abscess drainage is a well-tolerated procedure with a low risk of major complication or death. In patients the decision between continuing antiplatelet therapy or withdrawing it must be made on an individual basis.

**METHODS:** The 38-year-old man was admitted since 17 Jan 2018 because of dyspnea and heart failure. The patient underwent PCI and received dual antiplatelet therapy since 23 Jan 2018 post PTCA with BMS over RCA-PL and DES over RCA-M. Due to fever, OSSA bacteremia and right renal abscess(2cm) by CT image, renal abscess related OSSA septicemia was suspected. Percutaneous trans-renal abscess drainage was done 26 Jan 2018. Due to afraid of stent thrombosis, dual antiplatelet is continued.

**RESULTS:** Hgb drops to 4.6 d/dL six days after this procedure was noted and contrast CT scan showed active bleeding in the r't kidney and r't retroperitoneum. TAE was performed. But continuous fall in Hgb and progression of jaundice was found after TAE, finally open surgery for nephrectomy was done under evidence of active contrast extravasation seen in both intrarenal and extrarenal spaces, in favor of r't renal and r't retroperitoneal hemorrhage with huge hematoma formation more than 15 cm in size. Unfortunately patient was on critical discharge. This patient had catastrophic bleeding only explained by dual antiplatelet and underlying disease of ESRD and alcoholism.

**CONCLUSION:** Although the dual antiplatelet combination reduces stent thrombosis after PCI, it is associated with increased risk of sometimes fatal bleeding in patient with high bleeding risk such as ESRD and alcoholism even if procedure with low bleeding risk.

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## Ergotism and Ergot Alkaloids : A case series study.

Miss Kamonwan Patsriruang\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Although rare adverse drug reaction, ergotism is severe clinical manifestation and can be life threatening. From January 2012 to April 2018, the cases of ergotism were consulted from other hospitals and occurred in Siriraj hospital because patients got ergotamine to treat migraine headache from drug store. The objective of this case series is to summarize causes and clinical manifestation of ergotism, that consulted Siriraj Poison Control Center.

**METHODS:** This is an observational case series with data obtained retrospectively from Siriraj Poison Control Center, Siriraj Hospital, Mahidol University during January 2012 to April 2018. All patients with ergotism were recorded by pharmacist. We collected data from toxicology record form and all cases were diagnosed ergotism by medical toxicologists.

**RESULTS:** Twenty cases of ergotism were diagnosed. The mean age was 35.5 years (range 18-57) and 15 patients (75%) were female. All cases took a combination of ergotamine, typically used to treat migraine. Causes of ergotism came from drug-drug interaction (n=10), CYP3A4 inhibitors ( especially by HIV protease inhibitors ) and ergotamine, and intentional overdose (n=10). A manifestation of peripheral vascular insufficiency was commonly presented. Most cases resolved after intravenous vasodilator administration. One case was recovered by intra-arterial balloon dilatation. Unfortunately, one patient died (5%) from acute renal failure and one patient required amputation of both legs due to gangrene.

**CONCLUSION:** Ergotism is mainly caused by drug interaction between ergotamine and CYP3A4 inhibitors. Patients and health care workers should be aware of this harmful interaction because ergotamine in Thailand is an over-the-counter product. Education and counseling may help avoid unintentional drug interactions.

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## Long-term effect of statins and risk of new-onset osteoporosis in the Taiwan Cohort study

Lin, Tsung-Kun\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Several observational cohort and meta-analytical studies in humans have shown that statin users have a lower risk of fractures or greater bone mineral densities (BMD) than nonusers. However, some studies including randomized clinical trials have the opposite results, particularly in Asian populations. This study investigates the impacts of statins on new-onset osteoporosis in Taiwan.

**METHODS:** In a nationwide retrospective population-based cohort study, 45,342 subjects aged between 50–90 years having received statin therapy (statin-users) since January 1 2001, and observed through December 31 2013 were selected from the National Health Insurance Research Database of Taiwan. Likewise, 115,594 patients had no statin therapy (statin-non-users) were included as controls in this study. Multivariable Cox proportional hazards analysis for drug exposures was employed to evaluate the associati

**RESULTS:** During the 13-year follow-up period, 16,146 of all enrolled subjects (10.03%) developed osteoporosis, including 3097 statin-users (6.83%) and 13,049 statin-non-users (11.29%). Overall, statin therapy reduced the risk of new-onset osteoporosis by 48% (adjusted hazard ratio [HR] 0.52; 95% CI 0.50 to 0.54). A dose-response relationship between statin treatment and the risk of new-onset osteoporosis was observed. The adjusted hazard ratios for new-onset osteoporosis were 0.84 (95% CI, 0.78 to 0.90), 0.56 (95% CI, 0.52 to 0.60) and 0.23 (95% CI, 0.21 to 0.25) when cumulative defined daily doses (cDDDs) ranged from 28 to 90, 91 to 365, and more than 365, respectively, relative to nonusers.

**CONCLUSION:** In this population-based cohort study, we found that statin use is associated with a decreased risk of osteoporosis in both genders. The osteoprotective effect of statins seemed to be more prominent with a dependency on the cumulative dosage and statin intensity.

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## Risk assessment of statin and new-onset diabetes mellitus: A retrospective cohort study

Chien-Chuan Chen<sup>\*1</sup>, Hui-Hsia Hsieh<sup>1</sup>, Chi-Hao Hung<sup>1</sup>, Tien-Yuan Wu<sup>2</sup>, Chi-Hua Chen<sup>1</sup>

### Abstract

**OBJECTIVES:** Statins are key agents for treating dyslipidemia. The increased incidence of new-onset diabetes mellitus (NODM) associated with statin treatment is one of the emerging adverse events. However, the reports are mainly based on the Western populations; thus, further investigations on the risk of statin-induced NODM in the East Asians are necessary. The study aims to investigate the relationship of the risk of statin developed NODM.

**METHODS:** The cohort comprised 1,967 patients who were newly treated with statins (Rosuvastatin, Atorvastatin, Simvastatin) during 2012 in the Taichung Tzu Chi Hospital. Patients were followed from the index prescription until 2017. We reported means with standard deviations for continuous variables and numbers with percentages for categorical variables in the descriptive analysis. Differences in the characteristics between the exposure group and the comparison group were analyzed using chi-square tests.

**RESULTS:** All the 1967 patients recruited in the study were observed for five years. Descriptive statistics were used to describe the characteristics of the cohort and the statin therapy adherence. At the index date, the mean age of the patients was 60.49±11.15 years, and 48.4% of them were men. The 654 patients (33.25%) had atorvastatin 40 mg/tab, 927 (47.13%) had rosuvastatin 10 mg/tab, and 386 (19.62%) had Vytorin (Ezetimibe 10 mg & Simvastatin 20 mg). A total of 662 (33.66%) patients switched to another statin drug. The results show that the patients who exhibited a more continuous use of statins had a 7.17% increased risk of new-onset diabetes compared to those who used a small portion of statins

**CONCLUSION:** Statins are an important medication for the primary and secondary prevention of atherosclerotic cardiovascular diseases. This large-scale East Asian population-based study conducted in the West by providing evidence that statin therapy increases the risk of diabetes.

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## Clinical safety evaluation of the combined use of clopidogrel and proton pump inhibitors

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### Abstract

**OBJECTIVES:** Clopidogrel is a prodrug that is metabolized to an active metabolite primarily by the hepatic CYP2C19. Most proton-pump inhibitors (PPIs) inhibit the bio-activation of clopidogrel from its active metabolite through CYP2C19. The study hypothesizes that concomitant use of clopidogrel and PPI may decrease the therapeutic effect of clopidogrel and increase the cardiovascular events.

**METHODS:** We conducted a retrospective cohort study on the concomitant use of Clopidogrel and PPIs between January 2014 and December 2017, at a regional teaching hospital in Taichung. This study follows the American Society of Health-System Pharmacists (ASHP) guidelines for drug utilization evaluation (DUE). Microsoft Excel performed the statistical analysis in this study.

**RESULTS:** The study collected 164 patients whose average age was  $73 \pm 11.64$  years old. These patients used clopidogrel and proton pump inhibitors concomitantly for average  $200 \pm 132$  days. Within the 71 cases taking lansoprazole, there were 3 cases (4.22%) of myocardial infarction, 8 cases (11.27%) of revascularization. Within the 92 cases taking rabeprazole, there were 9 cases (9.78%) of myocardial infarction, 2 cases (2.17%) of revascularization. Within the pantoprazole group (1 case), there was not any adverse events.

**CONCLUSION:** Current findings on clopidogrel and PPIs interaction may increase cardiovascular risks, but the long-term mortality rate does not show a universal significance. This retrospective study presented the drug-drug interaction that PPIs may interrupt CYP2C19 activity of clopidogrel metabolism.

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## A comparative study on the efficacy, safety, and economic efficiency of a potassium-competitive acid blocker and proton pump inhibitor as first-line H. pylori eradication therapies

Kazuma Murayama\*<sup>1</sup>

### Abstract

**OBJECTIVES:** In 2015 vonoprazan fumarate (VPZ) is a novel pharmacological action, began selling the world first in Japan. The previous conventional regimen for H. pylori eradication in Kameda Medical Center was established in 2014 and did not include VPZ. To assess the revised regimen, we compared the efficacy and safety of proton pump inhibitors (PPIs) and VPZ for first-line H. pylori eradication and retrospectively examined their economic efficiency.

**METHODS:** The medical records of 40 patients with H. pylori infection treated at this hospital were retrospectively examined for eradication rate and safety of lansoprazole (LPZ) 30 mg, rabeprazole (RPZ) 10 mg, esomeprazole (EPZ) 20 mg, or VPZ 20 mg, used as concomitant medication in first-line H. pylori eradication therapy (twice-daily oral doses of amoxicillin 750 mg and clarithromycin 200 or 400 mg, and PPIs or VPZ for 7 days.). We investigated the cost which is price of each drug, and other factors.

**RESULTS:** The eradication rate was 68.4% in the LPZ combination treatment group, 57.5% in the RPZ combination treatment group, 73.7% in the EPZ combination treatment group, and 87.5% in the VPZ combination treatment group. The eradication rate in the VPZ combination treatment group was significantly different to those in the LPZ ( $p=0.036$ ) and RPZ ( $p=0.006$ ) combination treatment groups, but not significantly different to the rate in the EPZ combination treatment group ( $p=0.208$ ).

In addition, no serious adverse events were reported in any treatment group, and the cost for up to the second-line H. pylori eradication was the lowest when VPZ was used.

**CONCLUSION:** Our findings suggest that the combination treatment with VPZ for first-line H. pylori eradication therapy yielded a higher eradication rate than the combination treatments with LPZ or RPZ.

The treatment was lower with VPZ than with PPIs. Therefore, VPZ can reduce treatment costs.

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## Sustained impact of the Women's Health Initiative study on hormone therapy use in Australia: an interrupted time-series analysis

Rifani Bhakti Natari\*<sup>1</sup>, Peter Baker<sup>2</sup>, Treasure McGuire<sup>3</sup>, Alexandra Clavarino<sup>2</sup>, Kaeleen Dingle<sup>4</sup>, Samantha Hollingworth<sup>2</sup>

### Abstract

**OBJECTIVES:** Hormone therapy (HT) use dropped after the Women's Health Initiative study (WHI) publication in 2002 showing increased risk of cancer with HT. Subsequent WHI publication in 2007 showed benefits of HT if started before 60 years or within 10 years of menopause. The impact of the 2002 publication was studied, but the impact of the 2007 publication is unknown. Our objective is to explore the impact of 2002 & 2007 publications on Australians' HT use.

**METHODS:** We analysed HT use using data from IQVIA, a pharmaceutical research market company. The data covers the sales from wholesalers to pharmacies in Australia (2000 – 2016). We stratified the analysis by medicines class, administration route, & oestrogens strength. Use was measured in defined daily doses [DDD]/1000 women/day or packs/1000 women/month. The interventions were the WHI publications in 2002 and 2007. We conducted segmented regression analysis time-series errors using R software.

**RESULTS:** Prior to WHI 2002, the HT use was relatively stable with some changes in medicine classes and route. Progestogens and oral HT use decreased; while combination HT and vaginal HT increased. After WHI 2002, HT use decreased for most medicine classes, strengths, and routes. The biggest change was for oestrogens with a decrease of 30.08 DDD/1000 women/day (95% CI=25.34, 34.82), oral HT with a decrease of 49.23 DDD/1000 women/day (44.13, 54.33), and medium strength oestrogens with a decrease of 36.95 packs/1000 women/month (33.27, 40.63). The use of most HT products continued to decrease more slowly after WHI 2007.

**CONCLUSION:** The use of HT remained low in Australia after 2007 despite recent evidences & guidelines favour HT use in women younger than 60 years or 10 years since menopause. The low use might reflect women's hesitancy about HT and that the positive message for selective use has not been delivered effectively.

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## Comparison of drug holiday from ADHD in Taiwan and international experience

Tsung Hsien Wu\*<sup>1</sup>

### Abstract

**OBJECTIVES:** ADHD is a developmental disorder that affects approximately one in twenty children. Medication is first-line effective treatment for ADHD. Common options are immediate release methylphenidate (IR-MPH), the osmotic controlled-release formulation of methylphenidate (OROS-MPH) and atomoxetine (ATX).

**METHODS:** This is a retrospective study in which we use the Pubmed to search the related dissertaitons, and we set the desired outcome as review articles published within ten years. After setting the parameters, we utilize two review articles to this study.

**RESULTS:** The review articels include studies from countrles like USA, South Africa, Scotland and so on. It is common to see patients with ADHD taking drug holiday, and three studies even indicated that there are more than 50 percent of patients using drug holiday.

**CONCLUSION:** Further studies are required to clarify whether drug holiday regimen are the results of parents' decisions or physicians' advice, as well as whether temporary discontinuation of drug usage affects treatment outcome. Also, the idea of SDM (shared decision making) is highly emphasized nowadays, pharmacists can explain the concept of drug holiday to patients and encourage them to discuss with their doctors.

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## Assessment of Prescription Pattern of Discharge Medications in Myocardial Infarction patients in a tertiary care hospital in South India.

Alekhya Lavu\*

### Abstract

**OBJECTIVES:** To study the prescription pattern and DDI of cardiac drugs and non-cardiac drugs in Myocardial Infarction (MI) in a tertiary care hospital in South Indian

**METHODS:** This is a retrospective cross-sectional study where 282 patient's records from 2012 to 2014 were collected from September 2017 to March 2017, details about their discharge summary and DDI were collected from the inpatient case records from Medical Records Department (MRD). SPSS software was used to do the descriptive analysis of the obtained data.

**RESULTS:** The average age of study population was found to be  $60.19 \pm 11.47$  years. Subjects of age group 46-65 (59.80%) were found to be more susceptible to MI and majority of them were males 74.6%. Average number of cardiovascular drugs per patient were 8. Antiplatelet (92.09%) and lipid lowering drugs (91.48%) were the highest prescribed cardiac drugs followed by B blockers (49.29%), ACE inhibitors (45.03%), Nitrates (44.32%), diuretics (32.97%), ARB (13.47%), CCB (7.44%), Anticoagulants (3.90%), cardiac glycosides (3.90%), alpha-blockers (2.48%), Antiarrhythmic (2.48%) and anti-anginal drugs (1.06%).

**CONCLUSION:** The study provides a valuable reference data on the prescription pattern of drugs in myocardial infarction in South Indian patients. It also indicates the need for additional regional databases to broaden our understanding on prescription pattern. Hence better treatment for MI can be provided

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## Study on prescribing pattern of Cardio-vascular medicines in patients having Heart Failure in Tertiary Care Hospital

Indu Giri\*

### Abstract

**OBJECTIVES:** Congestive Heart Failure (CHF) is widely prevalent across the globe and a chronic disease that causes a major impact on the health of the population. Multi medicines of various classes are used for the treatment of the CHF. This study aimed to find out the demographic characteristics of the CHF patient and to study the prescribing patterns in CHF.

**METHODS:** A total of 299 patients with CHF were enrolled based on the inclusion and exclusion criteria in observational, cross-sectional study. The study was conducted in tertiary care hospital in Kathmandu, Nepal from May 2017 to August 2017. Demographic details, diagnosis, co-morbid disease, medicine prescribed were recorded from prescription. The collected data was reviewed, coded, verified and statistically analyzed using SPSS.

**RESULTS:** The study found out that the mean age of the patient was  $55.96 \pm 14.735$  years, and showed that male (64.9%) were more prone to the cardiac heart failure as compare to females (35.1%). Major co-morbid condition was hypertension (62.2%) followed by diabetes mellitus (17.6%). Among the medicine prescribed; Anti-Hyperlipidemic, Metoprolol, Enalapril, Frusemide and aspirin were mostly prescribed. The study found that combination of Anticoagulant, Anti-hyperlipidemic, B-blocker, Diuretics were highly prescribed.

**CONCLUSION:** Heart failure is one of the major public health problems in developing countries. A combination of multiple drug therapy proves to be more effective than a single drug in Heart Failure. Prescribing generic drugs may help to reduce the economic burden of the patients.

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## Cost savings from medication reconciliation process in patients with cardiovascular disease on the ward at Chantarubeksa Hospital

Lakkana trairattanasuwan\*

### Abstract

**OBJECTIVES:** To study cost-saving from implementing Medication Reconciliation process in the Artherosclerotic cardiovascular disease patients.

**METHODS:** The study design was retrospective study in the patients who admitted at medical ward of Chantarubeksa Hospital and received 6 medicines (Aspirin, Clopidogrel, Enalapril, Warfarin, Simvastatin and Atorvastatin) for reducing recurrent ischemic stroke during January 1st 2016 to December 31th 2017. All errors were considered to be medication errors, and analyzed omission errors to calculate direct cost saving by hospital perspective of recurrent ischemic stroke treatment, which has chance to occur

**RESULTS:** From 246 patients' reviewed data, 138 data were met inclusion criteria. The result found omission errors of 6 drugs at discharge were 26 from 80 patients (32.5%). For cost saving in bath per person in warfarin, clopidogrel, aspirin, simvastatin, atorvastatin, enalapril are 19.77, 89.47, 151.91, 159.74, 135.68 and 113.36 respectively.

**CONCLUSION:** In conclusion, Implementing medication reconciliation is increase better result of completely dispensing and avoiding chance to pay for expenses from adverse events that may occur.

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## A Retrospective Study on the Pharmacoeconomic Impact of Pharmacists' Interventions in a Tertiary Hospital

Lianne Desiree S. Gayona\*

### Abstract

**OBJECTIVES:** This study aims to provide insight on the important role of pharmacists in medication safety by assessing the frequently occurring medication errors intercepted and identified by the pharmacists in a selected tertiary hospital and gauging the monetary equivalence of pharmacists' interventions.

**METHODS:** The Medication Safety Through Interventions (MSTI) forms of the hospital were used to gather data on commonly occurring medication errors and the specific interventions done by pharmacists within the hospital. Qualified interventions were selected for the study for the estimation of cost savings and cost avoidance, using the formula developed by Nesbit et al (1990).

**RESULTS:** 1,068 pharmacy interventions have been reported from January to February 2016. These interventions were documented as errors of commission (23.03%), errors of omission (13.30%), and drug therapy monitoring (63.67%). 201 of the reported interventions have demonstrated a reduction in patients' overall drug therapy cost. Direct cost savings and cost avoidance of the interventions made by pharmacists amounted to 4,571,661.62 PHP and 75,004.37 PHP, respectively. In total, cost saving and cost avoidance amounted to 4,646,665.98 PHP.

**CONCLUSION:** The results indicate that medication errors have a direct impact on a patient's overall healthcare cost and that pharmacy interventions have had an overall positive pharmacoeconomic impact in the hospital setting.

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## Prevalence, Awareness, Treatment and Control of Hypertension and Medication Adherence among Elderly in Barangay 836, Pandacan, Manila, Philippines

Ricardo Arellano, Jr.<sup>\*1</sup>, John Patrick Ramos<sup>1</sup>, Marites Delacruz<sup>1</sup>, Remgia Lequin<sup>1</sup>

### Abstract

**OBJECTIVES:** This cross-sectional, population-based study assessed the prevalence and associated risk factors, awareness, treatment and control of hypertension among elderly residents of Barangay 836, Pandacan, Manila, Philippines, as well as their medication adherence.

**METHODS:** A total of 108 eligible participants (72% response rate) completed an interviewer administered questionnaire and undergone health examination focusing on BP and BMI measurement.

**RESULTS:** Hypertension prevalence was 81.5%. Of the individuals who have hypertension, 77.3% were aware of their condition and 72.7% of the hypertensive participants were receiving antihypertensive drugs. However, only 15.9% of these participants achieved blood pressure control (130/80). Multivariate logistic regression analysis showed that participants with family history of HTN

and age 60 to 79 years are significant risk factors in the development of hypertension in this study (OR>1, p<0.05). Medication adherence was evaluated and about two-thirds of hypertensive participants have poor knowledge of HTN and its treatment, and majority (82.5%) exhibited non-perfect adherence in the management of HTN.

**CONCLUSION:** Elderly in the lower age groups and with family history of HTN had higher risks of developing the disease. Despite acceptable level of treatment and awareness, an alarmingly low rate of control among elderly hypertensives calls for immediate strategies and intervention to improve management of HTN.

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## Prevalence, Awareness, Treatment and Control of Hypertension and Medication Adherence among Elderly in Barangay 836, Pandacan, Manila, Philippines

Ricardo Arellano, Jr.\*<sup>1</sup>

### Abstract

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## Pharmacovigilance: Extent of Awareness among Healthcare Professionals working in a DOH-retained Hospital

*Kaycerey Mijares Capua\*<sup>1</sup>*

### Abstract

**OBJECTIVES:** To assess the extent of awareness of healthcare professionals such as Medical Doctors, Pharmacists and Nurses on Pharmacovigilance

**METHODS:** The descriptive research design was utilized using a survey questionnaire which was prepared by the researcher after intensive readings of related materials from professional journals, magazines, books, and articles from the world-wide-web related to Pharmacovigilance, ADR monitoring and medication safety. Respondents were selected using stratified random sampling.

**RESULTS:** In general, healthcare professionals have neutral understanding on ADR reporting. As a whole, healthcare professionals do not know how to report ADR, observed the non-availability of reporting forms at work place, did not know where to report, have busy schedule to fill the reporting forms and having hard time in identifying or diagnosing ADR in clinical practice. These are the most common reasons of non-report of ADRs. Moreover, there is a significant relationship between the profile of healthcare professionals and their extent of pharmacovigilance awareness.

**CONCLUSION:** Healthcare professionals possess only neutral awareness and understandings on Pharmacovigilance.

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# Poster Presentations: Scientific



## Phytochemical and Pharmacological Overview of Pomegranate

Anna Muriel Talavera\*<sup>1</sup>, Catherine B. Galvez<sup>1</sup>, Jose Remel M. Talavera<sup>1</sup>

### Abstract

**OBJECTIVES:** This paper aims to provide an up-to-date overview of the phytochemical and pharmacological properties of pomegranate.

**METHODS:** The research strategy includes review of the existing literature in the ISI Web of Knowledge (Thomson Reuters), textbooks and Pharmacopeias from year 1978 to 2016 using terms 'pomegranate' or *Punica granatum*. Citations relevant to the topic were screened.

**RESULTS:** Phytochemical screening shows that its fruit, juice, seeds, flowers, leaves, root, bark and fruit peel contains the following; gallic acid, ellagic acid, punicalin, punicalagin, caffeic acid, citric acid, malic acid, succinic acid, tartaric acid, acetic acid, oxalic acid, shikimic acid, maleic acid, fumaric acid ellagitannins, pelletierine alkaloids, piperidine alkaloid, isopelletierine, methyl-pelletierine, pseudopelletierine, glucoside, granatic acid, luteolin, kaempferol, quercetin, catechin, EGCG, rutin, flavones, flavonones, flavonoid, flavonols, steroids, lignins, fats & oils, cardiac glycosides, carbohydrates, anthocyanidins, anthocyanins melatonin, delphinidin 3-O-glucoside, punicacor

**CONCLUSION:** The overall finding of the review suggests that *Punica granatum* plant is a promising herbal plant that can be developed into a suitable pharmaceutical dosage form.

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## Acute Toxicity and Antioxidant Potential of Crude Extract from Unripe Jackfruit Peel (*Artocarpus heterophyllus* Lam., Family Moraceae)

Rufo S. Calixtro, Jr.\*<sup>1</sup>, MLL Dela Paz<sup>1</sup>, AP Cupino<sup>1</sup>, PSK Dilla<sup>1</sup>, AJO Endaya<sup>1</sup>

### Abstract

**OBJECTIVES:** The study is aimed at determining the potential use of wastes such as the unripe jackfruit peel as an antioxidant and preliminary testing of its possible cytotoxic effects.

**METHODS:** Brine Shrimp Lethality Assay was utilized for acute toxicity testing with potassium dichromate as positive control and NSS as negative control. 1,1-diphenyl-2-picrylhydrazyl (DPPH) Radical Scavenging Assay was used for antioxidant potential with ascorbic acid as the standard drug.

**RESULTS:** The unripe jackfruit peel crude extract contained abundant amount of triterpenes, saponins and tannins; moderate amount of flavonoids and traces of sterols, alkaloids and glycosides. Furthermore, the flavonoid, phenolic and steroid content were quantified which resulted in 13.5 mg Quercetin acid, 10.9 mg Gallic acid and 10.5 mg Cholesterol, per gram of crude extract, respectively. Based on brine shrimp lethality assay, LC50 and ED50 are 25% (250 mg) and 1.5 mg, respectively. The crude extract has 77.3% radical scavenging activity at 2294 mg/kg with an IC50 of 132.257 mg.

**CONCLUSION:** The results obtained indicated sufficient evidence that jackfruit peel crude extract has toxic effects and antioxidant potential comparable to the standards used at higher concentrations.

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## Acute Oral Toxicity, Histopathology, and effects on hepatic enzymes of Ficus nota

Kenn James Ladublan Lagumbayan\*<sup>1</sup>, Jan Mae Vianney P. Factor<sup>1</sup>, Joanne Q. Rodriguez<sup>1</sup>, Vieno Gino Cruz<sup>1</sup>, Mark Harvey B. Adamson<sup>1</sup>

### Abstract

**OBJECTIVES:** Ficus nota is traditionally used by Philippine indigenous groups as alternative medicine and essential food source. Scientific evidence on the safety and toxicity of the fruit are deemed to be insufficient. The study assess the acute oral toxicity, histopathological studies, and effects on hepatic enzymes of Ficus nota fruit to provide pre-clinical data in the development of safe, efficacious, and low-cost quality new herbal drug candidate.

**METHODS:** Acute oral toxicity of the crude ethanolic fruit extract was performed according to the guidelines set by OECD 423 on total of twelve 8-12 week old female Sprague Dawley rats weighing 100-150g. Toxicological observations were completed for 14 days. On day 14, all test animals were humanely killed by cervical dislocation and subjected to gross necropsy; liver samples were subjected to histopathological examination. Blood samples of the test animals were collected for AST & ALT assay.

**RESULTS:** Extract was classified as GHS hazard category 5 (LD50=2000-5000mg/kg/bw), which indicates relatively low acute toxicity hazard. Gross examination of the rodent's organ was all normal. Histopathological examination showed no area of acute cellular swelling and hepatic zonal necrosis. Wilcoxon signed-rank test showed that post-exposure ALT level of test animals treated with 300mg/kg/bw & 2000mg/kg/bw were statistically significant lower than pre-exposure ALT level at  $\alpha=0.05$  (300mg/kg:Z= -0.524,p=0.600; 2000mg/kg:Z= -0.405,p=0.686). Likewise, post-exposure AST level showed statistically significant lower against pre-exposure AST level (300mg/kg:Z= -1.572,p=0.116; 2000mg/kg:Z= -1.753,p=0.080).

**CONCLUSION:** Results provided pre-clinical safety evidence on acute toxicity of the plant suggesting that fruit extract is non-toxic and safe for consumption up to 5000mg/kg/bw. The research recommends to perform sub-chronic & chronic toxicity studies to validate the long-term safety of the plant.

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## Comparative analysis of Hepatoprotective activity in crude extracts of different plants

Dr. Jitendra Patel<sup>\*1</sup>, G.S.Kumar<sup>2</sup>

### Abstract

**OBJECTIVES:** The main objective of this study was to compare the hepatoprotective activity of six medicinal plants. The comparisons were done on the basis of biochemical reduction and histopathology of livers on animal study.

**METHODS:** All the data obtained from animal study subjected for bio-statistical analysis. The rise in serum level ALT, AST, ALP, Total bilirubin, direct bilirubin and cholesterol has been marked to the damaged structural virtue of the liver. They are found in cytoplasm and secreted in blood stream after hepatic damages. When treated with plant extract to rats after giving hepatotoxicant and found that the marker enzymes (ALT, AST, ALP, BILT & BILP) level is reducing compare to standard.

**RESULTS:** The Terminalia coriacea and Artocarpus hirsutus at 250 and 500mg/kg respectively revealed that the \*P<0.05; \*\*P< 0.01; \*\*\*P<0.001; when compared to CCl4 group. Which indicate the 5%, 1% and less than 1% chance of false positive. The probability is supporting the activity significantly. The Cucumis melo revealed P<0.05 and P<0.01 as compared with liver damaged control to drug treated animal at doses 100, 250 and 500mg/kg. The Buchanania lanzan revealed significant at P<0.05\*, 0.01\*\* and 0.001\*\*\* at 100 mg/kg, 200mg/kg and 400 mg/kg for aqueous and alcoholic extract both. The Diospyros melanoxylon (Roxb) and Solanum americanum Mill at doses 100, 200 and 400 mg/kg and 200, 400 and 600 mg/kg res

**CONCLUSION:** In statistical significance testing, the p-value is the probability of obtaining test statistic at least as extreme as the one that was actually observed, assuming that the null hypothesis is true. The first two plants at 250 and 500mg/kg revealed that the \*P<0.05; \*\*P< 0.01; \*\*\*P<0.001.

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<sup>2</sup>School of Pharmacy, GITAM University, Rudraram, Sangareddy, Hyderabad-



## In-vitro and in-vivo assessment of Philippine Pandanus species (Pandanaceae) as potential anti-inflammatory agents

Crisfel R. del Mundo<sup>\*1</sup>, Agnes L. Castillo<sup>2</sup>, Mario A. Tan<sup>2</sup>

### Abstract

**OBJECTIVES:** Two members of the Philippine Pandanus species (Pandanaceae), *Pandanus amaryllifolius* Roxb. (PA) and *Pandanus tectorius* ex Du Roi (PT), have been ethnomedically used in the treatment of inflammatory diseases, however, this claim is not yet scientifically proven. Hence, this study aimed to establish a scientific basis on traditional claims of these species as potential anti-inflammatory agents through in-vitro and in-vivo scientific methods.

**METHODS:** PA and PT leaves were prepared to get the methanolic (PAM and PTM) and aqueous (PAA and PTA) extracts. First, all extracts were assessed in-vitro via COX inhibitory screening assay. After which, in-vivo tests were made on the most active extract in-vitro via acute oral toxicity, carrageenan-induced paw edema, histological and immunohistochemical analyses in rats. Metabolite profiling was also done via liquid chromatography-mass spectroscopy. Statistical analysis was made to analyze the results.

**RESULTS:** In-vitro assay on all extracts showed that only PTA gave the most remarkable COX-1 (86.04% 0.67) and COX-2 inhibition (81.28% 1.27) comparable to Indomethacin (COX-1: 89.38% 1.60 and COX-2: 90.69% 1.55). Acute toxicity test revealed that PTA was safe at 2000 mg/kg. In in-vivo test, PTA at 500 mg/kg showed the greatest activity against COX-2-mediated inflammation (3rd to 6th hr) caused by Carrageenan based on the following data: %anti-inflammatory of 91.79% at 6th hr; least neutrophil infiltration histologically; and least COX-2 expression immunohistochemically compared to the carrageenan control group ( $p < 0.05$ ). Metabolite profiling revealed the presence of flavonoids and phenolics.

**CONCLUSION:** Taken together, results imply that PTA has anti-inflammatory activity via COX-2 inhibition both in-vitro and in-vivo, thus, scientifically proving its folkloric application. Presence of flavonoids and phenolics, which have anti-inflammatory effects, could serve as the basis for such activity.

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## Regulation of *Helminthostachys zeylanica* extracts in intestinal cytokine and anti-inflammatory effects during acute colitis

Yen-Chin Chen<sup>\*1</sup>, Chiu-Mei Li<sup>2</sup>, Shu-Chen Lai<sup>2</sup>, Po-I Chen<sup>2</sup>, Li-wei Lin<sup>3</sup>, Fan-Shiu Tsai<sup>3</sup>

### Abstract

**OBJECTIVES:** The rhizomes of *Helminthostachys zeylanica* (HZ) a folk herbal medicine in Taiwan, have been used as an antipyretic and antiphlogistic agent or to treat diarrhea and promotion of blood circulation. This study aims to investigate the effects and potential mechanism of HZ extracts on dextran sulfate sodium(DSS)-induced acute colitis in mice.

**METHODS:** Six week-old C57BL/6 mice were administered 3% dextran sodium sulfate in drinking water for five days. We observed an increased weight loss in B6 mice. We used B6 mice as control group(C), DSS group(DSS), HZ 0.1 group(0.1g/kg), HZ 1 group(1g/kg) and HZ 2 group(2g/kg). CD3+ protein expression was measured in the tissue using fluorescence immunohistochemistry. The levels of TLR4 and NF- $\kappa$ B were assessed using Western blot analysis, and levels of cytokine IL-6 and TNF- $\alpha$  were quantified by ELISA.

**RESULTS:** DSS-induced mice exhibited lower body weight, shorter colonic length. The pathological results showed DSS produced acute colitis with inflammatory cells aggregation and mucosa necrosis, especially in certain sections of colon. HZ 2 group significantly inhibited lower body weight, shorter colonic length. IL-6 in colon was higher in DSS-induced mouse than HZ treatment group ( $p < 0.05$ ). TNF- $\alpha$  in serum was higher in DSS-induced mouse than HZ treatment group. HZ 2 group decreased the expression of NF- $\kappa$ B and TLR4 protein in colon. In addition, In addition, HZ 2-treated mice also demonstrated much less CD3(+) active T cell.

**CONCLUSION:** HZ may be used as a potentially novel for health care to improve the treatment of acute colitis.

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## Determination of the antifungal property of the semipurified glycosides from the extract of *Mollugo oppositifolia* Linn. (*Sarsalida*) versus *Aspergillus niger* and *Candida albicans*

Jhon Raphael M. Jimenez\*

### Abstract

**OBJECTIVES:** The prevalence of resistance to antifungal agents significantly increased in the past decade. So it led to the discovery of new classes of antifungal compounds to that fungal infection. The plant *Mollugo oppositifolia* (Molluginaceae) which is locally known as “Malagoso or Papait” have been reported in favor of various traditional uses. *Mollugo oppositifolia* is reported to possess antifungal property due to presence of glycosides.

**METHODS:** Methanolic extract of *Mollugo oppositifolia* was seen the presence of steroid glycosides, flavonoids, tannins, glycosides and carbohydrates according to phytochemical screening. Stas-Otto Method was used for the semi-purification of glycosides. The semi-purified extract of *Mollugo oppositifolia* underwent Physicochemical Analysis such as Organoleptic Evaluation, pH, Solubility test, Specific gravity, Fourier Transfer Infrared Spectrometry and Confirmatory testing.

**RESULTS:** Test organisms undergone observations were *Aspergillus niger* and *Candida albicans*. Antifungal Susceptibility Testing was used to carry out and two-fold serial tube dilution method was used to determine the Minimum Inhibitory Concentration. *Aspergillus niger* exhibited average significant inhibition of 13.67 mm ( $\pm 1.6704$ ) and *Candida albicans* exhibited average significant inhibition of 18.67 mm ( $\pm 1.6704$ ), both of which are statistically significant. Minimum Inhibitory Concentration of the semi-purified glycosides of *Mollugo oppositifolia* was 250 ug/ml.

**CONCLUSION:** Cold cream was used standard for the pre-formulation. Logarithm was used to determine concentrations. 2%, 8% and 32% was the concentrations computed. Physical and Chemical Analyses was conducted to the formulated cream. Overall, *Mollugo oppositifolia* Linn is an active antifungal agent.

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## Traditional Chinese medicine herbal extracts of *Rheum officinale* Baill. and *Siegesbeckia orientalis* inhibits SAR-CoV replication

Wen Chih-Chun<sup>\*1</sup>, Lie-Fen Shyur<sup>2</sup>, Jia-Tsong Jan<sup>2</sup>, Ning-Sun Yang<sup>2</sup>, Sheng-Chu Kuo<sup>3</sup>

### Abstract

**OBJECTIVES:** Severe acute respiratory syndrome (SARS) is a highly infectious, life-threatening disease caused by a novel coronavirus, severe acute respiratory syndrome associated coronavirus (SARS-CoV). In 2003, SARS spread in over 25 countries and caused 8098 probable SARS cases and 774 SARS-related deaths. Development of anti-SARS-CoV agents is pivotal to prevent the reemergence of SARS.

**METHODS:** 50 traditional Chinese medicinal herbs were extracted and evaluated for anti-SARS-CoV activities using a cell-based assay that measured SARS-CoV-induced cytopathogenic effect (CPE) in vitro on Vero E6 cells. The concentrations of the extracts inhibit 50% of cell proliferation (CC50) and 50% of viral replication (EC50) were determined. The selective index (SI), the ratio of CC50 to EC50, was then calculated to evaluate the potency of anti-SARS-CoV activity of test extracts.

**RESULTS:** Three herbal extracts, one from *Siegesbeckia orientalis* (designated as SOH) and two from *Rheum officinale* Baill. (designated as ROM, ROH), were found to be potent inhibitors of SARS-CoV at concentrations between 10 and 200 µg/ml. The concentrations of SOH, ROM and ROH needed to inhibit 50% of viral replication (EC50) were calculated as 1.083, 0.396, 0.412 µg/ml, respectively. The concentrations of the six extracts needed to inhibit 50% of Vero E6 cell proliferation (CC50) were also determined as >500, >500 and 450 µg/ml, respectively. The resulting selective index values (SI = CC50/EC50) of the most effective extracts SOH, ROM and ROH were > 50, >1262 and 1092, respectively.

**CONCLUSION:** Our findings suggest that these three herbal extracts may have potential as candidates for future development of anti-SARS therapeutics.

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## Antimicrobial and Disinfectant Susceptibility Patterns of Isolated Gram-Negative Rods from the Neonatal Intensive Care Unit (NICU) of the Philippine General Hospital (PGH)

Leigh Don T. Villanueva, RPh<sup>\*1</sup>, Louise C. Santos<sup>2</sup>, Shiela May J. Nacabu-an<sup>2</sup>

### Abstract

**OBJECTIVES:** Gram-negative rods are the most common highly-pathogenic multidrug-resistant strains found in the Neonatal Intensive Care Unit (NICU) of the Philippine General Hospital (PGH). The study aimed to detect the presence of gram-negative rods, specifically *Acinetobacter baumannii* and *Klebsiella pneumoniae*, and determine their antimicrobial and disinfectant susceptibility patterns.

**METHODS:** Samples were obtained by swabbing 6 high-touch surfaces in the NICU for 15 days. 90 samples were obtained and isolates were identified as either *A. baumannii* or *K. pneumoniae* using morphological and biochemical tests. 7 samples were identified as *A. baumannii* and 4 samples were identified as *K. pneumoniae*. Disc diffusion was used to determine the antimicrobial susceptibility while Broth Microdilution was employed for the disinfectants.

**RESULTS:** Among the 7 isolates of *A. baumannii*, 5 were classified as MDR, 1 as XDR, and 1 as Susceptible. As for the 4 isolates of *K. pneumoniae*, 3 were classified as MDR and 1 as Susceptible. *A. baumannii* was highly resistant against amikacin and meropenem while ampicillin-sulbactam had the highest activity. *K. pneumoniae* was most resistant against ampicillin-sulbactam, piperacillin-tazobactam, ceftazidime, and amoxicillin/clavulanic. Amikacin, meropenem and ciprofloxacin had the highest activity against *K. pneumoniae*. For the disinfectants, the minimum inhibitory concentration of 70% ethanol, hydrogen peroxide, and sodium hypochlorite was >512 mcg/mL and for benzalkonium chloride was 64 mcg/mL.

**CONCLUSION:** The findings of this study would be useful as a future reference for formulating standard treatment guidelines for nosocomial infections, specifically *A. baumannii* and *K. pneumoniae*. The results of this study would be helpful in selecting appropriate disinfectants and in improving cleaning protocols.

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## Evaluating the Mutagenicity of E-Cigarette Juice with Nicotine using Micronucleus Assay

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### Abstract

**OBJECTIVES:** This study aims to determine the possible mutagenic effect of electronic cigarette juice groups, the post 24 and 48 hour groups, after the administration of the test substance and compare the data with the positive control and negative control group.

**METHODS:** A total of 48 mice were used and divided into 4 groups. Group A, administered with electronic cigarette juice, Group B with electronic cigarette juice with nicotine (3mg/mL), Group C with the positive control Mitomycin-C (0.5mg/mL), and Group D with negative control 0.9% sodium chloride. Prior to cervical dislocation, the groups were further divided into two sets for post 24 hours and post 48 hours following administration. Micronucleus test was used and two-way factor ANOVA for statistics.

**RESULTS:** Results showed that Mitomycin-C 48 hours has the elevated MnPCE count attributable to its mutagenic activity. MnPCE were seen also on the electronic cigarette juice with nicotine (3 mg/mL). The number is not comparable to Mitomycin-C (post 48 hours). MnPCE count on the different electronic cigarette for both nicotine and without nicotine is less than the known mutagenic drug.

**CONCLUSION:** It is noted that the mutagenic potential for the IP administration of electronic cigarette juice is less if the basis is the Mitomycin-C (post 48 hours) count.

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## Quantification of Tetracycline Residues in Pork (*Sus scrofa domesticus*) Muscle and Liver in Public Wet Markets in Quezon City

Lance Frederick C. Dusaban\*<sup>1</sup>, Abana, KKS.<sup>1</sup>, Kwok, JRA.<sup>1</sup>

### Abstract

**OBJECTIVES:** This study aimed to evaluate tetracycline residues found in muscle and liver tissues of pork (*Sus scrofa domesticus*) samples from public wet markets in Quezon City. To realize this, the study specifically aims to: 1. Identify the presence of tetracycline residue in pork samples from public wet markets in Quezon City by antibiotic sensitivity testing via disc diffusion; 2. Quantify the tetracycline residues found in pork samples from markets in Qu

**METHODS:** The study employed an experimental research design. Samples were collected from market stalls in wet markets in Quezon City. Samples were subjected to Antimicrobial Sensitivity Testing via Disc Diffusion performed by the National Meat Inspection Service and HPLC Testing. HPLC Analysis used a binary mobile phase of 85:15 acidified water: acidified acetonitrile. Method validation was also performed.

**RESULTS:** The Antibiotic Sensitivity Testing reported that out of the 20 muscle samples and 14 liver samples submitted to the NMIS, it was reported that there was no observed zone of inhibition in all samples. Method Validation results reported the good linearity with r<sup>2</sup> value of 0.995, LOD and LOQ were 23.9 ug/kg and 72.3 ug/kg respectively. HPLC Analysis found that Two out of twenty muscle samples were found to possibly contain tetracycline residues, detected at levels ranging from 1452 to 1542 µg/kg. Consequently, eight out of fourteen liver samples contain residues from 1430 to 1539 µg/kg. All positive samples exceeded the tetracycline maximum residue limit.

**CONCLUSION:** Results obtained from the HPLC analysis compared to the AST via Disc Diffusion has advantages in terms of the ability to detect trace amounts of drug residues in pork samples. This study has shown evidence that tetracycline residues may be present in pork muscle and liver sold in public wet markets

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## The protection mechanism of folic acid and folinic acid via inhibition of heart damage to promote cardiac cell survival and prevent apoptosis in late-stage triple-transgenic Alzheimer's mice hearts

Sue-Fei Cheng<sup>\*1</sup>, Yi-Chen Su<sup>2</sup>, Wei-Wan Kuo<sup>2</sup>, Chih-Yang Huang<sup>2</sup>

### Abstract

**OBJECTIVES:** Alzheimer's disease (AD) and cardiovascular disease share some risk factors, disease-related pathways and persons with Alzheimer's disease displayed a higher risk of incident ischemic heart disease. So as to quest the relationship between Alzheimer's disease and cardiovascular diseases.

**METHODS:** We use triple-transgenic late-stage AD mice to inspect the heart functional changes, and the triple-transgenic late-stage AD mice (3xTg-AD; PS1M146V, APPSwe, and tauP301L) were gastric-fed with folic acid (FA) and folinic acid (FN) for 3 months to study their effects in mechanisms of enhance-survival and anti-apoptotic effects.

**RESULTS:** This study observed that the ingestion of FA or FN caused a reduction of apoptosis proteins and enhancement of survival and SIRT1 signaling proteins in the hearts. Collectively, our results suggest that FA or FN could inhibit heart damage via promote cardiac cell survival and prevent apoptosis in triple-transgenic late-stage AD aging mice. The IGF1R/PI3K/AKT survival pathway in the AD mice heart can be increased through treatment with FA or FN. The study showed that SIRT1 and its downstream PGC-1 $\alpha$  constitute is a novel alternative

**CONCLUSION:** FA and FN could protect triple-transgenic Alzheimer's old mice hearts. By way of activating SIRT1 longevity pathway performance instead of IGF1 survival signaling and increase the chance for cardiomyocytes survival.

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## Synthesis and Characterization of Donepezil loaded Nanoceria for Alzheimer's

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### Abstract

**OBJECTIVES:** The objective of this study is to investigate the synergistic effect of donepezil along with nanoceria (anti-oxidant) as a novel carrier in the treatment of Alzheimer disease and thereby reduce the dosing frequency and improving the efficacy.

**METHODS:** Preformulation studies were carried out for the compatibility study using FT-IR to check the compatibility between the selected drug and excipients by peak matching method. In formulation development donepezil loaded nanoceria was prepared by solvent evaporation method using 20% polymer concentration, 2 hours stirring time, 2000 rpm stirring speed and 1% w/v surfactant concentration and evaluated for further invitro and in vivo characterization.

**RESULTS:** F2 batch was found to have better particle size, zeta potential and entrapment efficiency. In vitro release was found to be in sustained manner for 24 hours. Various kinetic models were fitted and it was observed that Higuchi's model was the best fit model. In vitro cytotoxicity study was performed in SH-SY5Y cell lines and the IC 50 value of the formulation is about 0.21mg/ml and IC 50 value of the drug is about 0.23 mg/ml which proves that the nanoceria loaded with drug shows very less toxicity. Scopolamine induced dementia model was adopted to perform in vivo studies and the behavioural parameters and SOD levels were checked. Nanoceria showed better results

**CONCLUSION:** The synergistic effect of Donepezil and Nanoceria targeting both the pathways (cholinergic pathway and lipid peroxidation pathway) simultaneously for the treatment of Alzheimer is indeed the novelty of this thesis and was found to be an initial success which is evident from the studies performed.

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## simultaneous analysis of tamoxifen and its metabolites in DBS by LC-MS/MS for therapeutic drug monitoring of tamoxifen on breast cancer

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### Abstract

**OBJECTIVES:** Tamoxifen is the first choice of hormonal therapy in breast cancer patients ER positive. Tamoxifen is a prodrug that needs to be metabolized to be active. A sensitive ultra performance liquid chromatography/tandem mass spectrometry (UPLC-MS/MS) method has been developed for the simultaneous quantification of tamoxifen and its main phase I metabolites in Dried Blood Samples (DBS) of 15 breast cancer patients

**METHODS:** DBS samples were extracted by ultrasound-assisted liquid extraction. Tamoxifen, 4-hydroxy-tamoxifen and 4-hydroxy-N-desmethyltamoxifen (endoxifen) were successfully chromatographically separated using ultra high performance liquid chromatography-tandem mass spectrometry (UHPLC-MS/MS).

**RESULTS:** The analytical method has been fully validated in agreement with EMA guidelines. The % diff and CV of within-run accuracy and precision obtained in this method were no more than 15% and no more than 20% for LLOQ. The calibration curve range for tamoxifen obtained was 5 - 200 ng/mL, 1 - 40 ng/mL for endoxifen and 0.5- 20 ng/mL for 4-Hydroxy-tamoxifen with  $r > 0.99$ .

**CONCLUSION:** The applicability of this method was demonstrated and could be used to determine tamoxifen and its metabolites level in DBS samples of 15 breast cancer patients, thus become important tools to support therapeutic drug monitoring of tamoxifen in breast cancer

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## Carbonate apatite nanoparticles-facilitated delivery of siRNA(s) targeting calcium ion channels kills breast cancer cells

Mohammad Borhan Uddin\*

### Abstract

**OBJECTIVES:** Specific gene knockdown facilitated by short interfering RNA (siRNA) is a potential approach for suppressing expression of ion channels and transporter proteins to kill breast cancer cells. Overexpression of calcium ion channels, namely TRPM7, ORAI1, ORAI3 and ATP2C1 is seen in a variety of breast cancer subtypes. Since naked siRNA is anionic and prone to nuclease-mediated degradation, it has limited permeability across the cationic cell membrane

**METHODS:** Carbonate apatite (CA) nanoparticles were formulated, characterized, loaded with TRPM7, ORAI1, ORAI3 and ATP2C1 siRNAs and delivered into MCF-7 breast cancer cells to selectively knockdown the respective calcium ion channels.

**RESULTS:** Individual knockdown of TRPM7, ATP2C1, ORAI1 and ORAI3 genes showed extremely significant reduction ( $p < 0.001$ ) in cell viability of MCF-7 cells.

**CONCLUSION:** Therefore, CA-siRNA-facilitated gene knockdown in vitro holds a high prospect for deregulating cell proliferation and anti-apoptotic pathways modulated by Ca signalling in breast cancer cells.

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## Preventive effects of ginsenoside Rh2 against lipopolysaccharide induced acute lung injury mediated via TLR4/PI3K/Akt/mTOR, Raf-1/MEK/ERK and Keap1/Nrf2/HO-1 signaling pathways in mice

Yung-Hung, Hsieh\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Ginsenoside Rh2 (GRh2) is one of the most crucial ginsenosides in ginseng. This study aims to investigate the anti-inflammatory effects of GRh2 by LPS-induced lung injury in mice. GRh2 treatment decreased the histological alterations induced by LPS-induced lung injury. Moreover, GRh2 provided the reduction of the total cells number and protein concentration in the BALF. GRh2 has provided with anti-inflammatory effects and therapeutic efficacy.

**METHODS:** Mice were randomly divided into six groups: sham, model, GRh2, and dexamethasone treatment groups. Mice were intratracheally instilled with LPS or sterile saline alone. GRh2 were ground and suspended in distilled water for administration to mice. GRh2-pretreated groups received an oral GRh2 at given doses; each mouse was administered orally once a day within 5 days, consecutively. The mice were also given an intraperitoneal injection of dexamethasone 1 h prior to LPS administration.

**RESULTS:** Our study presents that GRh2 reduced LPS-induced NO, TNF- $\alpha$ , IL-1 $\beta$ , L-4, IL-6 and IL-10 productions in lung tissues. GRh2 treatment decreased the histological alterations induced by LPS-induced lung injury. Moreover, GRh2 significantly provided the reduction of the total cells number and protein concentration in the BALF. GRh2 also blocked iNOS, COX-2, the phosphorylation of I $\kappa$ B- $\alpha$ , ERK, JNK, p38, Raf-1 and MEK protein expression which corresponded to the growth of HO-1, Nrf-2, catalase, SOD and GPx expressions in LPS-induced lung injury. Thus, GRh2 brings into playing an anti-inflammatory effect in vivo.

**CONCLUSION:** GRh2 attenuated pulmonary histological changes, lung edema, and inhibited the release of inflammatory cytokines in the BALF. These data suggested that GRh2 has potent anti-inflammatory response by inhibited the TLR4/PI3K/Akt/mTOR, Raf-1/MEK/ERK and Keap1/Nrf2/HO-1 signaling pathways.

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## In-vitro antidiabetic and antihyperlipidemic activity of *Muntingia calabura*

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### Abstract

**OBJECTIVES:** Hyperlipidemia is a lipid metabolism disorder that can be characterized by an abnormally high concentration of fats or lipids in the blood, whereas diabetes mellitus is an abnormally high concentration of blood glucose levels. DM and hyperlipidemia are related diseases and a risk factor for promoting CVD. The study was done to determine the antihyperglycemic and antihyperlipidemic activity of *M. calabura* thru bioassay-guided enzyme inhibition.

**METHODS:** Dried *M. calabura* leaves were percolated using 70% MeOH and was concentrated under vacuo and was then subjected to kupchan partitioning using solvents of increasing polarity. Resulting fractions were subjected to  $\alpha$ -amylase inhibition assay. The most active fraction was then subjected to column chromatography using silica gel with gradient elution of solvents and was pooled using TLC method. The most active pooled fraction that inhibits  $\alpha$ -amylase was subjected to  $\alpha$ -glucosidase and HMG CoA reductase inhibition assay. TPC and TFC were also noted.

**RESULTS:** Petroleum ether partitioned extract (IC<sub>50</sub>=350.30  $\mu$ g/ml) showed better inhibition of  $\alpha$ -amylase compared to acarbose (0.0005619 mg/ml). Petroleum ether partitioned extract was fractionated by column chromatography resulting to four pooled fractions and were further assessed by  $\alpha$ -amylase inhibition assay. Pooled fraction 3 (PF3) showed a notable inhibition of  $\alpha$ -amylase (IC<sub>50</sub>=119.1  $\mu$ g/ml). Alpha-glucosidase inhibition activity of the PF3 resulted to better inhibition (IC<sub>50</sub>=257.7  $\mu$ g/ml) compared to standard drug acarbose (IC<sub>50</sub>=27.49 mg/ml. A minimal inhibition of HMG-CoA reductase was observed for PF3 ((IC<sub>50</sub>>1000  $\mu$ g/ml) compared to standard drug pravastatin with 84% inhibition. PF3 yielded GAE value of 39.46  $\mu$ g/ml and QE value of 40.17  $\mu$ g/ml.

**CONCLUSION:** The result of the present study indicates that, pooled fraction 3 of *M. calabura*, rich in polyphenolic compounds are effective  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors, which may help to reduce the post-prandial glucose levels and has a minimal anti-hyperlipidemic activity.

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## Evaluation of 15-Lipoxygenase Enzyme Inhibitory Activity of *Eleusine indica* Linn (Gaertn.) Aerial Shoot Fractions

Adrien Kyle M. Jacinto, RPh\*<sup>1</sup>

### Abstract

**OBJECTIVES:** To evaluate the anti-asthmatic property of EI aerial shoot fractions via Inhibition of 15-Lipoxygenase (LOX).

To characterize the EI fraction with the highest 15-LOX inhibitory activity using TLC profiling

To validate the genetic identity of EI using DNA barcoding

To investigate the stomatal type & index of the EI leaf

To examine the EI leaf for the presence of phytochemical constituents through histochemical analysis & phytochemical screening

**METHODS:** The *Eleusine indica* was subjected to the following tests:

DNA barcoding to validate and discriminate the genetic identity of the grass specie using matK and ITS as primers

Plant stomatal investigation to determine the shape and stomatal index of EI leaf

Histochemical analysis and phytochemical screening to determine the phytochemical constituents present

15-LOX inhibition assay to evaluate its antiasthmatic activity

TLC profiling of the fractions with the highest activity, together with crude

**RESULTS:** For the determination of the significant ( $p < 0.05$ ) lipoxygenase inhibition activity with respect to the negative control, the slopes of the lines from each test group is subjected to 1-Way ANOVA. The results showed that at 10ppm, the Methanol, Chloroform, and Ethyl acetate fractions exhibited 15-LOX inhibition. Furthermore, at 100ppm, all of the samples inhibited 15-LOX, with Ethyl acetate (59.85%) and Chloroform (72.73%) fractions exhibiting greater inhibitory activity, respectively. TLC profiling confirmed that the

presence of phenolics particularly the flavonoids were the one responsible for the 15-LOX enzyme inhibition.

**CONCLUSION:** The genetic of EI was confirmed to be authentic (99%). Stomata present is of encyclocytic type, with stomatal density of 74.02/mm<sup>2</sup> on the front side and 79.92/mm<sup>2</sup> on the back. The aerial shoots of *Eleusine indica* have

anti-asthmatic property, which is attributed to the presence of flavonoids

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## Alpha-Glucosidase Inhibitory Activity of Cogon [*Imperata cylindrica* Rausch (Family Poaceae)] Leaf and Root Methanolic Extract and Fractions

*Cristelle Kae D. Rodriguez\**

### Abstract

**OBJECTIVES:** Cogon grass (*Imperata cylindrica* Rausch), an allelopathic weed, is used in traditional medicine to treat kidney stones, arthritis, edema, and diabetes. However, there are no evidences of its antidiabetic use in scientific literature. This study aimed to evaluate the alpha-glucosidase activity of the methanolic extract and fractions of *I. cylindrica*, and the phytochemical components putatively responsible for it.

**METHODS:** A whole plant of *I. cylindrica* was macerated in methanol, from which Kupchan fractions were obtained. Phytochemical analysis and thin layer chromatography was used to characterize the phytochemicals present in *I. cylindrica*. The crude methanolic extract, ethyl acetate and aqueous fractions were assayed for its alpha-glucosidase activity in vitro using an alpha-glucosidase activity assay kit. *I. cylindrica* was also characterized according to the specifications of USP 41-NF36.

**RESULTS:** Most of the active components of *I. cylindrica* are alcohol- soluble, pointing to the presence of phenols, alkaloids, steroids, flavonoids, and glycosides. Phytochemical and thin layer chromatographic analysis of the methanolic extract and its fractions showed that *I. cylindrica* roots and leaves contains steroids, flavonoids, cardiac glycosides and tannins. The methanolic extract exerted a mean alpha-glucosidase inhibition of 50% at 0.1 mg/mL, but did not apparently show a dose-dependent inhibition upon increase in inhibitor concentration. The ethyl acetate and aqueous fractions displayed a dose-dependent increase in alpha-glucosidase inhibition upon increase in inhibitor concentration.

**CONCLUSION:** The results of this study point to the alpha-glucosidase inhibiting activity of the methanolic extract and its Kupchan fractions of *I. cylindrica*. Further investigation is required to determine the anti-diabetic potential of *I. cylindrica*.

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## In vitro mammalian alpha-glucosidase inhibitory activity of *Ficus nota* (Blanco) Merr.

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### Abstract

**OBJECTIVES:** Philippine traditional herbal knowledge and system of cultural groups are widely accepted in the primary health care. Ethnopharmacological studies on *Ficus nota* revealed the use for diabetes. The study investigates the mammalian intestinal alpha-glucosidase inhibition, in vitro, of *Ficus nota* leaves to validate the folkloric data and to provide information in the development of safe, efficacious, and low-cost quality new herbal drug candidate.

**METHODS:** Spectroscopic method was performed to examine the mammalian alpha-glucosidase inhibition of ethanol partition (EP), hexane partition (HP), ethyl acetate partition (EAP), chloroform partition (CP) and methanol partition (MP). IC<sub>50</sub> was determined from generated non-linear regression extrapolated from concentration-% inhibition plot. Standardized phytochemical analyses and Thin Layer Chromatography (TLC) bioautography was employed to detect the presence of phytochemical constituents.

**RESULTS:** EAP showed a concentration-dependent inhibition towards mammalian alpha-glucosidase enzyme displaying the lowest IC<sub>50</sub> (0.243 mg/mL) among different partitions. Phytochemical analyses and TLC bioautography revealed the presence of flavonoids on ethyl acetate partition (EAP) that may be responsible for the bioactivity. Flavonoids such as genistein, daidzein, quercetin, rutin, epicatechin and catechins were reported bioactive against diabetes. Other *Ficus* species have been also studied to contain flavonoids such as myricetin, naringenin and quercetin.

**CONCLUSION:** The results provided scientific evidence to support the folkloric use of the plant where partitions, especially EAP, possess mammalian alpha-glucosidase inhibition. This indicates that *Ficus nota* is a potential candidate in the formulation of standardized herbal drug product.

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## Exploring the potentiation effect of quercetin and metformin in the treatment of endothelial dysfunction in STZ induced diabetic rat abdominal aorta

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### Abstract

**OBJECTIVES:** Diabetes mellitus is associated with an increased risk of cardiovascular disease, even in the presence of intensive control. Endothelial dysfunction has received much attention as a potential contributor to the pathogenesis of vascular disease in diabetes mellitus. The objective of our present study was to investigate the antidiabetic effect and vascular protective effect of quercetin, metformin and its combination in a STZ induced diabetes.

**METHODS:** Male Sprague Dawley rats were used for 8 weeks in the experiment. Diabetes was induced intraperitoneally using 65mg/kg of streptozotocin dissolved in freshly prepared ice-cold normal saline. Parameters namely OGTT, AST, ALT, glucose, creatinine, total cholesterol, glucose, HDL, LDL, triglycerides and histopathology were performed. Abdominal aorta and pancreas were removed subsequently. Contractile response of the aortal rings followed by the relaxation response were studied.

**RESULTS:** There was a significant decrease in ( $p < 0.05$ ) AST, ALT and plasma creatinine, plasma glucose levels after treatment with combination. The effect of  $\alpha_1$ -receptor agonist-induced contractions induced by PE was decreased in endothelial intact aortic rings from combination drug treated rats in the abdominal aorta, compared with other groups. Relaxation induced by Ach and SNP was significantly decreased in endothelial intact rings of combination drug treated rats in the abdominal aorta. The diabetic groups which were treated with a combination of metformin and quercetin showed the islets with a great number of cells but with a lesser volume as compared to control in STZ-induced diabetic rats.

**CONCLUSION:** In summary, our outcomes revealed that quercetin administration in combination with metformin improved hyperglycemia, hyperlipidemia, hypercholesterolemia and cardiovascular risk in STZ induced diabetic rats.

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## Evaluation of wound healing activity of *Artocarpus heterophyllus* leaves methanolic extract ointment on Alloxan-induced Type 2 diabetic rats

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### Abstract

**OBJECTIVES:** The research aims to determine the wound healing activity of the crude methanolic extract of *Artocarpus heterophyllus*, Fam. Moraceae) leaves on Alloxan-induced diabetic albino rats.

**METHODS:** The plant material was collected last September 2014 from Bulacan, Bulacan and air dried for 2 weeks until crisp to touch. Exhaustive maceration using methanol as a solvent was performed to extract the metabolites from the leaves and standard phytochemical tests were performed to identify the constituents present. The ointment was formulated at the concentration of 5%, 10%, and 20% and tested for wound healing activity using alloxan-induced type 2 diabetic rats.

**RESULTS:** The presence of carbohydrates, flavonoids, tannins, glycosides, alkaloids, steroids, and terpenoids was detected from the qualitative phytochemical tests. the 20% concentration of crude methanolic ointment, there is a significant difference between the wound healing activity of the test sample and negative control (ointment base) after 21 days of treatment on the excised wound using One way ANOVA ( $p < 0.05$ ).

**CONCLUSION:** Therefore, there is a potential wound healing activity in crude methanolic leaves extract of *Artocarpus heterophyllus* at the concentration of 20% of the prepared ointment.

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## EVALUATION OF NEUROPROTECTIVE ACTIVITY OF *Acanthophora spicifera* (Rhodomelaceae)

Reymar E. Fausto\*<sup>1</sup>

### Abstract

**OBJECTIVES:** Determine the time latency scape of all groups and evaluate which group improved their cognitive ability.

Identify the relationship of time latency of each group to the histopathological analysis results as to severity of damage to CA3 neuronal cells.

Determine cholinesterase inhibitory activity dug by TLC using galantamine as standard

**METHODS:** Each group (from 5 groups) of rats will be subjected to morris water maze trial and test after pre treatment of *A. Specifera*.

In vitro Determination of Cholinestare inhibitory activity of each group by TLC.

Excomparision of results each group by cabsorbance measurement.

Comparison of Histopathological analysis of hippocampal neuronal CA3 cells

**RESULTS:** Groups that received preteeatment of *A. Specifira* extracts is comparable to standard anticholinergic drug donepezil as shown in the decrease in the escape latency and hippocampal tissue analysis. It suggests cholinesterase inhibitory activity in both ex vivo and in vivo analysis.

**CONCLUSION:** Rat groups who were pretreated with *A. spicifera* as suggested by behavioral MWM test *A. CA3* cslls of the brain of groups who were pre treated by *A. Specifera* shows lesser insult. Colorimetric method. To be done

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## AMP-Activated Protein Kinase, Antiangiogenic and Antiproliferative Activities of *Gracilaria coronopifolia* J.G. Agardh Extracts

*Katrin Mae M. Ortega\**

### Abstract

**OBJECTIVES:** The study aims to determine the role of AMP-Activated Protein Kinase in the inhibition of angiogenesis and to correlate the effect of iron, zinc and copper on the multiplication of blood vessels of CAM

**METHODS:** The Cyclex® AMPK kinase and CAM assay were employed. The analysis of Fe, Zn, and Cu concentrations on the treated CAM were performed using flame atomic absorption spectrometer (fAAS) and a developed colorimetric assay to provide an alternative and reliable determination of ions for quantitative analysis of angiogenesis based on metal content. Thin layer chromatography (TLC) and gas chromatography-mass spectrometry (GC-MS) revealed the active component of each extracts

**RESULTS:** This study reveals that the most potent extract that activated AMPK, significantly inhibited angiogenesis. Inhibition of angiogenesis is involved in the lowering of levels of Fe, Zn, and Cu ions in duck CAM. Notably, this is the first report on the AMPK activity of *G. coronopifolia* related to new blood vessel formation and a colorimetric-based quantification of angiogenesis based on Fe, Zn, and Cu concentration in the duck chorioallantoic membrane.

**CONCLUSION:** The data demonstrated that activation of AMPK provides a novel mechanism insight that leads to the regulation of cell proliferation that may prove useful in cancer treatment.

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## In-vivo determination of Immuno-regulatory Property of Sepia Ink Obtained from Bigfin Reef Squid (*Sepiateuthis lessoniana* Fam. Loliginidae)

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### Abstract

**OBJECTIVES:** Sepia ink (squid ink) is a natural chemical substance obtained from species of cuttlefish. Studies claim that among the activities of this product, sepia ink presents with immunoregulatory action. This study aimed to determine the In-vivo immuno-regulatory property of the ink from Bigfin Reef Squid (*Sepiateuthis lessoniana*) found in the seas of Pangasinan, a Philippine province rich in marine sources with potential for drug discovery.

**METHODS:** Sepia Ink Extract (SIE) was collected from freshly killed *Sepiateuthis lessoniana* using Madaras' protocol and was prepared using Zhong's protocol. The SIE was subjected to three subgroup of BALB/c rats (dose as mL/kg BW) in an experimental group (1.2, 2.4, 3.6 mL/kg BW SIE) a positive control group (75 mg/kg BW CM-Glucan), and a negative control group (1 mL NSS). Baseline and post-test profiling of White Blood Cell levels (Neutro, Lympho, Monocytes) were read to assess immunoregulatory activity.

**RESULTS:** In all the sepia/ squid ink preparations of the experimental group, the subgroup administered with the concentration of 3.6ml/kg body weight SIE exhibited the highest immuno-regulatory property in terms of lymphocytes and neutrophils increase; and was most proximate to the effect exhibited by the positive control (75 mg/kg BW CM-Glucan) which in turn ultimately presented the highest immunoregulatory action among all groups. ANOVA showed that there was no significant difference in the respective actions of SIE and CM-Glucan to increase Lymphocytes, Neutrophils, and monocytes in BALB/c animal models. Percent mean profiles of the SIE preparations reveal consistent immuno-regulatory activities.

**CONCLUSION:** The study concludes that sepia ink extract from Bigfin Reef Squid exhibits immunoregulatory activity of no significant difference to the market standard CM-Glucan. This conclusion is significant to public health, ethnic livelihood, and to the science of marines sources pharmacology.

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## Liposomal Curcumin as a Potential Therapeutic Intervention in Asthma

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### Abstract

**OBJECTIVES:** Curcumin a component of turmeric, which has been used in several ailments. But, curcumin has low bioavailability and hence limits its application. The present study is aimed to formulate liposomes containing curcumin with enhanced bioavailability and evaluate for its anti-inflammatory effects on lipopolysaccharide (LPS)-induced inflammation on BCI-NS1.1 cell line.

**METHODS:** Curcumin and salbutamol liposomes were formulated. These were characterized for particle size, zeta potential, encapsulation efficiency and in-vitro release profile. The liposomes were tested on BCI-NS1.1 cell line for its anti-inflammatory properties. The pro-inflammatory cytokines studied were IL-6, IL-8, IL-1 $\beta$  and TNF- $\alpha$ . Additionally, molecular mechanics simulations were used to elucidate the positioning, energy minimization, and aqueous dispersion of the liposomal architecture.

**RESULTS:** The prepared curcumin formulation showed an average size and zeta potential of  $271.3 \pm 3.06$  nm and -61.0 mV, respectively. The drug encapsulation efficiency of liposomal Curcumin is 81.1%. Both curcumin-loaded liposomes formulation (1 $\mu$ g/mL, 5 $\mu$ g/mL) resulted in significant ( $p < 0.05$ ) reduction in the level of pro-inflammatory cytokines expression such as IL-6, IL-8, IL-1 $\beta$  and TNF- $\alpha$  compared to positive control group. Liposomal curcumin with the dose of 1 $\mu$ g/mL reduces the inflammatory cytokines more effectively compared to that of 5 $\mu$ g/mL. Liposomal curcumin could be a promising intervention for asthma therapy.

**CONCLUSION:** The study shows that liposomal curcumin could be used as an effective intervention in asthma.

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## Thyroid lowering activity of the flavonoid from the leaves of Kangkong (*Ipomoea aquatica*, Convolvulacea) on Thyroxine-Induced Hyperthyroid Wistar Rats

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### Abstract

**OBJECTIVES:** The research aims to the determination of thyroid-lowering activity of the flavonoid extract from the leaves of Kangkong (*Ipomoea aquatica*, Convolvulacea) on drug-induced hyperthyroid in an animal model.

**METHODS:** Extraction of flavonoid was carried out using soxhlet apparatus with 80% methanol as extracting solvent. Standard phytochemical screening revealed result consistent to a flavonoid. Total flavonoid content quantitation was performed using aluminum chloride colorimetric assay . Levothyroxine 100mcg/100g was used to induce hyperthyroidism to male Wistar rats and T4 level was analyzed using ELISA assay.

**RESULTS:** Standard phytochemical screening revealed result consistent to a flavonoid. Total flavonoid content was done using aluminum chloride colorimetric assay which yielded 4.543 mcg quercetin/mg crude extract with an R2 value of 0.9827. Enzyme-Linked Immunosorbent Assay (ELISA) kit was used to determine the level of thyroxine (T4) which showed all doses of extract possesses thyroid lowering activity. One Way-ANOVA revealed that there is a significant difference between all the test group ( $p \leq 0.05$ ) and Duncan's multiple range tests revealed that there is no significant difference between the positive control and the experimental group (500mg/kg, 300mg/kg, 100mg/kg;  $p \geq 0.05$ ).

**CONCLUSION:** The semi-purified flavonoid from *Ipomea aquatica* at the concentration of 500mg/kg, 300mg/kg and 100mg/kg was comparable with the standard drug, Thiamazole at 100 mg/kg dose.

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## A Study on the Possibility of Treatment for Atopic Dermatitis by Antioxidant

Choi Nak Hoon\*<sup>1</sup>, Geun-Hyung Kang<sup>2</sup>, Eun-Hee Ji<sup>3</sup>

### Abstract

**OBJECTIVES:** Recently, oxidative stress has emerged as a cause of various chronic diseases including atherosclerosis and heart failure. Antioxidants, as reducing oxidative stress, have recently been widely used as a therapeutic and adjunctive therapy for these related diseases. The aim of the study is to investigate the effects of antioxidants on atopic dermatitis, which is also one of chronic disease.

**METHODS:** We have investigated various scientific articles that have been experimented with atopic dermatitis among naturally occurring antioxidant substances. Over 11 articles and numerous data were investigated.

**RESULTS:** Procyanidine from *Rosa multiflora*, Hirsutenone/Muricarpone B from *Alnus sibirica*, Hyperoside from *Nelumbo nucifera* have shown effective symptom related antioxidant activity toward atopic dermatitis in multiple mechanism.

**CONCLUSION:** Antioxidants such as Tannin, Diarylheptanoid and Flavonoid have been reported to be effective against atopic dermatitis, but the actual use is still insignificant. Research based on this field should become more active including clinical trial data for humans.

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The main ingredient of LALAOLA (L-Arginine, L-Aspartate hydrate 5230 mg) is arginine. By reviewing papers and promotions, we will highlight the value of arginine in South Korean pharmacies.

Kevin Ko\*<sup>1</sup>

### Abstract

**OBJECTIVES:** For 10 months in Korea, LALAOLA was promoted and sold to pharmacists to introduce our product. Through this process, we intend to examine the value of L-arginine and L-aspartate in South Korea Pharmacy. We will analyze the articles on the subject of arginine and examine the value of LALAOLA's Korean pharmacy market.

**METHODS:** For 10 months, we have been marketing and selling Lalaola to a nationwide pharmacy in Korea. We have reviewed some international papers to improve the accuracy of arginine administration at the pharmacy. By reviewing some papers, we can see that arginine is used for various purposes. Arginine can be applied to a variety of diseases through a single dose. By analyzing the article on the below, we will understand the information of arginine on the human body and inform the clinical value of Lalaol

**RESULTS:** <Effect of NO on human body>

1. The normal endothelial function of vascular endothelium was maintained by arginine intake, which is the only substrate for NO production, and it has a positive effect on platelet and blood coagulation systems in animal experiments. 2. Arginine administration is effective in preventing I / R injury (ischemia / reperfusion injury) due to excessive ROS inhibition. 3. Continuous administration of L-arginine-L-aspartate to athletes promotes fatty acid oxidation, reduces lactate accumulation, decreases total oxygen consumption and increases exercise efficiency. 4. Arginine during exercise increases muscle glucose utilization and promotes oxidation of fatty acids.

**CONCLUSION:** Thus, administration of arginine solutions in pharmacies can have a variety of indications. 1. Fatigue after drinking 2. chronic fatigue 3. Erectile dysfunction, infertility 4. Before exercise 5. Protein supplementation during diet 6. Improve concentration and memory 8. Metabolic syndrome 7. Growth

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## DETERMINATION OF STORAGE TIME OF PINEAPPLE (*Ananas comosus* (L) Merr) JUICE BASED ON BROMELAIN CONCENTRATION

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### Abstract

**OBJECTIVES:** Pineapple (*Ananas comosus* (L) contains the enzyme protease such as ananin, comosain, and bromelain. Bromelain is the largest component of enzyme protease in pineapple. The difference of time in consumption of juice can affect existing content in the juice. The aim of this research was to determine the storage time of pineapple juice based on bromelain concentration.

**METHODS:** Pineapple juice was stored at 10°C for 24hours in refrigerator. The concentration of bromelain in pineapple juice was analyzed using high performance liquid chromatography.

**RESULTS:** Levels of bromelain did not change significantly ( $p \geq 0.05$ ) after 16 hours of storage in this experimental condition, but decreased significantly after 20hours of storage.

**CONCLUSION:** Pineapple juice with optimum bromelain content can be stored for 16 hours at a temperature of 10 degrees Celsius in the refrigerator.

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## Cytotoxicity of d-Limonene rich-calamansi essential oil and compatibility with niosomal components

Clair Erdaje Palma<sup>\*1</sup>, Philip S. Cruz<sup>2</sup>, Agnes L. Castillo<sup>3</sup>

### Abstract

**OBJECTIVES:** The aim of this research study was to determine the chemical composition and amount of d-limonene present in Citrus microcarpa essential oil (CM EO), evaluate its cytotoxicity against different cell lines and assess possible interaction with niosomal components.

**METHODS:** Bioactive components of CM EO were determined by GC-MS analysis. Cytotoxicity study was done by MTT assay. Admixtures of CM EO and excipients (1:1) at different storage conditions 5oC, 25oC and 40oC for one month was evaluated using FTIR analysis. Thin film hydration method was used to prepare the niosomes containing span 60, cholesterol and dicetyl phosphate. Vesicle formation was determined by SEM. Presence of d-limonene after niosomal preparation was confirmed by GC-MS technique.

**RESULTS:** The d-limonene comprised at least 92.67% of the total oil and revealed 98.1% w/w of CM EO. CM EO was found to have cytotoxicity against breast tumor cell lines. A peak between 3020-3100 cm<sup>-1</sup> shows the presence of alkene at terminal end having C=C-H bond stretch. While peak at 1640-1680 cm<sup>-1</sup> represents an internal alkene and peaks at 1200-1500 imply presence of cyclic ring. These characteristic peaks of d-limonene were retained in the physical mixtures of CM EO and excipients. Lysed vesicles have shown presence of d-limonene by GC-MS analysis indicating that it was not destroyed after the preparation of niosomes. Spherical formation of niosomes with smooth edges was shown in SEM imaging.

**CONCLUSION:** These results concluded that there was no significant interaction in characteristic peaks of CM EO after combination with span 60, cholesterol and DCP as physical mixture and niosomal formulation and that d-limonene, the major compound, was retained. These promising findings are of considerable economic interest to Philippine agriculture which produces large amount of calamansi peel waste.

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## Determination of the prooxidant activity of Guyabano (*Annona muricata* L.) leaves through modified antioxidant assays and DNA

Sheena Jasley Samonte\*

### Abstract

**OBJECTIVES:** The study aims to confirm the prooxidant and antioxidant activity of *Annona muricata* L. leaves through DPPH Radical Scavenging, CUPRAC Assay and •OH-Mediated DNA Oxidative Degradation, to perform pharmacopeial assays for articles of botanical origins, to semi-purify components by Kupchan partitioning, to test for presence of metabolites by phytochemical screening and TLC, and to determine total flavonoid content using AlCl<sub>3</sub> Colorimetric Method.

**METHODS:** *Annona muricata* L. leaves were macerated and subjected to Kupchan partitioning resulting into dichloromethane, ethyl acetate and aqueous fractions. Prooxidant activity of each fraction and the crude extract at different concentrations were determined through DPPH Radical Scavenging, Modified CUPRAC assay, and Hydroxyl radical-mediated DNA oxidative degradation. For all the prooxidant activity assays, Ascorbic acid was used as the positive control while ethanol was the negative control.

**RESULTS:** The three assays suggested prooxidant activity. A possible plateau was observed in the DPPH assay, as seen in the absence of significant difference at the various concentration points. With the sample extract, DNA degradation manifested which was greater than that of the standard, ascorbic acid. The degradation was observed through the reaction with thiobarbituric acid. The CUPRAC assay showed protein damage caused by prooxidant activity of the extracts. The relative total prooxidant activity of the crude and ethyl acetate extracts are 0.2150 and 0.1281, respectively. The values represent the amount of ascorbic acid needed to produce equivalent prooxidant activity to 1 mg of extract.

**CONCLUSION:** The assays showed the presence of prooxidant activity for *Annona muricata* L. leaves through the DNA and protein damage. High concentration of the extract is needed to produce an equivalent effect of prooxidation of the standard. It is recommended that the effects of chronic use be studied as well.

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## In vitro evaluation of antifungal properties of cotton fabric treated with the ethanolic extract of propolis from *Apis mellifera* (Philippine variety) against *Trichophyton rubrum*

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### Abstract

**OBJECTIVES:** Propolis is a beehive product that is non-toxic in nature and has gained reputation because of its profound applications in the health care and cosmetics industry. The study aims: (1) to determine the antifungal activity of Propolis (ethanolic extract)/ EEP -treated cotton fabric against *Trichophyton rubrum* and (2) to determine as well if EEP - treated cotton fabric can cause skin irritation.

**METHODS:** We infused 2.5%, 5%, 10%, 15%, and 20% of the ethanol extract of propolis (EEP) as well as petroleum ether, ethyl acetate, and water fractions into the fabric using glyoxal (10%) and aluminum sulfate (3%) as fixatives. With this, the study also tested which concentration of propolis extract will exhibit greatest antifungal properties using Disk Diffusion Test and also determine whether the propolis-treated cotton fabric is safe for dermal use on albino rabbits using the Dermal Irritation Test.

**RESULTS:** Results show that EEP, when infused in cotton fabric would yield antifungal properties comparable to 2% miconazole at a concentration of 10%, 15%, and 20%, where the greatest antifungal activity was shown at a concentration of 15% ( $p$ -value  $< 0.05$ ). No significant difference in antifungal activity, however, was shown among the three fractions ( $p$ -value  $> 0.05$ ). Furthermore, no signs of dermal irritation, erythema or edema, were seen in the Dermal Irritation Test.

**CONCLUSION:** The propolis (from Philippine Variety *Apis mellifera*) extract-treated cotton fabric is effective as an antifungal textile product and is safe for dermal use. The patients, Pharmaceutical Industry, as well as bee farmers and textile industries among others are to benefit from this innovation.

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## Pharmacognostic profiling and in vitro hypoglycemic activity of the phenolic constituents of the fruit pulp of *Artocarpus odoratissimus* Blanco (Moraceae)

Joseph Mari Querequincia\*<sup>1</sup>, Tongol, Kay Ann J.<sup>2</sup>, Vasquez, Ross D.<sup>2</sup>

### Abstract

**OBJECTIVES:** Most of the plant species under the genus *Artocarpus* have phenolic phytochemical compounds and possess medicinal importance. *Artocarpus odoratissimus*, locally known as marang is an indigenous plant species in the Philippines. Currently, there are no scientific evidences about its potential medicinal value. Thus, this study sought to determine its pharmacognostic properties, biological activity such as hypoglycemic property through enzyme testing

**METHODS:** The fruit pulp extract was fractionated into different solvent fractions. Total ash, acid-insoluble ash and moisture contents were analyzed, microscopic properties and extractive values were also determined. Biochemical methods such as alpha-glucosidase inhibition was utilized in order to establish its in vitro hypoglycemic activity. Structure elucidation using NMR methods was used to identify the phenolic constituents present in the fruit pulp extract.

**RESULTS:** Total ash, acid-insoluble ash and moisture contents were under minimal levels. Polar solvents like ethanol have considerable affinities with the sample based from their extractive values. Phytochemical screening revealed the presence of phenols and flavonoids. In the quantitative analysis of flavonoid and phenol compounds, the hexane fraction showed significant total flavonoid content. In the total phenol content assay, the crude extract, hexane and DCM fractions showed notable phenol equivalent contents. All of the sample fractions showed considerable inhibiting activity against -glucosidase enzyme through their percent inhibitions and IC50 values.

**CONCLUSION:** Based from the results of this study, *A. odoratissimus* can be a potential medicinal source having active phenolic constituents.

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## In Vitro Anthelmintic Activity and Phytochemical Analysis of *Euphorbia hirta* Linn. (Euphorbiaceae)

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### Abstract

**OBJECTIVES:** The general objectives of the study are to evaluate the anthelmintic activity of *Euphorbia hirta* and to analyze the phytochemical constituents responsible for the activity.

**METHODS:** In this study, both crude ethanolic extract of *Euphorbia hirta* and its fractions (hexane, dichloromethane, ethyl acetate, aqueous) were subjected to phytochemical screening, thin layer chromatography, and anthelmintic assay to determine which fraction has best anthelmintic activity in terms of paralysis (P) and death (D).

**RESULTS:** Crude extract has anthraquinone glycosides, cardiac glycosides, phenolic compounds and tannins, flavonoids, terpenoids, and saponins. The solvent system 1:9:1 methanol:ethyl acetate:acetic acid showed the best in separating spots in TLC. The anthelmintic assay using the concentration 50 mg/mL and albendazole as positive control showed that aqueous fraction has the best anthelmintic activity. Aqueous, DCM, and ethyl acetate fractions have statistical significant difference in terms of paralysis from albendazole; however, both aqueous and DCM fractions have shorter mean times compared with the albendazole. For death, all fractions and albendazole have statistically significant differences.

**CONCLUSION:** The study was able to evaluate the anthelmintic activity of *Euphorbia hirta* fractions and was able to determine the phytochemical constituents responsible for the activity. Aqueous fraction has the highest anthelmintic activity. On literature, tannins, gallic acid, & ellagic acid may be responsible.

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## Hypouricemic Effect of *Ortosiphon aristatus* Blume Miq Ethanolic Leaf Extract on Potassium Oxinate-induced Hyperuricemia in Male Sprague Dawley Rats

Kaycerey Mijares Capua\*<sup>1</sup>

### Abstract

**OBJECTIVES:** To determine the effect of *Balbas pusa* (*Ortosiphon aristatus* Blume Miq) ethanolic leaf extract on uric acid levels of potassium oxonate-induced hyperuricemia in male Sprague-Dawley Rats.

**METHODS:** Pre-treatment and post-treatment designs of research were used in the study. The study included the pre-treatment design to measure the uric acid values after provoking hyperuricemia in rats. The study considered post-intervention to screen the uric acid levels of rats after the administration of different doses of ethanolic extract of the *Balbas pusa* leaves, 250 mg/kg, 500 mg/kg, and 1,000 mg/kg. The study employed Spectrophotometric Enzymatic Assay to measure the hypouricemic effect of BPELE.

**RESULTS:** Results of phytochemical screening revealed that flavonoids, tannins and alkaloids were the active constituents present in the ethanolic leaf extract of *Balbas pusa*. Findings showed that the uric acid levels of rats measured by Spectrophotometric Enzymatic Assay were high before the treatment of *Balbas pusa* ethanolic leaf extract as manifested by high uric acid concentrations compared to the baseline values. After the treatment of BPELE, results revealed that the uric acid levels of hyperuricemic rats were declined as manifested by low uric acid concentrations. Among all doses of *Balbas pusa* ethanolic leaf extract, 1000 mg/kg dose had the highest percentage reduction on uric acid levels.

**CONCLUSION:** *Balbas pusa* ethanolic leaf extract contains active constituents such as alkaloids, flavonoids and non-hydrolysable tannins which were responsible for its hypouricemic effect. Further, the 1000 mg/kg dose elicited the greatest hypouricemic effect.

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## Enzyme-Based Antihyperglycemic Efficacy of Libas (*Spondias pinnata*) Aqueous Extract

Armie Therese Penuela\*

### Abstract

**OBJECTIVES:** In the Philippines, one out of every 5 Filipinos could potentially have diabetes mellitus or pre-diabetes condition (Alviar, 2016). Health care burden of diabetes is enormous, and effective steps to combat the indiscriminate rise in the global incidence and prevalence of diabetes are urgently needed (Gupta, 2009). One of the effective managements of diabetes mellitus is to retard the absorption of glucose by inhibition of carbohydrate hydrolyzing

**METHODS:** Aqueous extraction was done on the leaves and barks of the plant and dried extract was obtained through freeze-drying. Phytochemical profiling for the presence of saponins, terpenoids, tannins, alkaloids, phenolic compounds and flavonoids was done and samples were sent to University of the Philippine, Diliman for the alpha-glucosidase inhibition assay. Brine shrimp lethality assay was then done to determine the LC50 of the most active extract.

**RESULTS:** Both leaves and bark extracts contains saponins, terpenoids and flavonoids. Phenolic compounds were only present on bark extract. At 5 mg, bark extracts ( $99.5\% \pm 0.04$  SD) and combined bark and leaves extract ( $98.68\% \pm 0.09$  SD) exhibited enzyme inhibition greater than acarbose ( $94\% \pm 0.29$  SD) which is the positive control. Combined sample also exhibited enzyme inhibition at 4 mg ( $99.52\% \pm 0.04$  SD) against acarbose. LC50 of the bark extract was found to be 147.911 mg/mL and is considered to be particularly non-toxic.

**CONCLUSION:** We conclude that the bark extracts of libas (*Spondias pinnata*) possess antihyperglycemic properties with alpha-glucosidase enzyme inhibition as the mechanism of action. Its antihyperglycemic activity and nontoxicity could pave way for its utilization as a hypoglycemic agent.

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## In vitro inhibitory activities of selected Philippine plant extracts on key enzymes linked to type-2 diabetes

Gerwin Louise Dela Torre\*<sup>1</sup>

### Abstract

**OBJECTIVES:** The study aims to determine the potential of selected plant-derived extracts in inhibiting key enzymes related to type-2 diabetes, namely,  $\alpha$ -amylase,  $\alpha$ -glucosidase and dipeptidyl-peptidase IV (DPP-IV).

**METHODS:** Selected Philippine plants were macerated separately using solvents of different polarities (water, ethyl acetate and hexane). The extracts were screened for their in vitro anti-diabetic potential against  $\alpha$ -amylase,  $\alpha$ -glucosidase and DPP-IV.

**RESULTS:** All extracts manifested inhibitory activity for  $\alpha$ -amylase comparable to acarbose ( $p > 0.05$ ), while only the ethyl acetate extract of *Kalanchoe pinnata* ( $p < 0.05$ ) displayed significantly low inhibition for  $\alpha$ -glucosidase. The hexane extract of *Artocarpus blancoi* exhibited the highest activity for both  $\alpha$ -amylase and  $\alpha$ -glucosidase ( $IC_{50, \text{amylase}} = 1.4 \text{ E-}3 + 5.0 \text{ E-}5 \text{ } \mu\text{g/mL}$ ;  $IC_{50, \text{glucosidase}} = 5.794 + 4.685 \text{ } \mu\text{g/mL}$ ). For the DPP-IV inhibition assay, all extracts have inhibitory activity between 41-49% at a concentration of 300  $\mu\text{g/mL}$ .

**CONCLUSION:** The results show the viability of some Philippine plant species as source of lead compounds for the discovery and development of anti-diabetic drugs.

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## The Pulmonary Protective Property of the Semi-Purified Flavonoid from the Leaves of *Gnetum gnemon* (Gnetaceae) against Second Hand Cigarette-smoke Induced Lung Injury

Anjellie Tumali Manansala<sup>\*1</sup>

### Abstract

**OBJECTIVES:** The study sought to answer the following:

1. What was the percentage yield of the isolated semi-purified flavonoid?
2. What were the physical and chemical tests conducted to confirm the presence of the flavonoid?
3. What concentration of the extract exhibited the same pulmonary protective property as that of N-Acetylcysteine?
4. Was there a significant difference between the pulmonary protective property of the extract and N-Acetylcysteine?

**METHODS:** 18 male wistar rats were divided into 6 groups and were treated as follows:

- 1: 500mg/kg extract + Fresh air (FA)
- 2: FA + Cigarette-smoke (CS)
- 3: N-Acetylcysteine + FA + CS
- 4: 250mg/kg extract + FA + CS
- 5: 500mg/kg extract + FA + CS
- 6: 750mg/kg extract + FA + CS

Rats were exposed to 2 sticks of cigarette for 15 minutes for 14 days. Lungs were removed and subjected for histopathological testing and Catalase Activity test. Statistical treatment of data was done using Analysis of Variance.

**RESULTS:** A 4.84% percentage yield was obtained from 100g dried plant sample.

Catalase activity results showed that Group 3 has the highest absorbance value followed by Group 5 while Group 2 has the lowest value. Histopathological evaluation was done to determine tissue damage and were graded 1-4. Group 2 has a mean value of 3.17 which indicated damage while Group 3 (2.50) and Group 5 (2.67) indicated pulmonary protective activity.

p-values of 1.44 and 0.80 were obtained for catalase activity and histopathological evaluation, respectively, indicating that there is no significant difference between the pulmonary protective activity of the extract (500mg/kg) and N-Acetylcysteine.

**CONCLUSION:** Catalase activity and histopathological results of the lung samples were treated with statistical analysis and showed no significant difference with N-Acetylcysteine. Therefore, the *Gnetum gnemon* extract exerted pulmonary protective property against second hand cigarette-smoke induced lung injury.

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## Determination of Anticoagulant Property of Semi-Purified Tannins from the Leaf Extract of *Bambusa merilliana* (Bayog)

Angelita Rodriguez\*

### Abstract

**OBJECTIVES:** The study aims to determine the anticoagulant property of semi-purified tannins from *Bambusa merilliana* (Bayog) for possible use of stroke patients, patients with Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) and to determine its anticoagulant property by the use of Activated Partial Thromboplastin Time (APTT) and Capillary Tube Method.

**METHODS:** The plant samples were macerated in 80% ethanol and stand for 48 hours and filtered. The crude extract was subjected to phytochemical screening and isolation. The study used 15 male rabbits divided into groups as positive control, negative control, for experimental control using the extract that contains semi-purified tannins with three concentrations such as 100mg/kg, 200mg/kg, and 400mg/kg. Biological tests were used such as Activated Partial Thromboplastin Time (APTT) and Capillary Tube Metho

**RESULTS:** Phytochemical screening of *Bambusa merilliana* (Bayog) extract resulted to presence of tannin, saponins and flavonoids. The results showed that there was a significant effect of Specimen group at Clotting Time at the  $p < .05$  level for the two conditions  $[F(3,8) = 5.383, p = .025]$  which shows a negative. The result in Partial Thromboplastin Time at the  $p < .05$  level for the two conditions  $[F(3,8) = 1.354, p = .324]$  which shows positive result. Based on the data and results gathered the plant sample *Bambusa merilliana* (Bayog) was positive for tannins, flavonoids and tannins which were polyphenolic compounds. The percent yield of the semi-purified tannin was 16.01%.

**CONCLUSION:** Based on the biological tests Activated partial Thromboplastin Time (APTT) and capillary tube method, the concentration which exhibited the same efficacy with the positive control of heparin based in the clotting time was the dose of 100 and 200mg/kg.

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## Gastroprotective and Cyclooxygenase Enzyme Inhibition Activities of *Garcinia vidalii* Merr (Clusiaceae) Rind Extracts from Ifugao, Philippines

Andre Nikkita Gonzales\*

### Abstract

**OBJECTIVES:** This study aimed to determine the most active *Garcinia vidalii* rind extract in inhibiting the enzyme cyclooxygenase. The most active extract was used to determine its safety profile or ALD and gastroprotective activity against the standard drug omeprazole in vivo.

**METHODS:** Sequential extraction of *G.vidalii* fruit rind using solvents of increasing polarity (hexane, ethyl acetate and butanol) was used. The phytochemical composition of the extracts were determined using thin layer chromatography and Folin-Ciocalteu method was used in determining their total phenolic content. The ALD was established using the OECD 425 guidelines. Ethanol and aspirin-induced models of gastric ulceration were used in evaluating the gastroprotective property of the most active extract.

**RESULTS:** The hexane extract yielded 9.26%, 7.42% for ethyl acetate and 1.98% for butanol. The total phenolic content of both the hexane (25.05 mg/g GAE) and ethyl acetate (23.04 mg/g GAE) were higher compared to butanol (8.55 mg/g GAE). Thin layer chromatography revealed the presence phenols, flavonoids and tannins. Hexane and butanol extracts have the highest percentage of inhibition for COX-2 and COX-1 at 89.87% and 92.44%. The hexane extract was safe at a dose of 2000mg/kg BW. There was no significant difference ( $p=0.143$ ) between the extract (800mg/kg BW) and the standard drug (40mg/kg BW) in the ethanol-induced ulceration while a significant difference was seen ( $p=0.028$ ) with the aspirin model.

**CONCLUSION:** The most active extract based from the TPC determination and the COX inhibitory assay was the hexane extract. The absence of mortality and signs of toxicity confirm the safety of the extract at 2000mg/kg BW. The extract was more effective in preventing ulceration in the aspirin-induced model.

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## Tracer Study of Graduates of BS Pharmacy and BS Clinical Pharmacy in Adamson University

April Mergelle Lapuz\*

### Abstract

**OBJECTIVES:** This tracer study was conducted to determine the job status of the graduates of BS Pharmacy (BSP) and BS Clinical Pharmacy (BSCP) program, to assess the relevance of the Bachelor of Science in Pharmacy curriculum in the industry and to determine how the curriculum affects the employability of the graduates.

**METHODS:** The tracer study covered the BS Pharmacy graduates from batches March 2014 to October 2016 and the BS Clinical Pharmacy graduates from 2012 to 2016. The official list of BSP and BSCP graduates of AdU was used as basis of population for conducting the tracer study. As issued by the AVPAA Office in 2014, a quota of 25% per batch should be met. A questionnaire from CHED was adapted and generated via Google form. The questionnaires were distributed on September 2017 - February 2018.

**RESULTS:** About 84% of the BSP and BSCP graduates are currently employed and are in ranked professional, technical or supervisory level. Most of the BSP graduates are in community pharmacy because of the wide range of opportunity offered. The 16% unemployed graduates either pursued further studies, have family or health concerns, or were preparing for licensure examination. In terms of graduate outcomes, 55% of BSP and 65% of BSCP said that they were able to acquire the knowledge and skills of being a pharmaceutical care provider including communication and critical thinking skills during their college years and were able to apply it in their jobs.

**CONCLUSION:** The curriculum provided by AdU College of Pharmacy to the graduates were relevant to both BSP and BSCP. For that reason, the curriculum used by the college should also be adaptable to changes to further improve and continue to develop graduates that are proficient and competent.

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## Antioxidant Evaluation and Acute Toxicity Study of the Fish Oil Obtained from the Janitor Fish (*Pterygoplichthys disjunctivus*)

April Mergelle Lapuz\*

### Abstract

**OBJECTIVES:** This study aimed to determine the safety of the crude fish oil and refine and analyze the antioxidant property of the refined form of the fish oil from the janitor fish. In addition, this study aimed to determine if the refined fish oil from *P. disjunctivus* be comparable to the fish oil available in the market in terms of its antioxidant property.

**METHODS:** The study involved the following: collection and identification of the sample, followed by the extraction of the fish oil from *P. disjunctivus* by Wet Reduction Method. Acute toxicity study was conducted on Swiss Albino Mice using OECD guidelines with the approval of the IACUC. A limit test dose of 5000 mg/kg was administered to the test animals and was observed for 7 days. The fish oil was subjected to refining process and was tested for antioxidant property. Data was analyzed and interpreted.

**RESULTS:** This study encompassed two parts, first was the acute toxicity study. After seven days observation time, all the test animals survived indicating that the crude oil used was not toxic and has LD50 greater than 5000 mg/kg. The second part was the refining process consisting five steps: degumming, neutralization, distillation, bleaching and deodorization. After certain process, parameters were observed to know the success of the tests. The crude and refined fish oils were evaluated through DPPH Scavenging Activity which yielded 36.59% and 34.03% inhibition, respectively. It was also tested for reducing power which yielded 59.09% and 63.18% inhibition, respectively.

**CONCLUSION:** The result of the acute toxicity study showed that the fish oil obtained from the janitor fish has an LD50 greater than 5000 mg/kg. It was also determined that the refining process was suitable for the fish oil since it did not decrease significantly its antioxidant property.

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