ภาคผนวก
บทคัดย่อ

การประชุมวิชาการและการนำเสนอผลงานวิจัยของคณาจารย์ นิสิต และนักศึกษาในระดับบัณฑิตศึกษาเนื่องในโอกาสฉลองครบรอบ 25 ปีคณะเภสัชศาสตร์ มหาวิทยาลัยขอนแก่น

Abstract

The Pharmacy Research Symposium as 25th year anniversary of Faculty of Pharmaceutical Sciences Khon Kaen University

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คณะเภสัชศาสตร์ มหาวิทยาลัยขอนแก่น
ภาคผนวก
“โครงการจัดประชุมวิชาการและนำเสนอผลงานวิจัยของนักเรียน นิสิต และนักศึกษาในระดับบัณฑิตศึกษา”
ภายใต้โครงการพัฒนาบัณฑิตศึกษา เพื่อพัฒนาอุตุนิธิศึกษาไทยของมหาวิทยาลัย (PED)

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CYP2C19 genetic polymorphism in three southeast asian populations

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To determine the genetic polymorphism of CYP2C19 in three Southeast Asian (Thai, Burmese and Karin) populations and compare these data with those from other populations. The study was conducted in 774, 127, and 131 healthy volunteers of Thais, Burmeses, and Karin, respectively. DNA was extracted from leucocytes and analyzed by the PCR-RFLP technique. Genotype analysis revealed that the allele frequencies of CYP2C19*1, CYP2C19*2 and CYP2C19*3 in the Thais were 0.676, 0.291 and 0.033, respectively, and those of the Burmese population were 0.665, 0.300 and 0.035, respectively. For the minority ethnic Karin, the allele frequencies of CYP2C19*1, CYP2C19*2 and CYP2C19*3 were 0.713, 0.279 and 0.008, respectively. The prevalence of PM estimated from genotype data among these three ethnic populations were 9.2\%, 11.0\%, and 8.4\%, respectively. Except for the rare allele of CYP2C19*3, there were no significantly differences in the PM phenotype and frequencies of CYP2C19 alleles among these three populations. The PM phenotype and the frequencies of CYP2C19 defective alleles, particularly CYP2C19*3 among Thai, Burmese and Karin populations appeared to be lower than other Asian populations. Lower prevalence of CYP2C19 PM suggests that these populations may have higher capacity to metabolise drugs that are substrates of CYP2C19.

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What criteria should we use for the determination of economic values of drug utilization under resource constraint?

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An innovative drug typically introduces advancement in clinical effectiveness as an exchange for the premium price to pay. To determine trade off between health outcomes gained and the total cost incurred, certain economic criteria can be employed using an incremental approach in cost-effectiveness analysis. Three case studies of economic evaluation in Thailand conducted by the authors were demonstrated for the cost-effectiveness determination. A decision analysis model was developed to estimate the expected values of direct health care cost and gastrointestinal (GI) disturbance under 6-month time horizon for celecoxib, a selective COX-2 inhibitor and of celecoxib and conventional non-steroidal anti-inflammatory drugs (NSAIDs) in combination with either histamine-2 receptor antagonists or proton pump inhibitors. Use of NSAID plus ranitidine was economically dominated by NSAID plus omeprazole (i.e., better effectiveness with lower cost). A GI event due to the use of NSAID with ranitidine and with omeprazole was avoided with an offset of 24,303 and 280,556 Baht due to the use of celecoxib, respectively. The second and third cases are economic evaluation of chemotherapy in breast cancer using Markov state transition models with the 3% annual discount for future values of both cost and effectiveness. Use of Paclitaxel, a taxane chemotherapy, following doxorubicin plus cyclophosphamide (AC) in an adjuvant setting under 15-year time horizon resulted in an incremental cost of 738,111 Baht per QALY gained as compared with AC alone. This is beyond the cost-effectiveness threshold of 3 national incomes (GNI for Thailand in 2004 was USD 2,540 per capita) recommended by WHO. One-way sensitivity analysis showed this incremental cost-effectiveness ratio (ICER) was very sensitive to the variations in unit price of Paclitaxel and its clinical efficacy in reducing disease relapse. Use of trastuzumab as the first-line therapy in metastatic breast cancer resulted in an ICER of 4,638,570 Baht per QALY under third-party payer perspective. Based on probabilistic sensitivity analysis using Monte Carlo simulation, trastuzumab would be cost-effective when the ceiling ratio of willingness to pay for 1 QALY gained was set to 4.85 million Baht. Knowledge backgrounds in epidemiology, statistics, and mathematical modeling are essential complements of economics when conducting health care technology assessment.

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Novel bacteriocin from *Lactobacillus paracasei* HL32

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*P. gingivalis* infection causes not only a problem in periodontal disease but also systemic diseases. There is evidence that *Lactobacillus* sp. can control populations of *P. gingivalis*. Our objective was to examine the antibacterial activity of bacteriocin from *L. paracasei* HL 32 related to its composition. A bacteriocin was purified from culture supernatant of *Lactobacillus* sp. using the dialysis technique followed by gel permeation chromatography. Its composition was characterized by a ninhydrin test, UV spectrophotometry, thin layer chromatography, sodium-dodecyl sulphate-polyacrylamide gel electrophoresis, electrospray ionization-mass spectrometry, and amino acid analysis. The bacteriocin was also determined for amino acid sequence from N-terminal. The antibacterial activity was examined by cylinder-plate method, microtitre assay, and scanning electron microscope as compared with standard antibiotics. *L. paracasei* HL32 produces a bacteriocin in its growth medium. The bacteriocin had a molecular weight of about 56 kDa with 68% carbohydrate and 32% protein and showed a maximum peak absorbance at 214 and 254 nm. The first 15 amino acid residues were shown to possess identical N-terminal sequences: Ala-Glu-Glu-Thr-Leu-Met-Thr-Glu-Tyr-Thr-Ala-Arg-Lys-Arg-Glu. The sequence was unique when compared to the non-redundant NCBI database. The bacteriocin acts as a bactericidal effect and shows a narrow spectrum of inhibitory activity, on growth of *P. gingivalis*. It causes swelling and pore formation on the cell envelope. Metronidazole killed *P. gingivalis* but did not affect the envelope, whereas tetracycline affected *P. gingivalis* with cell deformation.

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Rifampicin encapsulated liposomes as dry powder inhaler and its immunological responses from alveolar macrophage cell lines

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Rifampicin encapsulated liposome suspension was performed by dried lipid film method and to produce dry powder form, lyophilization process was used. Liposome dry powder formulations were characterized as aerosol by Andersen Cascade Impactor. Alveolar macrophage cell line was used to monitor cellular response (cytokines and nitric oxide production) after incubation with liposome dry powders for 24 h. ELISA kit was used to examine IL-1β and TNF-α in cell supernatant. Nitric oxide synthesis was measured by the Griess reaction and sodium nitrite was used as standard curve. The suspension of rifampicin liposome gave 50% encapsulation which had sonicated liposome size range 150 - 200 nm. Mannitol was identified as a suitable sugar for liposome cryoprotectant since it gave a mass median aerodynamic diameter (MMAD) of 3.30 μm which is expected to deposit deep in the alveoli. More than 50% fine particle fraction was obtained from liposome containing mannitol as a carrier. Liposome dry powder did not activate the immune system as compared to lipopolysaccharide (LPS) from E.coli (Positive control). In a similar manner to the immune response, alveolar macrophage did not produce nitric oxide when they were challenged with liposome samples.

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Amphotericin B incorporated in cholesteric liquid crystal

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Liquid crystals are organic compounds that are in a state between liquid and solid forms. Transition to these intermediate states may be induced by thermal processes (thermotropic liquid crystal) or by the action of some solvents (lyotropic liquid crystal). A thermo-responsive liquid crystal of cholesteryl cetyl carbonate mixture was successfully developed for lipophilic drug delivery. The aims were to synthesize, characterize and develop a formulation of amphotericin B (AmB) in liquid crystals, which has both high stability and safety. Cholesteryl cetyl carbonate was synthesized and identified by Thin layer chromatography (TLC), Gel permeation chromatography, Fourier transformed infrared (FTIR), Mass spectrometry (MS) and Nuclear magnetic resonance spectroscopy (NMR). X-ray diffraction (XRD), Transmission electron microscope (TEM) and Differential scanning calorimetry (DSC) were employed to characterize liquid crystals. The chemical structure of cholesteryl cetyl carbonate, which is composed of three parts: steroid planar nucleus, various hydrocarbon chains and polar linkage between the two parts of steroid ring and hydrocarbon chain from fatty alcohol. The mixture of liquid crystal is composed of cholesteryl cetyl carbonate, cetyl alcohol and cholesterol, which were incorporated with AmB. The phase transition temperatures of the mixture appeared at 36.9°C and cubic-shaped liquid crystalline can be observed in a micrograph at room temperature. The formulations of AmB in liquid crystal after physical mixing with a sugar revealed high content uniformity, low toxicity and had good characteristics of dry powder.

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Stability studies *Bacopa monnieri* ethanolic extract

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*Bacopa monnieri* (L.) Wettst. (Brahmi) has been used in Ayurvedic medicine as nervous tonic. It was reported for the cognitive enhancing activity and improvement of memory. Its major constituents are triterpenoid saponins such as Bacopaside I, Bacopasaponin C, Bacopaside A. The alcoholic extract of Brahmi was used in many pharmaceutical formulations. However, the stability study of the extract has not been reported. In this study, we aimed at the stability studies of Brahmi extract in various temperatures and pHs using a saponin glycoside, Bacopaside I, as a marker for quantitative analysis. The quantity of Bacopaside I in the extract was analyzed using HPLC techniques. The experiments were conducted at the temperature of 5°C, 40°C, 60°C, and 80°C and the pHs of 1.2, 6.8, and 9.0 under the controlled relative humidity of 75% for 28 days. The heat-cool cycle was conducted at 4°C for 48 hours, and then changed to 40°C for 48 hours at the total of 7 cycles under the controlled relative humidity of 75%. The results revealed that at the temperature of 5°C, the amount of Bacopaside I remained unchanged both in Brahmi extract solution and in pure Bacopaside I solution. Surprisingly, Bacopaside I in the extract solution was more stable than in pure solution at 40, 60 and 80 °C. The amount of Bacopaside I decreased gradually down to 45.07±2.66% in the extract solution and 26.56±2.77%. The stability of Bacopaside I in solutions was not stable at pH 1.2. The stability increased in basic condition. The stability of Bacopaside I in the Brahmi extract and as pure compound in various temperatures and pHs were studied. Bacopaside I was more stable when it was contained in the extract comparing with the pure compound. The degradation increases at low pH and high temperature.

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A randomized, double blind comparison of acupuncture versus sham acupuncture for chronic prostatitis/chronic pelvic pain syndrome

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Limited evidence suggests that acupuncture may ameliorate symptoms of chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS). We report a randomized, double-blinded sham-controlled acupuncture trial for CP/CPPS. Subjects who met the US National Institutes of Health (NIH) consensus criteria for CP/CPPS, aged $\geq$ 20 years old, with total score of $\geq$ 15 on the National Institutes of Health-Chronic Prostatitis Symptom Index (NIH-CPSI), and symptoms for $\geq$ 3 months within the preceding 6 months were randomized 1:1 to either acupuncture or sham. Four acupoints most commonly used in traditional Chinese medicine were chosen (CV1, CV4, SP6 and SP9) inserted to a depth of 1.5-2.5". Treatment consists of 30 minutes needle retention, twice-weekly session for 10 weeks (20 sessions total) without any stimulation or co-intervention. Sham was performed 0.5" left of acupoint superficially (\(\leq 0.5\)"). Subjects and investigators were blinded to the treatment. The primary endpoint was the NIH-CPSI total score and primary criterion for response was an eight-point decrease from baseline to 10 weeks. Forty-four subjects were randomised to acupuncture and 45 to sham acupuncture, with mean (SD) age of 40.9 years (11.0) and 42.8 (9.4), respectively (\(p=0.06\)). Using an intention-to-treat analysis with the last-observation-carried-forward method, 30 of 44 subjects (68%) responded in the acupuncture group compared to 16 of 45 (36%) in the sham group (chi square, \(p=0.002\). Mean NIH-CPSI decreased from 24.8 (SD= 6.2) to 13.5 (SD= 8.8) in the acupuncture group and 25.2 (SD= 5.8) to 18.0 (SD= 10.2) in the sham group (\(p=0.02\)). Acupuncture was effective in treating CP/CPPS.

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Improved oral bioavailability of a lipophilic polypeptide drug
with Gelucire® 44/14 formulation

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Incorporation of lipophilic drugs into Gelucire® 44/14 had been reported to increase their oral bioavailability. The objective of the present study was to investigate the potential of Gelucire® 44/14 to increase the bioavailability of a lipophilic polypeptide drug. Cyclosporin A, a well known immunosuppressant, was chosen as model drug. Firstly, the Gelucire® 44/14 cyclosporin A formulation was prepared using heat-fusion method at a ratio of cyclosporin A to Gelucire® 44/14 at 1:10 (w/w). An in-vivo study was subsequently conducted to compare the bioavailability of the Gelucire® formulation in comparison with Sandimmun Neoral® (reference) and a cyclosporin A suspension in water. The study was performed under fasted condition according to a 3-period, 3-sequence crossover design with 1-week washout period. 9 Sprague Dawley rats were used and the dose of all three formulations was 20 mg/kg. Cyclosporin A concentration in rat plasma was determined using a liquid chromatography-tandem mass spectrometry method. The parameters, $C_{\text{max}}$, $A_{\text{UCD}}$ and $k_e$ were analyzed using an ANOVA procedure appropriate for a 3-way crossover study design whereas $T_{\text{max}}$ was analyzed using the Friedman Test. No significant difference was found between the $C_{\text{max}}$ and $A_{\text{UCD}}$ values for the Gelucire® formulation and Sandimmun Neoral®. However, when compared with cyclosporin A suspension, the $C_{\text{max}}$ and $A_{\text{UCD}}$ values of the Gelucire® formulation were 2.3 - 2.8 folds higher. Similarly, the $C_{\text{max}}$ and $A_{\text{UCD}}$ values of Sandimmun Neoral® were also 2.8 - 3.4 folds higher than those of the cyclosporine A suspension. The $T_{\text{max}}$ values of the Gelucire® formulation and cyclosporin A suspension were similar but slower than those of Sandimmun Neoral®. Nevertheless, the $k_e$ values for all three formulations were similar. In conclusion, Gelucire® 44/14 could increase the oral bioavailability of a lipophilic polypeptide drug namely cyclosporin A.

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Systematic review of structured conceptualization for planning processes in primary care

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Introduction: Structured conceptualization is a specific form of concept mapping that is a mixed methods participatory approach that combines group processes with a sequence of multivariate statistical analyses (Multidimensional Scaling; MS, Hierarchical Cluster Analysis; HCA). Stakeholders participation is recognized as an essential process in primary care, but it is limited in the real practice especially planning process. The structured conceptualization could be used as a tool to promote community participation in planning processes. Objective: To examine the application of structured conceptualization for planning processes of health care. Methodology: The systematic search for worldwide reports written in English between January 1980 and November 2005 were done. Data were searched from The Cochrane Library 2005 Database, Sciences Direct Database, PubMed Database, hand searches of reference lists of papers and contact with the expert in the field. The words “concept mapping, primary care planning, and structured conceptualization” were used as keywords. Results: There were 214 articles identified, 13 articles were selected as the criteria. The articles which using structured conceptualization in planning processes for health care service. The article described the concept mapping processes involving six steps preparation, generation, structure ideas, representation, interpretation, and utilization. All steps should be done by a group of stakeholders. The preparation step is to identify focus statement, participants, and scale for structuring. The generation step is to generate statements as much as possible regarding to the focus statement. The structure step is to organize all generating ideas into a group and rate them as important or feasibility. The representation is to represent all ideas in the concept maps by using MS and HCA. Conclusions: Primary care services needs a participatory of stakeholders in
providing effective care. More evidences support that structured conceptualization promoted stakeholders participation in planning processes. The strength of this structured conceptualization is organizing all ideas by a group of participants which variety in power of decision making without domination of some participants, however this method needs an effective focus statement setting and brainstorming process.

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Spectrophotometric and chromatographic characteristics and classification of *Kaempferia parviflora* varieties in 12 rhizomes samples

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Abstract-*Kaempferia parviflora* ("Krachaidum" (KD) in Thai) is an herbaceous plant belongs to Zingiberaceae family. Its rhizomes have been traditionally used for illness treatment, especially anti-gastric disorders; in particular tribe, called 'Mong', occupied in the hilly area in the north of Thailand since ancient time. Now, it has widely used over the country due to believing in health beneficial activities (health activating and promoting, anti-gastric disorders, aphrodisiac and etc.) of its rhizomes resulting the increment of consumers demand for KD products. However, the varieties of KD rhizomes seem to be concerning issue, which urgently need to be clarified, because it potentially affects products quality. According to the reports of previous studies on DNA fingerprints of KD rhizomes collected from many parts of Thailand, the results suggest the varieties of KD rhizomes contributed the genetic differences, which might subsequently lead to different physical and chemical characteristics among KD rhizomes. Using simple techniques; spectrophotometry and chromatography, ultraviolet-visible (UV-Vis) spectrum scanning and gas chromatography (GC) analysis of ethanolic crude extracts of 12 KD rhizomes samples collected from different sources were done in this study to investigate the characteristics of KD rhizomes from various sources, in order to compare the differences among 12 KD rhizomes samples. Regards the internal skin color of KD rhizomes, all 12 varieties can be classified into 2 groups; there are Dark (Dark) and Pale internal skin color (Pale). Regarding to UV-Vis spectrums, different ratios of maximum absorbencies at wavelength 213, 264 and 324 nm (for Dark) and 213, 264 and 310 nm (for Pale), GC profiles and chemical constituent contents, the results show the similarity within group and differences between 2 groups of 12 KD rhizomes samples. According to spectrophotometric and chromatographic characteristics differences of 2 varieties, the classification of KD varieties (Dark and Pale) and quality control using simple techniques; spectrophometry and chromatography, could primarily and easily be conducted. Moreover, the further development for more efficiency and reliable simple methods used in KD varieties classification and quality control is possible and worthwhilely considered.

Keywords: *Kaempferia parviflora*, Krachaidum, Gas chromatography, Cultivars, and Varieties
Factor structure and cross-validation of the professionalism scale in pharmacy students

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The objectives of this study were to investigate factor structures of an attitudinal professionalism scale revised from the Schack-Hepler scale and cross-validate the findings. The students at a pharmacy school completed the scale twice, i.e., in 1998 (n=464) and again in 1999 (n=301). In 2004, another group of students (n=486) at the same school also responded to the same scale. Factorial validity of the scale was assessed using structural equation modeling. The results showed that six subscales of the instrument were reliable (Cronbach alpha > 0.70). Based on 1998 data, the fit of the six correlated factor model was better than those of the competing models. The parameter estimates suggested the convergent and discriminant validity of the scale. The six-correlated factor model had the highest degree of replicability in the 2004 sample. The analysis of panel data (using 1998-1999 samples) and the multi-group analysis indicated the invariance of factor loadings over time and across groups and classes. In conclusion, the professionalism scale is best represented by the six-correlated factor model. The respondents interpreted the scale items the same way across groups, time and classes.

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The effects of the motorcycle-safety training on changing in knowledge, attitude and behavior of the vocational students on motorcycle ride in Amnatcharoen province

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The study was a quasi-experimental research. The objectives of this study were to determine the effects of motorcycle-safety training on changing in knowledge, attitude and behavior of the vocational students on motorcycle ride in Amnatcharoen province. The students were purposive sampling from two schools; Amnatcharoen Technique College and Amnatcharoen Polytechnic College. The number of the students in sample and control groups was ninety each. The sample group was trained in both theory and practical motorcycle safety during May - August, 2005. The questionnaires were collected before and after training in twelve week separation. The data was analyzed using descriptive statistics ANOVA and paired-t test. The results showed that the percent of the students who attended the training gained high score of knowledge than before training (63.3\% vs 30.3\%). The attitude of the students before training was better than after training also. The percent of the students who were trained slightly increased in high behavior score in motorcycle riding comparing to before training. In summary, the sample group showed significant changes in knowledge, attitude and behavior scores before and after training at p-value < 0.01.

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The satisfaction level of the service receivers at Ubon Ratchathani's community hospitals under the universal health care coverage project

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This study aims to examine the satisfaction level of the people who received services from Ubon Ratchathani's community hospitals under the universal health care coverage project. Study variables include demographic variables, the level of awareness regarding the universal health care coverage policy, the reasons in receiving the services and the service accessibility. Data collection was performed by means of interviewing the service receivers who used the Gold Card at the out-patient wards in 19 community hospitals during September, 12 - October, 30, 2003 with a sample of 330 participants. The results showed that 50\% of the participants, using the Gold Card with fees were mostly females, aged 15-29 years. The majority had agricultural occupations with an average monthly income of 4,647 baht. The average distance from the participants' residences to the hospitals was 12.01 km. The average commuting time was 35.29 min. 65.76\% of the participants came to the hospitals using their own vehicles. 90.91\% of the participants came to the hospital without appointments or referrals. 92.12\% of the participants would recommend their acquaintances and relatives to receive the services at the same hospitals. The majority of the participants (75.15\%) had no other treatment privileges besides the Gold Card. 67.70\% of them were accurately informed of the universal health care coverage policy. 83.93\% were correctly aware of the medical services they would receive. 71.03\% were knowledgeable about the universal health care coverage policy. Only 47.85\% were aware of advantages in receiving the medical services. More than 69\% of the participants had positive attitudes towards the service accessibility and their overall satisfaction level was in the moderate-to-high range. The highest average scores of 3.85 came from the satisfactions regarding service expenses. Followed by the hospitality, the quality of the services, the convenience of the service, the information and coordination of the services with the average scores of 3.71, 3.67, 3.64, 3.63, and 3.55, respectively. Most of the participants (76.10\%) thought that the services at the community hospitals after the initiation of the 30-baht health care scheme were better than before. The study also showed that only two variables: service accessibility and the work - at home or non - employed status, significantly influence the level of satisfaction of the service receivers with a predictability of 24.3 \%. The prediction of satisfaction level can be presented in the following equation:

\[ = 85.808 + 3.158 \times (\text{the service accessibility}) - 6.864 \times (\text{the work-at-home or non-employed status}) \]

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Opinions and the experiences of physicians on prescribing herbal medicines in Ubon Ratchathani province.

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The purposes of this research were to study: 1) four aspects of opinions (i.e., policy aspect, effectiveness & safety aspect, quality aspect, and economic & society aspect) of physicians on herbal medicines, 2) past experience with herbal medicines; 3) a relationship between demographic variables and each aspect of their opinions, 4) a relationship between demographic variables and experience on prescribing herbal medicines. The study subjects were physicians from the Ministry of Public Health in Ubon Ratchathani province (including medical student). Data was collected using a valid questionnaire (Cronbach’s alpha coefficient = 0.886) during July - Sept, 2003. From the study, 193 (84.6% of the population) questionnaires were returned. Majority of the participants were male (61.1%), age 20 - 30 years (48.7%), specialist (44.6%), practicing less than 5 years (70.5%). Data was analyzed using descriptive statistics and Chi - square test. Result: 1) Highest score was found (mean = 3.8) for opinions on economy & society aspect, which most physicians agree that using herbal medicines reduces cost. Followed by opinions on policy aspect, effectiveness & safety aspect, and quality aspect with mean score of 3.71, 3.20, and 3.10, respectively; 2) 49.2% of participants have prescribed popular herbal medicines products, most often cough remedies. While 50.8% did not prescribe herbal medicines because of a lack of confidence in the medication and are unfamiliar with the prescribed medications; 3) gender showed a correlation with the opinions on economy and society aspect ($p = 0.017$), in which most male subjects gave the highest score. There was also a correlation between age and opinions on policy aspect ($p = 0.019$), quality aspect ($p = 0.006$), and economy & society aspect ($p = 0.003$). While working experience in hospitals that provides herbal medicines had a significant correlation with policy aspect ($p = 0.000$) and economy & society aspect ($p = 0.017$); 4) gender was the only demographic variable that showed a significant correlation with experience on prescribing herbal medicines.

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Physical characteristic of sesame seeds

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The aim of this study was to determine physical characteristic of white, black and red sesame seed (\textit{Sesamum indicum} L.) collected from Thailand. Linear dimensions, geometric mean, sphericity, surface area, mass of seeds, bulk and true density, angle of repose, static coefficient of friction against selected surfaces and, moisture content have been examined. The obtained results will be used for processing improvement and equipment design. The analysis of flow properties exhibit free flowing of all 3 seed types whereas some other characters were difference.

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In vitro permeability study of shed king cobra snake skin

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The scales of shed skin of king cobra (Ophiophagus hannah), a natural waste material was used to investigate as a barrier membrane in an vitro permeability study of diffusants namely methyl paraben, propyl paraben, butyl paraben, paracetamol, diclofenac sodium, ibuprofen, salicylic acid, sodium salicylate acid, methyl salicylate and phenol. The factors controlled in the permeation study to mimic the human skin include pH and temperatures. Side-by-side diffusion cells, controlled temperature at 32\textdegree C, were used and filled as follows: the donor side being filled with the permeants suspended in 3 ml citrate phosphate buffer at pH 5.6; the receptor side being filled with 3 ml phosphate buffer at pH 7.4 and the barrier being the fully hydrated scale of shed snake skin which was placed at the center between the donor and the receptor. Quantitative analysis of the permeate concentrations through the barrier into the receptor medium was determined by UV spectrophotometry and estimated to mean flux and lag time of the permeation studies. The permeability of these diffusants showed to be correlated with good linearity when plotted with square root of time ($r^2 > 0.99$). Mean fluxes of methyl, propyl and butyl paraben were $10.54 \pm 0.49$, $5.14 \pm 0.59$ and $5.95 \pm 0.85 \mu g/cm^2/h^{-1}$, respectively ($n=3$). Ibuprofen gave the highest mean flux of $5.64 \pm 0.57 \mu g/cm^2/h^{-1}$ when compared to paracetamol and diclofenac sodium. Salicylates and phenol permeated at higher rates than the others. The factors affecting the permeation of the compounds used in this study include the molecular weights, structures of molecule, pKa and solubilities of the compounds. It leads to conclude that the shed snake skin performed as the barrier of the permeation study.

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Evaluation of glutinous rice starch characteristics for modified as pharmaceutical excipients

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Glutinous rice starch is prepared from glutinous rice commonly cultivated in Northeast of Thailand. Normally, the glutinous rice starch is contained 99.7-100% of amylpectin and insoluble in cold water. The highest amylopectin content had the highest swelling power and lowest solubility. Modified glutinous rice starch is an interesting for production of pharmaceutical excipients but the characteristics of native glutinous rice starch are important considerations. The aims of this study was evaluated the characteristics and homogenous of glutinous rice starch for selective suitable raw material to modified. Three batches of glutinous rice starch were detected. The physical characteristics of glutinous rice starch were determined of morphology, particle size by Mastersizer (r), bulk density, tapped density, powder compressibility, true density, flowability, moisture content, swelling capacity, water retention capacity, solubility and the homogenous of glutinous rice starch were measurement of viscosity by Rapid Visco Analyzer (RVA), the protein content by Kjeldahl method. The result showed that the characteristics of native glutinous rice starch all three batches were poor flowability and compressibility. The viscosity of glutinous rice starch batch I was not homogenous but batch II and batch III were homogenous. The protein content of batch I and batch III were less than 0.5% but batch II was more than 0.5% which over standard of starch with allowed have the protein content is not over 0.5%. It could be concluded that the physical characteristics of glutinous rice starch of three batches were not different but the viscosity and the protein content were different which effected for modification. The glutinous rice starch is natural material, which may be variable. Thus, this evaluation of physical characteristics and homogenous of glutinous rice starch is important to check the desirable quality of raw material before modified as pharmaceutical excipients.

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The effect of peeling mask containing herbs on skin

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Masking product is one of the popular spa products, particularly for whitening purposed. Mostly, powder mask products have been marketed. Few studies on the effect of on peeling mask products on the skin have been investigated. Attempts to develop whitening peeling mask containing herbs were made and the effects of using the peeling mask on the skin were investigated. Whitening peeling mask contain mulberry extract powder, panthenol, aloe vera powder and allantoin were formulated. Physical and microbial contamination were evaluated. Only the formula met the minimum requirement of USP Pharmacopoeia were selected and tested on 10 volunteers. The following parameter, which were melanin, erythema and skin moisturizing were evaluated before and after using twice a day for 2 weeks. Subjective study was evaluated using visual analog scale. The peeling mask contained polyvinyl alcohol (PVA) as a film former was having the good flexibility and peeling capability. When tested on 10 volunteers, it was found that the face mask contain herbs was not significant difference in whitening (p=0.329), irritation (p=0.516) and skin moisture (p=0.539) from placebo. In comparison between the product contain herbs and placebo by using visual analog scale for acceptance test, the overall liking, odor, texture, moisturizing after use and the feeling after use were not significantly difference. In this study, the peeling mask product having a good flexibility and peeling ability was achieved. The clinical study indicated that selected herbs added to the product could not improve the skin conditions. However, there were the limitation of this study due to the small number of volunteers and other environmental factors involving activity of volunteers. The longer duration of the study might be needed. The most important factor is outdoor activities of each volunteers which have to be strictly controled.
The effect of mask powder containing herbs on skin

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Powder mask is very popular for skincare purposes. Many products normally add herbs and claimed for skin improvement. The aim of this study was to investigate the effect of powder mask containing herbs on skin whitening and moisturizing. Whitening powder mask containing yogurt powder, panthenol, aloe vera powder and allantoin were formulated. Physical and microbial contamination were evaluated. Only the formula met the minimum requirement of USP Pharmacopoeia were selected and tested on 10 volunteers. The following parameters, which were melanin, erythema, and moisture of the skin were evaluated before and after using twice a day for 2 weeks. The powder mask containing yogurt powder, panthenol, aloe vera powder and allantoin in kaolin powder base was tested on 10 volunteers. It was found that the powder mask containing the herbs was not significantly different in whitening (p=0.358), irritation (p=0.759) and skin moisturizing (p=0.512) from kaolin alone (placebo). In comparison between the product containing herbs and placebo by using visual analog scale for acceptance test, the overall liking, odor, texture, moisturizing after use and the feeling after use were not significantly different. In this study, the herbs and other ingredients added might not improve skin condition. However, due to the limitation of this study, there was a small number of volunteers, the short duration of study and the difficulty of controlling other environmental factors including the activity of volunteers. This preliminary, therefore, suggests only the guidelines for further study in volunteers.
Formulation, evaluation and stabilization of a tablet formula from \textit{Phyllanthus} sp. extract

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An extract of a \textit{Phyllanthus} sp., family Euphorbiaceae, a small plant widely distributed in the tropics and traditionally claimed to possess anti-inflammatory and antioxidant properties, was attempted for a tablet preparation which would ease and enable further in vivo study. The Phyllanthus extract tablet (PET) formula, employed direct compression method, contained 2.4% Phyllanthus extract, 96.1% fillers, 1.5% glidant, and 1.5% lubricant. The PET was kept in sealed packaging, characterized and evaluated at zero months and after 4 months of storage at room temperature, -20, 4, and 45°C. An average PET after storage at all temperature presents almost similar to zero months that would be about 99 mg in weight, 5 mm in diameter, and 4.44 mm thickness. However, its hardness increases approximate 32%, while disintegration time reduces to 26% from the beginning. For further, the PET-stored for 4 months reveal friability decrease approximate 96, 89, 55, and 48% from the first time for the storage at -20, 4, room temperature, and 45°C. Antioxidative activity was determined by using 2,2-diphenyl-picryl hydrazine (DPPH) method. TLC chromatogram, detected by UV detection at 254 and 366 nm, and sprayed with vanillin sulfuric reagent gave 6, 9, and 20 bands. DPPH determination showed EC50 value at 39.6 g of Phyllanthus extract equivalent to the concentration at 13.2 \(\mu\)g/mL but it decrease to 28.2 g after 4 months. Those are an antioxidant activity comparable with vitamin C and E. The PET, remained high antioxidant activity alters the tableting process with good physical properties.

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Development of anticancer agents from fungal extract

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Four anticancer agents were semi-synthesized from the fungal extracts found in Thailand. It has been reported that tumor cells are hypoxia, overexpressed of reductases and hence optimal for a reduction reaction. The anticancer structures were designed to be bioreductive agents. They are hypothesized to be activated via reduction reaction selectively in cancer cells to lessen toxicity to the normal cell during distribution. The bioreductive compounds consist of quinone carrier and fungal structures which are preussomerin G, preussomerin I, (+)-phaseolinone, and (+)-phomenone, respectively. Objectives: To semi-synthesize anticancer agent from natural product from fungi and determine their anticancer activity in different cell lines. Methods: Two reactions have been performed to obtain the quinone propionic acid. Trimethyl hydroquinone was firstly reacted with methanesulfonic acid and 3,3-dimethyl acrylic acid yielding corresponding lactone. Then, the lactone was further reacted with N-bromosuccinimide to form quinone propionic acid carrier. The bioreductive compounds were synthesized from the esterification of quinone propionic acid and fungal cytotoxic compounds. The chemical structures were confirmed by using spectrometry. The anticancer activity of these bioreductive anticancer agents were also tested compare to their parents fungal cytotoxic compounds by using sulforhodamine assay in different cell lines; normal Vero cells and reductases - containing cancer cell line (BC-1). Results: Bioreductive anticancer agents were synthesized containing ester linkage between hydroxyl group of the fungal extract compounds and the quinone propionic acid. It was found that the synthesized bioreductive agents were less active in the normal cells (Vero cells) compared to their parent compounds. They were also less active in cancer cell line studied (BC-1) in stead of showing cytotoxicity as expected from the bioreductive activation. Conclusions: Modification of fungal extract compounds by forming ester linkage at the hydroxyl group led to less cytotoxicity in both normal cell and cancer cells. The hydroxyl group of fungal extract compounds might be important functional group for their cytotoxicity. Further study of this assumption needs to be confirmed. And more experiment should be conducted to test whether bioreductive activation of the synthesized bioreductive agents really occurs in the cancer cells.

Validation of a high performance liquid chromatography method for the determination of andrographolide in human plasma

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Andrographolide is the main active constituent in Andrographis paniculata Burm. F. Nees. The purpose of this study was to determine andrographolide in human plasma by using high-performance liquid chromatography with UV detection. Samples were prepared using C18-solid phase extraction. The analysis of andrographolide in the plasma samples was carried out using a reverse phase Hypersil ODS column (250x4.0 mm, 5 μm) column. The chromatographic separation was accomplished with a gradient mobile phase consisting the mixture of acetonitrile in 0.025%TFA (A) and water in 0.025%TFA(B) (the ratio varies from 0 to 90% A in 50 minutes). The method was linear in the concentration range of 48.75-487.5 ng/ml. The lower limit of quantitation (LLOQ) was 48 ng/ml. The intra- and inter-day relative standard deviation runs over the concentration range were less than 10.24%. The accuracy determined at three concentrations (97.5, 195.0 and 487.5 ng/ml) was within ±8.84% in terms of the deviation from actual value.

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Development of flours as filler for direct compression method

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Development of flour as filler for direct compression method by physical modification. Flour was granulated by wet granulation method. The process variables studied were type and concentration of binder. 2,3 and 5 % (w/w) of Gelatin, Methylcellulose (MC 4000) and Polyvinylpyrroldione (PVP K30) were used in this study. The physical properties of granule were determined, most formulation had a good flowability expect for those prepared from PVP K30 in alcohol as binder solution. The density and mean size were simarity. Then granules were used as a directly compressible excipient using three force such as 100, 150 and 200 Kgf/cm2 and determined physical property of tablet such as hardness, thickness, friability, disintegration time and weight variation. The formulation prepared from MC 4000 had low hardness and high friability. Formulation prepared from gelatin couldn’t compress expect for those prepared from 2% gelatin could compress with high force but flour tablet had a low hardness and high friability. The suitable binder solution for prepared flour tablet was PVP K30, tablets were high hardness and low friability. However, the increase of compression, increase of hardness, reduction of friability and stable of disintegration time. For consideration property of granule in compressibility and flowability, formulation used 3% PVP K30 in water as binder was suitable for development by reduction of size of dry granule through sieve no. 40 compared with sieve no. 20. Model drug in this study was Hydrochlorothiazide (HCTZ), the evaluation of tablet property showed that the increasing of tablet’s hardness and reduction of disintegration time by HCTZ. Dissolution profile showed that drug was released more than 60 % within 60 minute. This study was also possible to development of waxy flour as filler for direct compression method.
Effect of selected medicinal plants on human gingival fibroblasts

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Many medicinal plants have been reported to enhance the process of skin wound healing. It is interesting to search medicinal plants having a potential promoting activity on gingival healing. Therefore, the purposes of this study were to investigate the effects of five plants with regard to gingival fibroblast proliferation. The dry aerial parts of Plumbago zeylanica, Justicia betonica, Barleria lupulina, Rhinacanthus nasutus, and Alternanthera paronichyoides were extracted with hot 98\% aqueous MeOH. The MeOH extract of each plant was concentrated to dryness and partitioned between H\textsubscript{2}O, diethyl ether (Et\textsubscript{2}O) and n-butanol (n-BuOH), respectively. The plant extracts at concentration of 0.04 to 5.00 mg/ml were incubated with human gingival fibroblast at 37\degree C, 5\% CO\textsubscript{2} for 24 h. Colorimetric assay by MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide] was used for measure cytotoxicity. The result revealed that the cells cytotoxicity were increased in a dose-dependent manner. The 50\% inhibition (IC\textsubscript{50}) values for MeOH, Et\textsubscript{2}O and n-BuOH were 3.62, 1.45, 3.77; 1.16, 0.96, 1.38; 1.62, 1.58, 0.92; 1.90, 1.56, 1.5; and 1.49, 1.40, 0.07 mg/ml for P. zeylanica, J. betonica, B. lupulina, R. nasutus, and A. paronichyoides, respectively. At 0.15 mg/ml concentrations of MeOH extract from R. nasutus, B. lupulina and A. paronichyoides, and Et\textsubscript{2}O of P. zeylanica as well as n-BuOH of P. zeylanica, the stimulation of cell proliferation were observed. In conclusion, P. zeylanica, R. nasutus, B. lupulina, and A. paronichyoides could be promoted cell proliferation.

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The potential of *Artocarpus incisus* extracts for active as skin whitening agent

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In order to develop a new skin whitening agent, *Artocarpus incisus* extracts were chosen due to the presence of artocarpin which was reported to relate the melanogenesis inhibitory activity. The heartwood of *A. incisus* was extracted by diethyl ether and examined by HPLC. It was found that the content of artocarpin to be 45.19%. The extracts were evaluated for tyrosinase inhibitory and antioxidant activity. The tyrosinase inhibitory activity was tested *in vitro* by inhibition action of the extracts against the formation of dopachrome from DOPA by tyrosinase. The results showed that the tyrosinase inhibitory activity of *A. incisus* extracts increased with the increase of their concentration. The tyrosinase inhibition of the extracts was 62.93% in compared with a known tyrosinase inhibitor, kojic acid. Furthermore, the antioxidant activity of *A. incisus* extracts was determined by DPPH assay and found that the extracts showed the dose dependent DPPH scavenging activity EC<sub>50</sub> = 0.704 mg/ml in compared with ascorbic acid and BHT. Therefore, the potentiality of the extracts of *A. incisus* possible use as skin whitening agents.

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Effect of processing parameters on Curcuminoids - pH sensitive microparticle

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Curcuminoids, the active principles in rhizome of Curcuma longa Linn. (turmeric plant), demonstrated many pharmacological activities including antioxidant, antibacterial, anti-inflame, wound healing, anti-HIV and anti-tumor. However, an instability of these compounds in neutral to basic solution and a photosensitive in organic solvent were observed and reported. Therefore in this study, these actives subjected to be encapsulated in pH sensitive polymeric wall (Eudragit L100-55) which expected to improve their stability and released upon use. Emulsification solvent elimination has been selected as encapsulation method in this study. The effect of various processing parameters on particle formation including polymer to alcohol ratio (g : g), shear rate (rpm), polymer to active principle ratio (g : mg), polymer to oil core ratio (g : μl), dispersed to dispersing phase ratio (g : g), stabilizing agent content (%w/w) and emulsifying temperature (°C) were investigated. The results indicated that the optimization condition according to mentioned parameters were 1.0g : 24.0g, 800 rpm, 1.0g : 1.0mg, 1.0g : 50μl, 0.3g : 1.0g, 0.5 %w/w and 50 °C, respectively.

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Rationales of members on discontinuity to received service from
the Silpakorn university community pharmacy practice center
(Bhesaj Sala), Nakron Pathom, Thailand

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The purpose of this research is to study rationales of the members on discontinuity to received service from the Silpakorn University Community Pharmacy Practice Center (Bhesaj Sala). In this research, qualitative method was applied by using in-dept interview technique either by face to face or telephone interview by the research team members. Purposive sampling was applied to recruit samples. Sampling size was 25 persons. A list of the Bhesaj Sala members were requested from the Bhesaj Sala manager. Inclusion criteria of the selected sample for interview were that any member of who resides around a city district, in Nakorn Pathom and discontinued to received service from the Bhesaj Sala over SIX months. After each interview was finished, the message was transcribed into text form for further analysis. Content Analysis was used to find the rationales of the members on discontinuity to received service from the Bhesaj Sala. Most members concerned on over pricing in almost items of pharmaceuticals. The location of Bhesaj Sala was not outstanding and unnoticeable. Working hours were not suitable for members to come for service. Many members suggested that working hours should be extended. In addition, the Bhesaj Sala should have health related information available and the price of those pharmaceuticals provided in the Bhesaj Sala should be cheaper than they were priced at this time.

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A confirmatory factor analysis of a new health status measure of Thai general population

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AIMS: A new health status measure for the Thai general population called 9-THAI was developed for using in the national household survey. The objective was to assess construct validity of the 9-THAI using confirmatory factor analysis (CFA). The 9-THAI consists of 4 items assessing physical health problems; mobility, self-care, work, and sickness, 3 items assessing mental health problems; blue emotion, concentration, and social relations, and 2 overall health questions. METHODS: The national survey was conducted with 37,202 persons aged 15-98 years who represented the Thai general population. The alternative models strategy with a cross-validation process was used. Two competing models were evaluated, the one-factor (1F) and the two-factor (2F) model of physical and mental constructs. Because of the very skewed distribution of the large sample data, a weighted least square estimation method was applied through the LISREL program. RESULTS: Multiple goodness of fit indices indicated that the 2F model was the best fitting model based on standard criteria used. [1F vs 2F; Non-Normed Fit Index, 0.98 vs 0.98; Comparative Fit Index, 0.99 vs 0.99; Root Mean Square Error of Approximation, 0.06 vs 0.05; Standardized Root Mean Square Residual, 0.08 vs 0.05, Cross-Validation Index, 0.73 vs 0.35]. In addition, the squared multiple correlations ranged from 0.60 to 0.92 for the 2F model indicating a good reliability of the scale. CONCLUSIONS: The 9-THAI possesses construct validity based on CFA. The measure is a promising tool for assessing the health status of the Thai population. The major advantage of the measure is that the norm reference is obtained from the national survey data.
An application of the theory of planned behavior to diet control in overweighing and obese women living in rural communities: a structural equation model

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AIMS: Theory of Planned Behavior (TPB) has explained and predicted human health behavior but it has rarely been applied to the issue of overweight and obesity. The present study developed the TPB-based questionnaire and determined the explanatory power of TPB for weight control behavior. METHODS: Elicitation review of weight control behavior was obtained from 32 females and content analysis was performed. The TPB questionnaire was administered via face-to-face interview to 397 overweighing and obese women living in rural communities of Mahasarakham Province, Thailand. Confirmatory factor analysis (CFA) was used to determine how well TPB explained diet control behavior. RESULTS: An initial model was developed based on TPB and the statistical diagnostic of the model fit were as follows: chi-square=694.555, P<0.01, CFI=0.955, NNFI=0.934, Standardized RMR=0.085, RMSEA=0.057. Intention and Perceived Control were the most influential constructs on the diet control behavior. In turn, Intention was explained directly by the global scores of Attitude toward Behavior (beta=0.31), Subjective Norm (beta=0.23), and Perceived Behavioral Control (beta=0.49). To improve the model fit, the original model was extended by two additional factors including the association between Subjective Norm and Attitude (beta =0.31), and the association between Attitude and Perceived Control (beta=0.67). Model diagnostics presented a good fit (chi-square=545.154, P<0.01, CFI=0.970, NNFI=0.955, Standardized RMR=0.049, RMSEA=0.047). CONCLUSIONS: This study confirmed predictive and explanatory powers of TPB in explaining diet control behavior. Interventions to improve Intention and Perceived Behavioral Control could strengthen the diet control behavior.
Efficiency evaluation of hospital pharmacy services using data envelopment analysis.

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PURPOSE: This study aimed to measure efficiency of hospital pharmacy services using Data Envelopment Analysis (DEA). Evaluation efficiency of pharmacy service will help to identify the inefficient unit and how to improve them to become an efficient unit. METHODS: Technical efficiency evaluation of 155 district hospitals in Thailand was performed using DEA. Input orientation and variable return to scale (VRS) were assumed. Input variables were full-time equivalent (FTE) pharmacists, pharmacy technicians and supportive personnel. Output variables were number of prescriptions, expense of purchased drugs, inventory stock value, value of drugs supplied, number of patients receiving the pharmaceutical care, frequency of providing pharmacy education and surveillance on food safety. RESULTS: Of 155 hospitals, 9.68%, 55.48%, 22.58%, 8.39% and 3.87% were 10, 30, 60, 90 and 120 bed-size hospital. Drug dispensing was the principal service (52% of FTE pharmacist) and approximately 9% to 15% of FTE pharmacist provided each other services; purchasing and inventory control, pharmaceutical care, health consumer protection, and others. There were 42 pharmacy services that were identified as efficient units across four specifications which consideration all services (4, 22, 6, 6, and 4 units in 10, 30, 60, 90 and 120 bed-size hospital, respectively). Among four specifications, the number of efficient units ranged from 48 (30.97%) to 64 (40.65%) units. The average efficiency scores ranged from 0.80 to 0.86. There were 52% to 68% of pharmacy services that were identified as high efficient units (efficiency score 0.75-1.00). When measuring only the efficiency of drug dispensing service and pharmaceutical care, there were 21 pharmacy services that were identified as efficient units which 17 units were the efficient pharmacy services in overall efficiency dimension. CONCLUSION: Approximately one third of pharmacy services were efficient units. Among the inefficient units, input reduction or increasing output should be concerned to become the efficient unit.
Study on the traditional healer employing “Sanding Medicine” in Northeastern Thailand.

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Sanding medicine is one type of dosage preparation used by the herbalists in northeastern Thailand. In the past, there were many expert herbalists who used sanding medicines in every village. Nowadays, their wisdom is in danger of disappearing because the number of herbalists is decreasing and there is a lack of knowledge being transferred between generations. This present qualitative research was conducted with the following objectives. First, to process the theory of treatment by sanding medicine. Second, to compile the present diseases and symptoms that are treated by sanding medicine. Third, to study the dosage formula. Fourth, to identify the remedies used in the formula. Fifth, to study the source of the remedies. Demographics of 291 healers were collected from the provincial health offices and the folk healer networks in nineteen provinces of the Northeast region. Out of this group, 214 folk healers were selected randomly and interviewed to identify healers who passed the study criteria. These criteria include; 1. Healer who originated from the Northeast region; 2. Healers who obtained knowledge from an ancestors or masters; 3. Healers who are been treating for over twenty years; 4. Healers who are willing to participate in the study; 5. Healers who have over 60 years old. As a result, twenty healers were selected for in depth study. The result of the study show that the sanding medicine has specific characteristics to treat specific type of diseases and symptoms. Sanding medicine, it can be easily and quickly prepared and used for both internal and external medicine. Ten groups of symptom were recorded such as fevers, gastrointestinal disease, respiratory tract disease, urinary tract disease, cardiovascular disease, dermatological disease, gynecological disease, veterinary disease and as health supplements. Use of sanding medicine has a culture process and taboos for both the healer and patient. Plants, animals and minerals of 200 species and types are used in the formulas. The plant parts include root, heartwood, bark and seed. Animal parts are bone, horn and shell. Minerals are rock sediments and natural elements. These raw materials are collected from the nearby forests, mountains and
purchased from border markets. Some kinds of materials are difficult to identify and the scientific name has not been determined.

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The four new species of the genus Caulokaempferia (Zingiberaceae) in Thailand

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The genus Caulokaempferia was established in 1964 with seven species (Larsen, 1964). It is distinguished from the true Kaempferia by its remarkable and conspicuous pseudostem. In presently, nineteen species have been botanically reported in the world. Literature surveys report that plants of this genus are distributed in every region of Thailand and neighbor countries in the colonial areas of Himalayan Mountain, while its center of biodiversity is located in Northeastern Thailand, thirteen species (including the four new species) have been botanically reported in Thailand. Six species are found in Northeastern Thailand and all are endemic plants. Preliminary surveys have discovered four new communities of plants in Thailand which show high potential as new species are described and illustrated. This studying shows that in Thailand territory abounds with diversity natural resources and some of them undiscovered species. These national resources could be protected by strictly laws and urgently conservation before they will become as extinct species.

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Study on the “Blowing traditional healer” in Northeastern Thailand

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Blowing traditional healers (Mor Paw) are traditional healers that function within communities in Northeast Thailand. The blowing method is one type of traditional therapy that is popularly used in co-ordination with other methods. This research is a qualitative study. The objective is to study the concepts and theories of treatment, health conditions or symptoms and processes used to treat diseases, and local herbs used in healing with blowing healers. Blowing traditional healers were identified via the Thai traditional section of provincial health offices, community hospitals, and traditional healers network in Northeast Thailand. A random sample of 230 healers was selected. These healers were interviewed to determine if they passed to following criteria: 1. Healers who use blowing methods for treatment; 2. Healers who are trained by parents or other blowing healers; 3. Healers who have more than 20 years of experience; 4. Healers who are actively treating patients with blowing methods; and 5. Healers who will share their knowledge. As a result, 20 healers were selected for an in-depth study. These healers treat 15 health conditions or symptoms including, skin, eye, mouth, and throat diseases, child diseases, and injuries caused by accidents. The treatment includes incantation and blowing, and can also include chewing and blowing herbs, using herbs topically or for ingestion, tattooing and burning. The research found over 70 species of medicinal plants, animal parts, and minerals. These raw materials are collected from the local area, cultivated, or purchased from other areas. Blowing traditional healers usually receive knowledge on blowing treatments from their parents and other experienced blowing traditional healers. When receiving the knowledge, new initiates must present offerings to their teacher on an auspicious day. New healers are often subject to superstitions, for example, they must ‘test’ their new skills or adhere to specific taboos. Consequently, healers often only learn treatments with taboos that they can accept, and this can lead to loss of knowledge of blowing treatments.

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The study of export potential of herbal compress (Luk Pra Kob)

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Luk Pra Kob (LPK) in Thai word, is one of Thai herbal product, used for muscle pain and massage. LPK is composed of many kinds of herbs wrapped in muslin clothes with round shape. The objective of this study was to survey exporting performance and potential of LPK to 3 countries; Japan, Canada, and Australia. All data was collected by using questionnaires and focus group interview. It was found that current situation of LPK exporting is growing due to the trend of healthy, environment protection and herb therapy. Also, spa is widely spread both domestic and foreign countries. Therefore, LPK export product is potentially to grow up in the future. This study also found that the demand from those 3 countries is rising, so strategy to improve market performance was set up. The strategy focus in promoting LPK to be more well known should be done. LPK is mostly produced in household, and substandard is found. Shortage of production machines is also significant threat. Non-export entrepreneurs indicted that they lack of true understanding of marketing management. Capital is also a major problem. Therefore, real support from government should be set up to improve capability of this business.

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Medicinal plant use by Kui traditional healers (Northeast Thailand)

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The Kui (Austro-Asiatic: Mon-Khmer) are the original inhabitants of the lowland parts of Northeast Thailand. Today, over 300,000 Kui people continue to reside here. Thirty healers were selected for an in-depth study of medicinal plants use. Interviews, patient logs, free-listing techniques, and plant specimen collection were used to collect data. Healers use a variety of material medica including plants, animals and minerals. There were 363 species/types recorded for treating 91 health conditions. Medicinal plants from 88 plant families can be prepared fresh or by boiling, sanding, soaking, burning, roasting, and steaming. The remedies can be consumed or smoked, applied topically, consumed, or blown on the patient, or used as a bath or compress. Medicinal plants still play a strong role in the local healthcare system of Kui communities.

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Demonstration of docosahexaenoic acid (DHA) as a bioavailability enhancer for CYP3A substrates: *in vitro* and *in vivo* evidence using cycloporin in rats

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In order to investigate pharmacokinetic interaction between cyclosporin A (CsA) and docosahexaenoic acid (DHA) *in vivo*, 5 mg/kg CsA was orally or intravenously co-administered with DHA (50-200 μg/kg) into rats. Effect of DHA on CYP3A activity was determined using rat liver microsomes *in vitro*. Moreover, the effect of DHA on P-glycoprotein (P-gp) function was examined using cultured Caco-2 cells *in vitro*. After oral co-administration of CsA with 100 μg/kg and 200 μg/kg DHA, bioavailability (BA) was significantly increased, compared with control rats. In contrast, no pharmacokinetic interaction was observed when CsA was intravenously administered in rats dosed orally with DHA, suggesting that DHA did not affect hepatic metabolism. The formation of 6β-hydroxytestosterone from testosterone in rat liver microsomes was competitively inhibited by DHA. The $K_m$, $V_{max}$ and $K_i$ values were 25.5 μM, 2.45 nmol/min/mg-protein and 5.52 μM, respectively. Moreover, basal-to-apical transport of [1H]-CsA in the Caco-2 cell monolayer was not affected by DHA but was decreased by PSC-833, a P-gp inhibitor. Our finding is the first to indicate that DHA inhibits intestinal CYP3A both *in vitro* and *in vivo* but not P-gp. It was thus demonstrated that DHA could be used as a BA enhancer for the drugs which are extensively metabolized by CYP 3A in the gut.

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A study on traditional medical knowledge of the Phu Thai ethnic group in northeastern Thailand

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Phuthai is considered to be one of many Thai-Laos race groups in Asia. They were originally from the district of 12 juthai, but migrated to live in the northeastern part of Thailand during 2387-2421 (The Buddhist Era). Prominently, most of Phuthai people have been in the areas of Kalasin, Sakornnakorn, Nakornpanum, Mukdahan, Aumnjalearn, Yasothon, Roi-et, Ubontratkhani, Udonthani, and Nongkhai provinces ever since. The Phuthai people always have their own distinctive culture, and beliefs. They also preferring more on using the native knowledge in order to look after their healths regardless of western medicine being available everywhere. This is a qualitative type of study that took place in 2548, and finished the study in one full year. In order to understand the Phuthai ethnic group thinking theory on the issue of ethnomedicine; the research team has gathered the information through twenty folk healers such as herb healer, yao healer, traditional blowing healer, sanding healer and predict healer. They were studied to know the remedy procedure of ethnomedicine that used native’s herb to cure sickness. The folk healer would use herb to cure a sickness according from the symptom of that sickness. All of the herb medicines were made by boiling, soaking, smoking, baking, and employing sanding medicine. The patterns of health’s care and cure disease were originated, which depended upon the practice method of native culture, and nature treatment. We actually are able to say that the way Phuthai people look after their health’s has touched their own minds, bodies, spirits, and souls. The Phuthai people deeply believed that the caused of all diseases were from ghost, and nature. We could not explain the caused of sicknesses that associated between human to human, human to nature, and other things that stay beyond the nature. The ways folk healer observe, diagnose the disease, and etc. were matched with the practice of ethnomedicine because of this that made the folk healer so powerful to Phuthai ethnic group. We have also realized that the Phuthai people only used the ethnomedicine to cure the diseases, and maintain their health before the entrance of western medicine.

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หลักเกณฑ์และคำแนะนำสำหรับผู้นิพนธ์ บทความ หรือ บทความวิจัย*  
(Instructions for the Authors)

การเตรียมต้นฉบับสำหรับบทความและบทความวิจัย

1. ภาษา เป็นภาษาไทยหรือภาษาอังกฤษ ถ้าเป็นภาษาไทยให้มีหลักการใช้คำศัพท์หรือการเขียนทับศัพท์ตามหลักของราชบัณฑิตยสถาน

2. ขนาดของต้นฉบับ พิมพ์หน้าเดียวบนกระดาษขาวขนาด เอ 4 (22x24 ซม.) เว้นขอบทุกคนประมาณ 1 นิ้ว พิมพ์ห่างบรรทัดคู่ พิมพ์ด้วยโปรแกรมไมโครซอฟต์เวิร์ด ตัวขั้วแบบตัวอักษร Angsana new ขนาด 16 และใส่หมายเลขหน้า ตามลำดับ

3. จำนวนหน้า บทความและบทความวิจัยไม่ควรเกิน 12 หน้า

การเรียงลำดับเนื้อหาบทความ และบทความวิจัย

1. ชื่อเรื่อง (Title) ควรชัดเจนและเป็นตัวอย่าง

   1.1 หัวเรื่อง ทั้งภาษาไทยและภาษาอังกฤษ ชื่อเรื่องควรสื่อความหมายได้ชัดเจนและตรงกลไก เป็นภาษาไทยไม่ควรใช้คำสั้น และมีความยาวไม่เกิน 2 บรรทัด

   1.2 ชื่อผู้นิพนธ์และผู้ร่วมนิพนธ์ ตามลัทธิการศึกษาสูงสุด ให้รายละเอียดตามหน้าที่วางไว้ สำหรับการข้าราชการ, ภาควิชา, สถาบันหรือสถานที่ซึ่งแต่ละท่านอยู่ในลำดับของหน้า เป็นภาษาไทยและภาษาอังกฤษ และให้มีเครื่องหมายต้นที่ก่อนก่อนอักษร (corresponding author) โดยแยกรายละเอียดของสถานที่ติดต่อ หมายเล็กโทรฟิชท์ โทรสาร และหรือ E-mail address ให้ชัดเจนเพื่อความรวดเร็วในการติดต่อ

2. บทคัดย่อ (Abstract)
เพื่อชี้แจงให้คงหลักทฤษฎีสำคัญของเรื่องทั้งหมด ไม่เกิน 200 คำ มีทั้งภาษาไทยและภาษาอังกฤษให้ทบทวนย่อภาษาไทยที่เกี่ยวข้องกับภาษาอังกฤษ

3. คำมั่นสัญญารือคำหลัก (Keywords)
เป็นคำหรือข้อความที่สำคัญที่เป็นจุดสำคัญของเนื้อเรื่อง รวมกันแล้วให้อยู่ระหว่าง 3-5 คำ โดยให้ระบุทั้งภาษาไทยและภาษาอังกฤษ

4. บทนำ (Introduction)
เป็นคำที่แสดงเนื้อหาที่ประกอบบทความ และหลักหลักในประเด็นการศึกษาวิจัย ให้ชัดเจนทางวิชาการหรือหัวข้อ มุ่งมั่นที่จะข้ออย่างชัดเจนและมีวัตถุประสงค์ของการศึกษาและการวิจัยนั้นๆ

5. วัสดุอุปกรณ์และวิธีการทดลอง (Materials and Methods)
ให้รายละเอียดอย่างละเอียด และวิธีการศึกษา ทั้งที่นำมาศึกษา จำนวน ลักษณะของตัวอย่าง ที่ศึกษา ตลอดจนเครื่องมือและอุปกรณ์ต่างๆที่ใช้ในการศึกษา รายชื่อแบบแผนการศึกษา การสุ่มตัวอย่าง วิธีหรือมาตรการที่ใช้ศึกษา วิธีการเก็บข้อมูล วิธีวิเคราะห์ข้อมูล และสถิติที่ใช้
6. ผลการทดลอง (Results)

การรายงานผลการทดลองหรือวิจัยเป็นคำบรรยาย ควรเป็นอย่างละเอียด ขัดเจน และตรงประเด็น อาจแยกเป็นหัวข้อเพื่อให้เข้าใจง่าย ควรใช้ตาราง แผนภูมิ เพื่อช่วยอธิบายการทดลอง และควรแปลความหมายรวมถึงการวิเคราะห์ผลที่เกิดขึ้น และสรุปเปรียบเทียบกับสมมติฐานที่ตั้งไว้

7. วิจารณ์และสรุปผล (Discussion and Conclusion)

ขั้นตอนการศึกษาถึงที่มาของประสบการณ์ของการวิจัย หรือแตกต่างไปจากผลการทดลองที่มีอยู่แล้วหรือไม่ อย่างไร เหตุผลใดจึงเป็นข้อถกuble ในกรณีที่มีพื้นฐานทางวิทยาการที่ชัดเจน ใดอาจมีข้อเสนอแนะที่สามารถนำไปใช้ประโยชน์ได้ หรือทั้งประเด็นคำานวณการวิจัย ซึ่งเป็นแนวทางสำหรับการวิจัยต่อไป

8. ที่ตั้งและเกี่ยวข้อง (Acknowledgement)

ระบุถึงรายชื่อผู้ให้ข้อมูลที่ช่วยในการดำเนินงาน และความช่วยเหลือจากที่ใดบ้าง

9. เอกสารอ้างอิง (References)

- วรรณกรรม ควรเรียงตามหลักภาษาไทย จัดเรียงตามลำดับเก่าที่สุด กรณีที่มีเอกสารอ้างอิงเป็นภาษาไทยควรเรียงตามลำดับเก่าและตามด้วยเอกสารอ้างอิงภาษาอังกฤษ โดยจัดเรียงลำดับคำเด่น ชื่อตัว และชื่อสกุลของผู้แต่งทุกคน ปีที่พิมพ์ และ原著 ชื่อวารสาร ปีที่ ฉบับที่ และหน้าของวารสาร ตั้งแต่ย่อก ประวัติ พฤติกรรมจีน ไฟโพรเจน วารสารสมาคมเคมีกรัมโรคบิดบวก (ประเทศไทย) 2536 : 3 : 71


- หนังสือ จัดเรียงลำดับเหมือนวารสาร ถ้า ชื่อผู้แต่ง ปีที่พิมพ์ ชื่อหนังสือ ครั้งที่ สำนักพิมพ์ เมืองที่พิมพ์ และจำนวนหน้า ตั้งแต่ย่อก


การส่งคัดฉบับ

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ข้าพเจ้า…………………………………………………………………………………………………………………………………………………………..
ขอสมัครเป็นสมาชิกวารสารศาสตร์ดีอิสานกับหนังสือปีพีน้าบบที่………… ฉบับที่………… ฉบับที่…………โดยจัดส่งไปที่………………………………………………………………………………………………………………………………………………………………………………..

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พร้อมนี้ข้าพเจ้าได้ส่งคำสมัครสมรภูมิ โดย ท่านมีดังนี้จ่าย
นส.ทองคำ ศิริปุรุ คณะเกษตรศาสตร์ มหาวิทยาลัยขอนแก่น อ.เมือง จ.ขอนแก่น 40002 บุดค่า……………… บาท มาด้วย

ลงชื่อ………………………ผู้สมัคร
(……………………………)

อัตราค่าสมัครสมรภูมิ 1 ปี 2 ฉบับ 200 บาท
โปรดส่งตามที่อยู่ด้านหลัง