Abstract Book of
The International Seminar on Pharmacology and Clinical Pharmacy 2016

ISPCP ITB 2016

Current Trend of Molecular Pharmacology in The Drug Development and Clinical Use

School of Pharmacy
Institut Teknologi Bandung

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THE INTERNATIONAL SEMINAR ON PHARMACOLOGY AND CLINICAL PHARMACY 2016
(ISPCP 2016)

EDITORIAL BOARD

GREETING FROM THE DEAN OF SCHOOL OF PHARMACY ITB

Assalamualaikum wr.wb

Dear ISPCP attendees.

First of all, I would like to express my sincere thanks to all of you for participating in this International Seminar on Pharmacology and Clinical Pharmacy (ISPCP ITB 2016) with the theme of "*Current trend of molecular pharmacology in the drug development and clinical use" which is proudly organized by School of Pharmacy Institut Teknology Bandung.*

In recent years, an enormous progress has been made in drug development and uses. Molecular pharmacology is one of the pharmaceutical sciences which has progressed rapidly. It helps scientists to delineate the mechanism of action by which the drug works in the body. This knowledge will also help clinical pharmacists in rational use of drugs.

This seminar is the first International Seminar on Pharmacology and Clinical Pharmacy which is held by School of Pharmacy ITB. On behalf of the faculty, I would like to congratulate members of ISPCP's organizing committee to be able to organize this seminar. All of you have worked hard to make this conference a reality.

This seminar will truly serve as an international forum for researchers*,* students, practitioners and all parties interested in pharmacology and clinical pharmacy to embrace and share a diverse range of basic studies, techniques, and experiences.

Our School of Pharmacy ITB has a vision to be the leading institution in pharmacy education, research and social services, at regional and international level. Therefore, through this seminar, we want to be able to facilitate an event to share the latest knowledge and experience particularly in the fields of pharmacology and clinical pharmacy from around the world. So what we will get through this seminar can be applied for better community services, enhancing profession in pharmacy, and of course to stimulate increased innovative, competitive and continuous research in pharmaceutical fields. Through this event, we also can to create networking in pharmacy fields.

Finally, I wish a pleasant seminar to ISPCP ITB 2016 participant and I hope that this event will continue to be held every year.

Wassalamualaikum wr.wb.

Prof. Dr. Daryono Hadi Tjahjono, M.Sc

GREETING FROM THE CHAIRMAN OF ISPCP ITB 2016

On behalf of ISPCP ITB 2016 committee, I would like to gratitude and welcome to all invited speakers, committee, participants, guests, and all contributing sponsors, and all participants, to the International Seminar on Pharmacology and Clinical Pharmacy (ISPCP ITB 2016) today.

It is a great honor for me to welcome you all in our seminar. Welcome to our beloved city Bandung, and we hope you will enjoy your time here.

This seminar is the first International Seminar on Pharmacology and Clinical Pharmacy conducted by School of Pharmacy Institut Teknologi Bandung to facilitate expert meeting and sharing knowledge and latest development on the subjects among scientists, researchers, hospital and community pharmacists, regulatory officials, members of health professional organizations, representatives from pharmaceutical industries and individuals interested in the fields. Furthermore, the event can serve as a medium to establish networking with colleagues from hospital and industry sectors. International Seminar on Pharmacology and Clinical Pharmacy (ISPCP ITB 2016) will bring up the captivating theme : *"Current trend of molecular pharmacology in the drug development and clinical use", as a respond to the increasing attention for new pharmaceutical product.*

As we know, drug has been an essential part in human life. It is an important element in the prevention, treatment, and management of illness and the preservation of mental and physical well-being. Pharmacology is undoubtedly one of the fundamental knowledge in the development of drug; and molecular pharmacology, in particular, helps scientists to delineate the mechanism of action by which the drug works in the body. Understanding the mechanism of action of drug contributes to the rational use of drug in clinical setting to achieve the intended therapeutic goals.

In this seminar, we are fortunate to have **Prof. Dr. dr. Nila Djuwita F. Moeloek, SpM (K),** *the Health Minister of Republic of Indonesia, as a keynote speaker. We also invited 9 more experts in various field of pharmacology and clinical pharmacy both form Indonesia or overseas, who will give their inspiring lecturers. Here, among more than 167 participants, there are more than 100 presenter will present their recent research finding either as oral presenter or poster presenter, which are divided into two big topics: pharmacology and clinical pharmacy. Our high appreciation and sincere gratitude are delivered to all speakers and presenters who enthusiastically participate in our seminar.*

The organizing committee deeply acknowledge, The Rector of Institut Teknologi Bandung as well as to all of our sponsors for the invaluable supports to the seminar. As the chairman of the committee, I personally would like to express our high appreciation and gratitude to all team members who has put all the hard work, dedication, and extraordinary efforts for the success of the seminar.

Finally, while the event will serve as a means to showcase the recent development as well as findings in the area of pharmacology and clinical pharmacy, it is expected that results of the seminar will contribute significantly to public welfare. *We also hope that all participants could gain benefit from this event and we wish you an enjoyable moment in Bandung.*

Chairman
Dr. I Ketut Adnyana

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Pharmacochemistry : Analytical Pharmacy, Clinical Chemistry, Microbiological Analysis, Food Analysis and Safety, and Medicinal Chemistry

Pharmaceutics : Physical Pharmacy, Pharmaceutical Biotechnology, Pharmaceutical Technology, Biopharmacy and Pharmacokinetics

OR-PY-001

Acute Toxicity Effect of The Passion Fruit Peel Ethanolic Extract (*Passiflora edulis* Sims.) in Mice

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Background: Passion fruit (*Passiflora edulis* Sims.), Passifloraceae family. The passion fruit peel has antihypertensive, antimicrobial, anti-inflammatory activity, and useful as lipstick dye. **Objective:** To understand the limit of safety of passion fruit peel used as medicine. The researchers will do LD_{50} test and histopathological test of mice kidney and heart for acute toxicity symptoms. **Methods:** This study uses 25 mice, which are divided into 5 groups. The groups are the control group (Na CMC 0,5%), and the test groups which are given Passion Fruit Peel Ethanolic Extract (PFPEE) with 500, 1000, 2000, and 5000 mg/kg bw doses variation. After 14 days of study, deaths in mice were observed for LD_{50} test, histopathology of mice kidney and heart were observed for acute toxicity simptoms. **Results:** There were no toxic symptoms in the control group, and groups with PFPEE doses of 500 and 1000 mg/kg bw. Toxic symptoms were found in groups with PFPEE doses of 2000 and 5000 mg/kg bw. Histopathological test of mice kidney showed that there were hemorrhaging, pyknosis, damaged glomerular, congestion in groups with PFPEE doses of 1000 and 2000 mg/kg bw, and necrosis, destroyed glomerular in groups with PFPEE doses of 5000 mg/kg bw. Histopathological test of mice heart showed that there were irregular miofibril, karyolysis, hemorrhage in groups with PFPEE doses of 1000 and 2000 mg/kg bw, and hemorrhage in group with PFPEE doses of 5000 mg/kg bw. There were no dead mice in LD_{50} test with PFPEE doses up to 5000 mg/kg bw. **Conclusion:** PFPEE doses of 2000 and 5000 mg/kg bw shows very toxic symptoms, just only after single dose administration.

Keywords: *Passiflora edulis* Sims., ethanolic extract, acute toxicity.

OR-PY-002

Antioxidant, Anti Wrinkle and Tyrosinase Inhibitor Of Brown Seaweed (*Turbinaria decurrens* Bory)

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Background: Skin aging is formed as a result of natural aging process and the presence of excessive amount of reactive oxygen species (ROS). Exposure to sunlight, especially UVB radiation can produce free radicals and *Reactive Oxygen Species* (ROS). ROS formation that exceeds the ability of the antioxidant defense system in target cells can trigger oxidative stress. ROS can damage their oxidative biomolecules such as DNA and membrane lipids, thus triggering melanogenesis. In addition, the ROS can increase levels of the enzyme collagenase (MMP-1) and increasing the activity of the enzyme elastase which results in increased degradation of collagen cause wrinkling of the skin. Fucoxanthin (FCX) been shown to have *photoprotective* properties in human fibroblast cells by inhibiting DNA damage and increases the activity of antioxidants that have anti-aging effects. *Turbinaria decurrens* is one of brown seaweed that contained fucoxanthin. **Objective:** This study aims to determine the activity of antioxidant and anti-aging of extracts (ETD) and fractions (FTD) of *T.decurrens*. **Method:** The antioxidant capacity were measured using, β-carotene bleaching assay (BCB) and ferric reducing antioxidant power (FRAP). Inhibiting effect on skin degradation enzymes was carried out using elastase and collagenase assays. The skin whitening effect of ETD and FTD were determined by tyrosinase inhibitory assay. **Result:** the results showed that the antioxidant activity of extracts (ETD) and fractions (FTD) of *T.decurrens* were FRAP: ETD > FCX > FTD; and BCB: BHT > FTD > ETD. Extract and fraction of *T. decuurens* showed better activity against elastase and collagenase enzymes in comparison with elastantinal and NNGH (N-Isobutyl-N-(4-methoxyphenylsulfonyl). The anti-melagonic activity showed that ETD and FTD have a higher inhibition toward tyrosinase enzyme than kojic acid. The results of the present study can be concluded that extracts and fractions *T decurrens* effective as an antioxidant action and effective as an anti-aging by inhibiting the activity of tyrosinase enzyme, elastase and collagenase. These results suggest that *T. deccurens* has high potential cosmetic ingredient due to its anti-wrinkle and skin whitening effects.

Keywords: *Turbinaria decurrens,* fucoxanthin, antioxidant, anti-wrinkles, skin whitening

OR-PY-003

Anticancer Activity of Ethylacetate Extract of *Picria fel-terrae* Lour. Leaves on Benzo(a)pyrene Induced Breast Cancer in Mice

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Objective: To evaluate the effects of ethylacetate extract (EAE) of *Picria fel-terrae* Lour. leaves on Benzo(a)pyrene induced breast cancer in mice. **Methods**: The EAE was prepared by graded maceration using n-hexane and ethylacetate. The anticancer activity of EAE was tested on female mice induced with 0.1 mL of B(a)P (20 mg/mL in oleum olivarum) subcutaneously for 4 weeks. The doses were given into 125 mg/bw and 250 mg/bw from 1st week until 11th week. Nodule were analysed with palpation on the breast area of mice and volume of nodule were measured. IHC examination of Ki-67 and caspase-3 and their score were calculated. **Results**: The volume of nodule were measured 0 mL for control group, 0.5 mL for B(a)P group, 0.2 mL for EAE 125 mg/kg bw group and 0.1 mL for EAE 250 mg/kg bw group. The results of Ki-67 and caspase-3 score expression (% ± SD) by control group 6.239 ± 3.767; 7.917 ± 3.318, B(a)P group 83.423 ± 5.403; 37.684 ± 21.431, EAE with dose 125 mg/bw and 250 mg/bw were 35.180 ± 15.219; 30.849 ± 20.362 and 14.791 ± 3.015; 33.880 ± 6.174 respectively. There are significant differences between treatment group and control group. **Conclusions**: The results of this study suggest that EAE is potential to be developed as chemotherapeutic agent for breast cancer by inhibiting cell progression and inducing apoptosis on cancer.

Keywords: Anticancer, *Picria fel-terrae* Lour., ethylacetate, Ki-67, caspase-3.

OR-PY-004

Curcuminoid Prevents Nicotine Dependence Symptom and Nicotine Relapse

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Background: Nicotine is an active compound found in tobacco and has rewarding effect which may lead to addiction. Using Conditioned Placed Preference (CPP) paradigm, curcuminoid which has anti-inflammatory effect, was tested for its activity to prevent the nicotine dependence and relapse. **Method**: The Behavioral tests were carried out using CPP method. The mice were firstly habituated to the CPP apparatus for five days, followed pre-conditioning test to determine the drug-paired compartment. Mouse then entered conditioning training for five day in which 0.5 mg/kg nicotine was administered intraperitoneally followed by confinement in the designated compartment of CPP apparatus for 30 minutes. Four hours later, the same procedure was repeated, but saline was given instead of nicotine, mouse was confined at opposite compartment. The effects of curcuminoid were tested after its administration at 1, 3.2 or 10 mg/kg orally 30 minutes prior nicotine administration. One day after conditioning was measused preference score dependence. The mice entered extinction phase for seven days without nicotine doses were administered. Preference score was checked for the second time on the next day. In the first, the mice received no drugs prior to the test. In the second test, mice were challenged with the administration of 0.5 mg/kg nicotine to induce relapse. Mice in test groups received 1, 3.2, or 10 mg/kg curcuminoid before nicotine. The mice were sacrificed and the brain was extracted for measurement of acetylcholinesterase activity **Results:** Curcuminoid dose 10 mg/kg significantly decreased activities of acetylcholinesterase and reduced the preference scores in conditioning tests to that modeled dependence and relapse. The activity of curcuminoid was not significantly different compared reference substance brupopion. **Conclusion:** Curcuminoid blocks the development of nicotine dependence and relapse through the cholinergic system.

Keywords: Curcuminoid, Nicotine dependence, Relapse, Conditioned Place Preference, Acetylcholinesterase.

OR-PY-005

Antimutagenic Activity of Ethanol Extract of *Rhaphidophora pinnata* (L.f) Schott Leaf on Mice

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Objective: *Rhaphidophora pinnata* offer a promising hope in the prevention or treatment of cancer from genetic mutations. In this study, antimutagenic activity of ethanol extract of *Rhaphidophora pinnata* leaves was evaluated by using bone marrow micronucleus assay on mice. **Methods:** Male mice (20-30 g) were treated by gavage for 7 days with ethanol extract of *Rhaphidophora pinnata* leaves at the dose of 500, 750 and 1000 mg/kg/day, prior to exposure to cyclophosphamide (i.p. 30 mg/kg), 24 h after the end of the treatment. Antimutagenic activity was determined by the formation of micronuclei. **Results:** The results showed that a single administration of all variant dose of extract had significantly decreased the micronucleus formation in a dose dependent manner in bone marrow cell of mice as compared to cyclophosphamide group. **Conclusion:** Ethanol extract of *Rhaphidophora pinnata* leaves had antimutagenic activity and dose-dependent protective effects against cyclophosphamide-induced oxidative DNA damage.

Keywords: antimutagenic activity, ethanol extract, *Rhaphidophora pinnata* leaves

OR-PY-006

In Vitro Anti-Tuberculosis Activity of Selected Medicinal Plants against Susceptible and Multi-Drug Resistant *Mycobacterium tuberculosis*

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Background: Tuberculosis (TB) remains a leading infectious killer globally. In 2014, there were 9.6 million new cases of TB and 1.5 million died from the disease. 1 in 9.6 million new cases took place in Indonesia, rendered Indonesia as the country with number 2 highest tuberculosis patient population in the world. **Objectives:** The objective of this research was to evaluate the antituberculosis activity of *Anredera cordifolia* (Ten.) Steenis, *Hibiscus sabdariffa* L., *Kaempferia galanga* L., and *Piper crocatum* N.E. Br in inhibiting susceptible and multi-drug resistant (MDR) strains of *Mycobacterium tuberculosis.* **Methods:** Ethanolic extracts of *A. cordifolia* leaves, *H. sabdariffa* calyxes, *K. galanga* rhizomes, and *P. crocatum* leaves (50-1000 µg/mL) were tested in vitro for their activity against susceptible H37Rv and two MDR strains (isoniazid-ethambutol resistant and rifampicin-streptomycin resistant) of *M. tuberculosis* using LJ (Löwenstein–Jensen) medium for 8 weeks. Antituberculosis activity was evaluated by percentage inhibition which was calculated by means of reduction in number of colonies on extract-containing medium as compared to extract-free controls. **Results:** The results showed that all extracts inhibited growth of susceptible and MDR strains of *M. tuberculosis*. The best overall activity was shown by *K. galanga* which fully inhibited H37Rv by concentration 1000 µg/mL and both MDR strains by concentration 500 µg/mL. **Conclusion:** *Anredera cordifolia* (Ten.) Steenis, *Hibiscus sabdariffa* L., *Kaempferia galanga* L., and *Piper crocatum* N.E. Br had a high activity in inhibiting *Mycobacterium tuberculosis* growth including resistant strains.

Keywords: *Anredera cordifolia, Hibiscus sabdariffa, Kaempferia galanga, Piper crocatum,* antituberculosis

OR-PY-007

Cytotoxic Activity of Ethylacetate Fractions of *Plectranthus amboinicus* (Lour. Spreng.) Leaves on HeLa and T47D Cell Lines

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Objective: To investigate the cytotoxic activity of ethylacetate fractions of *Plectranthus amboinicus* (Lour.) Spreng. leaves against to HeLa and T47D cell lines. **Methods**: The extract was prepared by graded maceration using n-hexane and ethylacetate. The ethylacetate extract was fractionated with vacuum liquid chromatography with n-hexane: ethylacetate; ethylacetate: methanol as mobile phase and fractions were analysed with thin layer chromatography (TLC). The cytotoxic activity were determined using MTT assay. The value of IC_{50} were determined by using SPSS 22.0 programme. **Results**: The fractions contained 5 sub fractions with same TLC profile. The IC_{50} of each sub fractions on HeLa cell were 77.08; 46.04; 93.17; 71.44; and 476.01 µg/mL; and for T47D cell were 1621.37; 111.19; 127.68; 149.54; and 208.50 µg/mL. **Conclusion**: Based on the results can be concluded that ethylacetate extract fraction of *Plectranthus amboinicus* (Lour.) Spreng. leaves potential to be further isolation its cytotoxic compounds and can be a lead compound as anticancer.

Keywords: Cytotoxic, *Plectranthus amboinicul* (Lour.) Spreng., ethylacetate, fractions.

OR-PY-008

Instant Coffee Products and Their Impact on Electrocardiogram (ECG): Experimental Study in Human

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Objective: To observe the effect of instant black coffee, coffee mix, and white coffee on electrocardiogram (ECG) of human has been studied. **Method :** The study was conducted on 35 healthy volunteers divided into 4 groups. Group 1 as control received common black coffee, while group 2, 3, and 4 received instant black coffee, instant coffee mix, and instant white coffee, respectively. The ECG were recorded using Biopac MP35 (Biopac® Data Acquisition System) before and after 7, 15, 30, 60, 120 minutes the volunteers drank the coffee and calculated as percentage changes of PR wave interval, QRS wave interval, T wave amplitude, and R-R wave interval. Data were analyzed using two-way ANOVA followed by Duncan's Multiple Range Test and the significance level was taken at $p<0.05$. **Results :** Black coffee, coffee mix, and white coffee influenced PR and QRS intervals of volunteers significantly ($p<0.05$), while time of measurement didn't influence the ECG wave ($p>0.1$). The PR interval shortened by coffee mix, but lengthened by instant black coffee and white coffee. Furthermore, all kinds of coffee prolonged QRS interval significantly ($p<0.05$). **Conclusion :** all type of coffee may potentially inhibit the AV impulse conduction which may influence the heart rate. The findings are somehow in contrast to the common claims from TV commercials and advertisements of instant coffee products "safe for heart".

Keywords: black coffee, coffee mix, white coffee, ECG, human

OR-PY-009

The Antioxidant and Antihyperuricemic Acitivity of Ethanol Extracts of Kersen (*Muntingia calabura* L.) Leaves

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Background : Hyperuricemia is an abnormally high level of uric acid in the blood caused by many factors. Xantin oxidase is an enzyme catalyze the oxidation of hypoxanthine to xanthine and can further catalyze the oxidation of xanthine to uric acid. This enzyme play an important role in the catabolism of purines to uric acid. The flavonoid compounds was known as natural antioxidant that capable to inhibit free radical reactions in the human body. The antioxidant acitivity of flavonoid may be related to inhibition of xantin oxidase enzyme that responsible to uric acid production. Cherry (*Muntingia calabura* L.) had potency as antihyperuricemic regarding to its flavonoid content. **Objective :** To determine the *in vitro* antioxidant activity and in-vivo antihyperuricemic activity of ethanol extracts of cherry (*Muntingia calabura* L.) leaves. **Method :** Cherry leaves was extracted with ethanol 70% using maseration method. The antioxidant activity of exctract were performed using lipid peroxidation and DPPH (2,2-diphenyl-1-picrylhydrazil) methods. The measurement of antioxidant activity of ethanol extracts of cherry and tocopherol using lipid peroxidation method; ethanol extracts of cherry and ascorbic acid using DPPH methods thoroughly in vitro by visible spectrophotometer had been done. Ascorbic acid and tocopherol used as comparator for each method. The antihyperuricemic activity of ethanol extracts of cherry leaves at doses of 50, 100, and 200 mg/kg body weight (bw) had been studied in Swiss Webster female mice. Hyperuricemia was induced by administration of chicken liver juice 20% orally and potassium oxonate 300 mg/kg bw intraperitoneally. Allopurinol used as comparator. The extract were given to mice then the blood sample were taken every hour for four hour after potassium oxonate injection. The measurement of blood uric acid level using enzymatic method and visible spectrophotometer. The data collected and analyzed using one way ANOVA (Analysis of Variance) and LSD (Least Significant Difference) test. **Results :** IC_{50} (Inhibition Concentration) number of ethanol extract and tocopherol using lipid peroxidation method were 414.42 and 15.96 µg/mL; and IC^{50} number of ethanol extracts and ascorbic acid using DPPH method were 469.5 and 19.27 µg/mL respectively. The extract at doses of 50, 100, and 200 mg/kgbw had antihyperuricemic activity by decrease blood uric acid levels significantly compare to control group ($p<0.05$). The highest activity was shown by the extract at a dose of 100 mg/kg bw at the third and fourth hour observations with percentage of decrease were 106.86 and 104.49% respectively. Based on phytochemistry screening it has flavonoid, saponin, tannin, and steroid/triterpenoid. **Conclusion :** Antioxidant activity of cherry leaves that can be related to antihyperuricemic activity probably due to flavonoid content, also terpenoid has antihyperuricemic activity but its mechanism still unkown.

Keywords : antioxidant, antihyperuricemic, “kersen” leaves

OR-PY-010

Antihypertension Activity Ethanol Extract of *Petiveria alliaceae* on Fructose-Induced Hypertension Rats

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Background : Hypertension is a major risk factor for heart disease and stroke. Uncontrolled hypertension can cause damage to other organs, such as the brain, kidneys, and eyes. One of the herbal medicine that have the potential to decrease blood pressure is singawalang (*Petiveria alliaceae*) leaves. Empirically singawalang plant has diuresis activity. **Objective :** To determine the antihypertensive activity of singawalang leaves extract in an animal model of hypertension induced by high fructose diet 66% for 14 days. Thirty male Wistar rat were grouped into 6 groups randomly, 5 animals each: group 1 (negative control), group 2 (captopril 2.5 mg/kg bw), group 3, 4, and 5 receive test extract at doses of 50,100 and 200 mg/kg bw. The test extract was given for 14 days along with high fructose foods. Parameters measured were urine volume, systolic and diastolic blood pressure, ECG, and heart rate profile. **Results :** Ethanol extract of singawalang leaves doses of 50 and 200 mg/kg showed diuresis activity (increased urine output), lowering systolic and diastolic blood pressure which is comparable to captopril (2.5 mg/kg bw) and can improved heart rate but does not affect the ECG profiles, while at dose of 100 mg/kg bw the extract have no diuresis effect, but decreased systolic and diastolic blood pressure and improve heart rate. **Conclusion :** The ethanol extract of singawalang leaves have antihypertension activity.

Keywords: hypertension, *Petiveria alliaceae,* fructose, diuretic, blood pressure

OR-PY-011

Preventive Effect on Obesity of Mangosteen (*Garcinia mangostana* L.) Pericarp Ethanolic Extract by Reduction of Fatty Acid Synthase Level in Monosodium Glutamate and High Carbohydrate Food Induced Male Wistar Rats

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Background : Mangosteen pericarp ethanolic extract can function as the prevention or treatment of obesity. **Objective**: To evaluate the preventive effect of mangosteen pericarp ethanolic extract (MPEE) on obesity by measuring body weight changes and fatty acid synthase (FAS) concentration in the adipose tissue and serum of monosodium glutamate on high-carbohydrate food-induced male Wistar rats. **Method:** The content of MPEE was determined by high-performance liquid chromatography (HPLC) analysis, using α-mangostin and xanthone as the marker compounds. The experimental study with rats was conducted for 9 weeks, with rats divided into 5 treatment groups which were normal (standard diet),control (high-carbohydrate), dose 1 (high-carbohydrate, MPEE 200 mg/kg b.w.), dose 2 (high-carbohydrate, MPEE 500 mg/kg b.w.), and orlistat (high-carbohydrate food, orlistat 21.6 mg/kg b.w.) groups. The FAS concentration was measured by enzyme-linked immunosorbent assay (ELISA) method. **Results**: MPEE contained 29.13% of α-mangostin based on HPLC analysis and no xanthone detected. The dose 1 (MPEE 200 mg/kg b.w., high-carbohydrate food) and dose 2 (MPEE 500 mg/kg b.w., carbohydrate food) groups showed less body weight gain than the control, normal, and orlistat group with dose 2 showed the lowest body weight gain. Dose 1 and dose 2 groups also had significantly lower FAS concentration in either adipose tissue or serum compared to the control group. **Conclusion:** MPEE have great potential as a therapeutic agent in preventing obesity, by suppressing major body weight gain and reducing FAS concentration.

Keywords: Mangosteen, α-mangostin, Anti-obesity, Fatty acid synthase (FAS) , High-performance liquid chromatography.

OR-PY-012

Gastric Ulcer Healing Effect of Ethanol Extract of *Orthosiphon stamineus* (Benth.) Leaves in Aspirin-Induced Rats

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Background: Gastric ulcer disease is one of the common serious problems in human life and offer contribution against morbidity and mortality. Pathophysiology of gastric ulcer is an imbalance between aggressive and mucosal integrity factors. Increases of aggressive and decreases of mucosal integrity factors have potential impact against the development of gastric ulcer disease. **Objective**: The objective of the research was to evaluate gastric ulcer healing and antioxidant effect of ethanol extract of *Orthosiphon stamineus* (Benth.) leaves. **Methods**: *In vivo* antiulcer activity of ethanol extract of *Orthosiphon* leaves was evaluated through several parameters involves gastric acidity, number of ulcers, diameters of ulcers, ulcer index, and healing ratio. Doses level of ethanol extract of *Orthosiphon* leaves which used in this study were 250 mg/kg and 500 mg/kg respectively. Antioxidant activity was evaluated by 1.1-diphenyl-2-picrylhydrazil hydrate (DPPH) method. In addition, histopathological of the stomach was performed using *hematoxylin-eosin* stained. **Results**: The results showed that the groups which given ethanol extract of *Orthosiphon* leaves are significant different for gastric ulcer healing compared to the control group. The ethanol extract of *Orthosiphon* leaves also showed best antioxidant activity with IC_{50} 84.54µg/ml when compared to ascorbic acid as the standard with IC_{50} 5.08µg/ml by DPPH method. Histopathological study of the stomach ulcers showed a healing activity of ethanol extract of *Orthosiphon* leaves in aspirin-induced rats. **Conclusion**: It can be concluded that from the experimental study of ethanol extract of *Orthosiphon stamineus* (Benth.) leaves have potentially antiulcer activity in aspirin-induced rats and antioxidant effect by DPPH method.

Keywords: *Orthosiphon stamineus* (Benth.), Extract, Ulcer, Aspirin, DPPH

OR-PY-013

Pharmacological Activities of *Plectranthus Scutellarioides* (L.) R. Br. Leaves Extract

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Background : *Plectranthus scutellarioides* (L.) R.Br. (Lamiaceae) has been widely used in West Java, Indonesia to cure various diseases. People boiled the leaves of the plant in water and consumed the tea daily until the symptoms reduced. **Objective :** To study the pharmacological activities of *Plectranthus scutellarioides* (L.) R.Br. extract on cyclooxygenases (COXs) and xanthine oxidase (XO) enzymes by *in vitro*, as well as its *in vivo* assay on vaccine-induced mice for its antipyretic activity. **Method:** The plant was purchased from Manoko plantation in Lembang, West Java, Indonesia. The leaves were sundried, crushed, and soaked in ethanol for 3 x 24 h, prior to be used. The extraction was continued further using ethyl acetate and water. **Results :** Inhibitory activity of the extract on COXs was performed by measuring the absorbance of reduced-TMPD (tetramethyl-*p*-phenylendiamine) at 590 nm, which correlates to the level of PGH_2 production, while its inhibitory on XO was measured at 290 nm. *P. scutellarioides* (L.) R.Br. leaves extracts (ethanolic, ethyl acetate, and water) showed inhibition on COX-1 and COX-2 enzymes (40.43% for COX-1 and 97.04% for COX-2), while on XO water extract showed the highest inhibition (IC_{50} water extract = 6 μg/mL; IC_{50} allopurinol = 0.15 μg/mL). *In vivo* assay on vaccine-induced mice indicated a decrease of temperature of the animals. **Conclusion :** Effective dose of extract as antipyretic was 5.6 mg/20 g BW. This plant could be further explored its anti-inflammatory and antipyretic activities.

Keywords: Anti-inflammatory, antipyretic, COX, gout, NSAIDs, prostaglandin, PGH_2, XO

OR-PY-014

Effect of Honey on Healthy and Alloxan Diabetic Male Swiss-Webster Mice (*Mus musculus*) with and without Glibenclamide Therapy

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Background : Diabetes mellitus and its complication are major causes of death in most countries. Some studies showed that diabetes can be treated by natural honey. Nevertheless, the high content of fructose and glucose in honey should be taken into consideration in its use for people with diabetes mellitus. **Objective** : This study aims to know the effect of honey, especially honey from Sumbawa, West Nusa Tenggara on healthy mice and alloxan-induced diabetic mice. **Methods** : This study consists of honey quality test, a glucose tolerance test (GTT) and alloxan-induced diabetes. GTT was performed on healthy animals. Animals were given pure honey, diluted honey 20% and 50%, blood glucose levels were measured every 30 minutes for 3 hours. Alloxan diabetes test conducted on mice by inducing alloxan at a dose of 50 mg / kg bw. Animals with blood glucose levels of 400-500 mg/dL were used as diabetic animal in this research. Honey and combination of glibenclamide and honey were given for 21 days. Glibenclamide dose of 0.65 mg/kg bw was used as standard drug. Blood glucose levels were measured on days 10, 17 and 24. On the next day, the animals were sacrificed and pancreas were isolated. **Results** : The pure, 20%, and 50% honey showed to raise blood glucose levels. Blood glucose levels in mice that given pure honey stayed in the normal value of 140 mg/dL until 180 minute observation, significantly different from the group of glucose 20% ($p<0.05$). Honey and combination of glibenclamide and honey in alloxan diabetic mice did not caused a decrease of blood glucose levels that significantly different compared to the sore group ($p>0.05$). Pancreatic histology results did not show an improvement in the condition of the islands of Langerhans after administration of honey, glibenclamide or a combination of glibenclamide and honey. **Conclusion** : Honey maintains blood glucose levels of healthy mice on a normal value of 140 mg/dL until 180 minutes. In alloxan diabetic test, neither honey nor the combination of glibenclamide and honey did not show a decrease in blood glucose levels that significantly different to the sore group. Honey treatment in mice that treated with glibenclamide may affect the action of glibenclamide.

Keywords : diabetes mellitus, honey, alloxan, glucose tolerance

OR-PY-015

In Vitro Anti-Aging Activities of three Seaweed Extracts from South Sulawesi

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Background: Aging process can be prevented by using effective cosmeceuticals with antioxidant, sun protecting and anti-collagenase activity. **Objective:** To investigate the in vitro anti-aging activities from three seaweeds, namely *Sargassum cristaefolium, Eucheuma cottoni and Eucheuma spinosum.* **Method:** The plant extracts were prepared by maseration extraction. These extracts were tested for anti oxidative, sun protection and collagenase inhibition activity in order to evaluate their in vitro anti-aging activity. Total phenolic content was measured using the Folin-Ciocalteau method (gallic acid Equivalent). The ethanolic extract of the three Seaweed extracts were studied by *in vitro* by enzymatic assays to mimic the breakdown of collagen fibres, while their anti oxidant capacity was determined by the 2-2-diphenyl-picrylhydrazyl (DPPH) radical scavenging assays. The sunscreen activity was evaluated by sun protection factor (SPF) using spectrophotometer UV-Vis. **Results:** Total phenolic content of the dried sample of *Sargassum cristaefolium, E.cottonii* dan *E.spinosum* were 0.81%, 0.86%, dan 1.00%, respectively, of gallic acid equivalent. The antioxidant values of the ethanol extract of *Sargassum cristaefolium, Eucheuma cottonii* dan *Eucheuma spinosum* were 200.01 ± 3.05, 0. 150.03 ± 2.45 and 474.80 ± 4.69 ppm, respectively, whereas ascorbic acid gave 20.13 ± 2.40 ppm. The free radical scavenging activity was not correlated with their total GAE ($p < 0.001$). The extract inhibited collagenase activity of *Sargassum cristaefolium, Eucheuma cottonii* dan *Eucheuma spinosum* were with IC_{50} of 87.03 at 100 ppm, 30.96 ± 3.56 % at 300 ppm, 66.075 ± 6.09 at 250 ppm, respectively. From the three Seaweed extracts, the *Sargassum cristaefolium* has the weakest sun screen activity with SPF value of 8.615 at 1000 ppm ($p < 0.05$). It was followed by *Eucheuma cottonii* dan *Eucheuma spinosum* with SPF value from 6 – 8 at 500 ppm. **Conclusion:** From the three seaweed extracts, the *Sargassum cristaefolium,* ethanolic extract has the strongest activity to inhibit the skin ageing process and could be formulated antiwrinkle skin care products.

Keywords: *Sargassum cristaefolium, Eucheuma cottonii, Eucheuma spinosum, anti-oxidant,*
anti-collagenase

OR-PY-016

Acute Toxicity Test of Bitter melon (*Momordica charantia*) Leaves Ethanolic Extract

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Background: Bitter melon (*Momordica charantia* L.) known have anticancer, antidiabetic, antioxidant, and antihyperlipidemia effects. However, study about its safety is still limited. **Objective:** The aim of this study is to observe the effect of single administration of bitter melon (*Momordica charantia* L.) leaf ethanolic extract on male and female Swiss Webster mice. **Method:** The test was carried out according to acute oral toxicity test with minor modification. Bitter melon leaves ethanolic extract was administered orally at a single dose i.e., 625, 1250, 2500, and 5000 mg/kg body weight. The parameters observed were mortality, body weight changes, and toxicity symptoms while relative organ weight was determined at end point of experiment (day 14). The data obtained were analyses statistically. **Result:** Result showed that after single administration of the extract, there were no toxicity symptoms include the number locomotors activity, motoric activity, Straub phenomenon, piloerection, ptosis, corneal reflex, pineal reflex, lacrimation, vasodilatation, catalepsy, to hang on, reestablishment, flexion, haffner, stretching, grooming, tremor, vocalization, salivation, body attitude, defecation, and urination. There also no death occured. The significant increase in body weight occur in male mice received 5000 mg/k body weight. The gross necropsy analysis also reveal no change in organs appearance. **Conclusion:** Based on this research it can be concluded that bitter melon leaves ethanol extract is safe and practically non-toxic.

Keywords: acute oral toxicity test, bitter melon ethanolic extract.

OR-PY-017

Antidiabetic Activity of Saponin-Rich and Non Saponin Fractions of *Centella asiatica* Linn. Leaf in Alloxan-Induced Diabetic Mice

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Background : *Centella asiatica* Linn. has long been known and used in ayurvedic system as traditional anti-diabetic drug. Some studies have also shown anti-diabetic activity of *Centella asiatica* Linn. extract in experimental animals. **Objective :** The objective of the present study was to evaluate and compare the anti-diabetic activity of saponin-rich fraction (SRF) and non saponin fraction (NSF) of *Centella asiatica* Linn. leaf in alloxan-induced diabetic mice. **Method :** Diabetes was induced in albino mice by administration of alloxan monohydrate (60 mg/kg i.v). The SRF and NSF were administrated orally at doses of 75, 150, and 300 mg/kg body weight for 21 days. Blood fasting glucose, insulin, and glycosylated haemoglobin level, and histopathology of pancreas were determined. **Results :** The decreased in blood fasting glucose and glycosylated haemoglobin levels, and an increased in insulin level occured in diabetic mice treated with SRF. While, NSF treatment did not affect the parameters mentioned above. SRF and NSF have no effect in improving diabetic mice pancreas β-cells regeneration. **Conclusion:** Based on the results, it can be concluded that saponin-rich fraction of *C. asiatica* Linn. have significant antidiabetic activity while non saponin fraction not. The antidiabetic effect of this fraction is believed to occur by stimulating the insulin secretion without ability to regenerate the pancreas beta cells damaged by alloxan.

Keywords: *Centella asiatica* Linn., fraction, saponin, anti-diabetic, alloxan

OR-PY-018

Purified Extract Of Guava Leaves as Mast Cell Degranulation Inhibitor and Blood Eosinophil Count Reducer in Rat Active Cutaneous Anaphylaxis Reaction

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Background: Guava (*Psidium guajava* L.) is an herbal that grows widely in some areas of Indonesia which have been proven as anti-inflammatory properties. Guava is a plant that has potential as an anti-allergy. **Objective:** The aims of this study was to evaluate the effects of purified extract of Guava leaves (PEG) against mast cell degranulation and blood eosinophil count in active cutaneous anaphylaxis rat model induced by ovalbumin. **Methods:** Wistar male rats were divided into 5 groups (n = 5). Each group was induced by ovalbumin (OVA) and Al(OH) on the days of 0 and 7, and finally were challenged by ovalbumin on the day of 14 to induce active cutaneous anaphylaxis reaction. Cromolyn sodium was used as standard drug. PEG with dose of 150mg/kgBW, 450mg/kgBW, and 600mg/kgBW were given orally at day 14. In order to determine the mast cells on the inflammation tissues, the specimens were stained with toluidine blue. Determination of the eosinophil count were observed at day 15. **Results:** The results showed that PEG at doses of 150, 300 and 600 mg/kg BW could inhibit the pigmentation area of vascular permeability on rats skin, that signicantly different with controll group ($p<0,05$). Histopathologically, PEG had inhibitory effect on mast cell degranulation and decreased blood eosinophil count in active cutaneous anaphylaxis reaction. **Conclusions:** Guava leaves is effective in decreasing the allergic response in active cutaneous anaphylaxis reaction. Guava leaves can developed into an alternative anti allergy treatment.

Keywords: *Psidium guajava.*, eosinophils, mast cell degranulation, active cutaneous anaphylaxis

OR-PY-019

Six-Months Chronic Toxicity Study of Tamarind Pulp (*Tamarindus indica L.*) Water Extract

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Background: Tamarind (*Tamarindus indica* L.) water extract has an anti-obesity effect in high fat-induced rats or high carbohydrate-induced rats. Tamarind pulp water extract decreases total cholesterol, low density lipoprotein (LDL), and triglyceride level. To use tamarind pulp water extract as a herbal drug, the safety of Tamarind pulp water extract must be evaluated. **Objective**: In this research, long term use of tamarind pulp water extract safety was evaluated. After six months administration of tamarind pulp water extract, clinical biochemistry profile, hematology profile, body weight changes and organ index of rats were determined. **Methods**: Tamarind pulp was extracted with hot water by reflux apparatus, followed by freeze-drying to obtain dry extract. Wistar rats, 120 males and 120 females, were divided to six groups, 20 animals per sex per groups. Control group and satellite control group received CMC-Na 0.5% 1 mL/100gram bw/day. Treatment groups were received tamarind pulp water extract at the doses 75 mg/kg bw per day, 200 mg/kg bw per day, 1000 mg/kg bw per day or 1000 mg/kg bw per day for six months. The last group served as satellite group. After 6 months, control groups, and treatment group were sacrificed. Satellite groups were sacrificed 1 month later. Organ index, hematology and clinical biochemistry profiles, were determined. **Results**: After six months administration of tamarind pulp water extract, there are no significant changes in body weight, and clinical biochemistry profile of the tested group compared to the control group. Body weight of male rats in satellite 1000 mg/kg bw group are significatly increased in week 30 compared to satellite control group ($p<0.05$). Compared to the control group, white blood cell counts of male rats of 200 mg/kg bw group are reduced ($p<0.05$) but it still in normal range. Spleen index of female rats of 200 mg/kg bw group is reduced ($p<0.05$). Uterus index of female rats in 75 mg/kg bw group is reduced ($p<0.05$). Kidneys index of male rats in 1000 mg/kg bb group is increased ($p<0.05$). **Conclusion**: This study showed that tamarind pulp water extract were generally save well tolerated at the tested dose.

Keywords: Tamarindus indica, Tamarind, Toxicity

OR-PY-021

Interaction Effect of Antituberculosis Drugs and Ethanolic Extract of Selected Medicinal Plants against Multi-Drug Resistant *Mycobacterium tuberculosis* Isolates

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Background: Adverse drug reaction of antituberculosis drugs and resistancy remain to be the causes to tuberculosis therapeutic failure. **Objective:** This research aimed to find synergic effect of interaction of standard antituberculosis drugs with *Hibiscus Sabdariffa* L., *Kaempferia galanga* L., and *Piper crocatum* N.E. Br against multi-drug resistant (MDR) *M. tuberculosis* isolates. **Methods:** Two MDR strains (i.e. isoniazid-ethambutol resistant and rifampicin-streptomycin resistant) of *M. tuberculosis* were inoculated in Löwenstein–Jensen medium contained with two combination of standard antituberculosis drugs and ethanolic extracts of *Hibiscus sabdariffa* calyxes, *Kaempferia galangal* rhizomes, and *Piper crocatum* leaves using 1:1 and 1/2:1/2 concentration proportion of drug and extract. The colonies number were observed for 8 weeks. The effect of interaction was analized using proportion method calculated by percentage inhibition of mean colonies number on drug-extract containing medium compared to extract-free control medium. **Results:** The results showed that on both MDR strains (isoniazid-ethambutol resistant and rifampicin-streptomycin resistant) of *M. tuberculosis, Kaempferia galanga* L. had the best synergic effect with standard antituberculosis drugs followed by *Hibiscus sabdariffa* L., and *Piper crocatum* N.E. with concentration proportion of 1:1 (drug:extract). **Conclusion:** *Kaempferia galanga* L. had the promising synergistic effect with antituberculosis drug to maximize the therapeutic goal of antituberculosis therapy.

Keywords: *Interaction*, *Hibiscus sabdariffa*, *Kaempferia galanga*, and *Piper crocatum*, antituberculosis drug

OR-PY-022

Lineage and Serotype Determinations of LM 25722248, a *Listeria monocytogenes* Isolate

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Background: The strains distribution which represent a particular lineage has led to a number of studies aimed at identifying phenotypic differences among the different *Listeria monocytogenes* lineages. Understanding both of *L. monocytogenes* lineages and serotypes will not only help people to understand the ecology and evolution of this foodborne pathogen, but may also enable them to seize differences in transmissibility and ability to cause disease among different *L. monocytogenes* subtypes. **Objective:** The current study aimed at determination of lineage and serotype of LM 25722248 isolate. The isolate was taken from fresh food factory in a city in United Kingdom (UK) and had been verified as a *L. monocytogenes* isolate previously. **Methods:** The lineage and serotype of LM 25722248 isolate was determined using allele-specific oligonucleotide PCR (ASO-PCR) and serotyping PCR methods, respectively. Amplification products of each PCR were resolved on 1% (w/v) agarose gel, in 50-70 V and scored relative to 100 bp DNA size ladder. **Results:** The 1% agarose gel electrophoresis of ASO-PCR products showed that LM 25722248 produced a single amplicon of 564 bp, consequently, it belongs to lineage 2. Additionally, the serotyping PCR actually showed that LM 25722248 belongs to serovars 1/2a and 3a, but as serotype 3a is very infrequent found in food and rarely implicated in human listeriosis then it was assumed that the isolate typed here was in serogroup 1/2a. **Conclusion:** From the current study, it can be concluded that LM 25722248 belongs to lineage 2 and serovar 1/2a.

Keywords: *Listeria monocytogenes*, ASO-PCR, serotyping PCR, foodborne pathogen.

OR-PY-023

Xanton Effect on Fasting Blood Glucose in White Male Mice Hyperglycemia Induced by Alloxan Monohydrate

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Background : Mangosteen (Garcinia mangostana L.), a native plant from Asia is one of the tropical forest plants that contain a lot xanton. Alpha, beta and gamma-mangostin, garcinone E, 8-deoksigartanin and gartanin are part of xanton. The ethanol extract of mangosteen shows significant 2 hour post prandial hypoglycemia effect. Xanton fraction is thought to have antidiabetic effects. **Objective :** This study aims is to determine the effect of xanton on the white male mice fasting blood glucose (FBG) hyperglycemia that induced by alloxan monohydrate 70 mg/kg intravenously. **Method :** Subject of the study 30 mice were divided into 6 groups. Animals hyperglycemia grouped into 6 groups, groups of 1-3 by xanton 5 mg/kg, 10 mg/kg and 20 mg/kg, group 4 given glibenclamide, group 5 is positive control and group 6 is negative control. **Results :** The results showed that at day 14 and 21 after the administration xanton and glibenclamide, reflecting the significant decline in GDP, compared with a positive control ($p < 0.05$). The effects of α-mangostin not significantly different when compared with glibenclamide ($p > 0.05$. The largest decrease was found in the group a dose of 20 mg/kg. **Conclusion :** Alpha mangostin lowered fasting blood glucose in white male mice induced alloxan.

Keywords: xanton, Alpha-mangostin, glibenclamide, fasting blood glucose

OR-PY-024

Effect of *Solanum Lycopersicum L.* (Tomato) Peel Extract on Lipid Level of Type 2 Diabetes Mellitus Male Rats

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Background: Type 2 diabetes mellitus (DM) is associated with lipid abnormalities, including elevated total cholesterol (TC) and low density lipoprotein-cholesterol (LDL-C) levels. The previous studies revealed that tomato extract had protective effects against hepatic steatosis in rats with high fat diet, and tomato peel extract had the highest antioxidant activity. **Objective:** The aim of this study was to assess the effect of tomato peel extract on the level of serum TC and LDL-C in male rats with type 2 DM. **Methods:** 25 male *Rattus norvegicus* Wistar rats were treated for 11 weeks in 5 experimental groups including: 1-healthy control group, 2-type 2 DM group, 3-type 2 DM group plus tomato peel ethanolic extract 50mg/kg body weight, 4-type 2 DM group plus tomato peel ethanolic extract 100mg/kg body weight, and 5-type 2 DM group plus tomato peel ethanolic extract 150mg/kg body weigh. At the end of experiment, the serum level of TC and LDL-C were analyzed using enzymatic method with spectrophotometer. **Results:** SerumTC and LDL-C level in type 2 DM rat group was higher than healthy control group ($p<0.005$). A dose of 150mg/kg body weight tomato peel ethanolic extract had significant effect ($p<0.05$) in decreasing TC and LDL-C in type 2DM rat group. **Conclusion:** Tomato (*Solanum lycopersicum L.*) peel extract has been proven to decrease TC and LDL-C level in type 2 DM rats. Similar studies with other lipid parameters are encouraged to clarify the effect of lipid abnormalities inhibition by *Solanum lycopersicum* peel ethanolic extract.

Key words: Total cholesterol, LDL-cholesterol, *SolanumlycopersicumL.* peel extract, type 2 DM rats

OR-PY-025

Screening of Novel Anticancer Agent From *Moringa Oleifera* Using BSLT and WST-Assay

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Background : Cancer is still one of the main health problems in the world. Current treatment with conventional medicine has its limitations, as a result of the side effects on normal cells and the high rates of cancer cells' resistance to anticancer agents. The discovery of safer and more effective anticancer become important and need to be prioritized. One of the prospective plant as an anticancer agent is the leaves of *Moringa oleifera* Lam.. M.oleifera Lam has been documented to have various beneficial health properties such as antioxidants, antifertility, and anti-inflammatory. **Objective :** To evaluate the cytotoxic effect of extract and fraction of moringa leaves against Artemia saline using brine shrimp lethalthy test (BSLT) method and MCF-7 and HeLa cells line using WST-assay. Various concentrations of ethanol extract and fractions of Moringa leaves were used in this study. **Results :** The results showed that lethality concentration (LC_{50}) of BSLT for ethanol extract, water fraction, ethyl acetate fraction and n-hexane fraction of Moringa leaves were 400.40, 1195.40, 23:08, 54.99 µg/mL respectively. For the WST assay ethanol extract, water fraction, ethyl acetate fraction and n-hexane fraction have inhibition concentration (IC_{50}) of the test WST-assay were 249.66, 469.60, 52.17, 73.59 against MCF-7 and is 458.6957, 1463,441, 40.09627 and 55.56006 ug / ml against HeLa respectively . **Conclusion :** From the results of both the tests can be concluded that the ethyl acetate fraction has the highest cytotoxic effect against the larvae of Artemia salina shrimp, breast cancer cells MCF-7, and cervical cancer cell HeLa.

Keywords: Anticancer, Moringa leaves, MCF-7,HeLa, Brine shrimp lethality test (BSLT), WST Assay, Cytotoxic

OR-PY-026

Vasodilator Effect of *Anredera cordifolia* Ten. Stenis and Its Fractions

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Background : *Anredera cordifolia* has potential antihypertensive effect. Although it has weak diuretic effect, it can reduce the heart rate increment which induced by adrenaline. Other mechanism of action may play a role in the antihypertensive effect of *Anredera cordifolia*. **Objective :** This experiment was performed to determine the vasodilator effect of *Anredera cordifolia* and its fractions. **Methods :** Aortic rings were placed in an organ bath and pre-contracted with norepinephrine before addition of ethanolic extract of *Anredera cordifolia* leaves, hexane fraction, ethyl acetate fraction, and water fraction. The vasodilation response by an extract or fractions was evaluated in the duration of contraction of the aortic rings. **Results :** Ethanolic extract and fractions of *Anredera cordifolia* produced significant vasodilation of the norephineprine pre-contracted rabbit aortic rings ($p<0.05$). Extract and fractions had a similar vasodilatation effect. They were not produced concentration-dependent vasodilatation effect. **Conclusion :** Vasodilator effect of ethanolic extract and fractions of *Anredera cordifolia* could potentiate its antihypertensive effect.

Keywords : *Anredera cordifolia*, antihypertensive, vasodilator effect

PO-PY-001

Effect of Different Doses of Lutein on The Activities and Phagocytic Capacity on Peritoneal Macrophage Cells of Mice Infected With *S. Aureus*

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Background : *Chlorella pyrenoidosa* is a microalgae that produce lutein compounds that can stimulate an immune response. **Objective :** This study examined the crude lutein extracted from biomass *C. pyrenoidosa* as an immunomodulator through observation activity and phagocytic capacity of peritoneal macrophages of mice. **Method :** This study uses twenty-eight mice were divided into 7 groups each comprising 4 replicates ie Group (I) normal controls, mice were untreated; (II) a negative control, mice were induced by *Staphylococcus aureus*; (III) positive control, mice were induced by *S. aureus* and treatment of meniran extract (*Phyllanthus niruri*, stimuno®). The treatment group (IV-VII), mice were induced by *S. aureus* and treatment of crude lutein, respectively: 0.058 mg, 0.117 mg, 0.234 mg and 0.468 mg per 20 g of body weight. Lutein crude was given for 2 weeks and the next day the mice were injected bacterium *S aureus*. **Results :** The results showed that crude lutein from *C. pyrenoidosa* act as immunomodulators that can stimulate an immune response as the dose increases. **Conclusion :** Treatment of crude lutein dose of 0.234 mg per 20 g BW of mice showed a proportional response to the positive control treatment (stimuno®).

Keywords: Lutein, *Chlorella pyrenoidosa*, immunomodulatory

PO-PY-002

Modulation of Insulin on Diabetic Rats by *Urena lobata* Leaves Extract

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Background : Diabetes mellitus is metabolic syndrome that is characterized by hyperglycemic chronic due to disorder of insulin secretion. **Objective** : In this study, anti diabetic potency of *Urena lobata* leaves extract was evaluated in modulation of insulin. **Methods** : Male Spraque Dawley rats was induced diabetic with High Fructose Diet (HFD) and single dose streptozotocin (25 mg/kg bw) intra peritoneally. *Urena lobata* leaves extract was made by decoction method and administered orally at doses of 250, 500 and 1000 mg/kg bw for 4 weeks on diabetic rats. Blood sample were collected from the tail vein after fasted overnight and the blood glucose level was measured using a commercially available glucometer while insulin serum level was examined by rat insulin elisa kits. The data was analyzed using ANOVA test continued with LSD test ($p < 0.05$). **Results** : the oral administration of *U.lobata* leaves extract at dose of 500 and 1000 mg/kg bw able to increase insulin level about 4 and 8-fold respectively compared to diabetic group ($p<0.05$), whereas the fasting blood glucose level was decreased by 30% and 27% ($p<0.05$) respectively. In diabetic groups, fasting blood glucose level was increased approximately 20% compared to normal group ($p<0.05$) while the insulin level were decreased by 6-fold ($p<0.05$). **Conclusion** : Water extract of *U.lobata* leaves is able to increase insulin level and to decrease fasting blood glucose level on diabetic rat.

Key words: blood glucose, diabetic, insulin, modulation, *U.lobata*.

PO-PY-003

Antidiarrheal Activities Of Ciplukan Herb (*Physalis angulata* L) and Fraction on Swiss-Webster

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Background: Diarrhea is defined as an increased defecation (bowel movements) more than usual/more than three times a day, accompanied by consistent changes in stool (to liquid) with or without blood. Diarrhea still becomes the main health problem especially in several developing countries including Indonesia. *Physalis angulata* L. have been used as traditional plan to treat various gastrointestinal tract disorders including diarrhea.**Objective:** The purpose of this study was to evaluate antidiarrheal activity of extracts and fractions of *Physalis angulata* L. **Methods:** The extraction was conducted using reflux method with ethanol 96% as solvent. Extract was fractinated by liquid-liquid extraction methods using n-hexane and ethylacetate solvents gradually. In vivo antidiarhheal activity was evaluated by administrating castor oil into mice as an induction method..Extract or fraction was given one hour before castor oil administration. Furthermore, frequency, consistency, and weight of feces was observed. Intestinal transit method was also performed in this experiment by comparing the length of the intestinal through by marker with the total length of the intestine.**Results:** Antidiarrheal activity result showed that *Physalis angulata* L. extract at the dose of 50 and 100 mg/Kg bw could improve frequency and consistency of feces significantly different compared to positive control group ($p<0.05$) at minute of 120-150. Ethylacetate fraction and n-heksana fraction of *Physalis angulata* L. herb at dose of 25 mg/Kg bw showed better activity in decreasing intestinal motility. **Conclussions:** *Physalis angulata* L. herb extract had antidiarrheal effect by decreasing frequency of defecation and improving the consistency of feses. Ethylacetate fraction and n-heksana fraction of *Physalis angulata* L. herb showed intestinal motility decreasing activity

Keyword: Antidiarrheal, Ciplukan, *Physalis angulate* L.

PO-PY-004

Anredera cordifolia Leaves as Antilipid Peroxidation

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Objective : The objective of this research was to evaluate antilipid peroxidation activities of ethanolic extract and fractions of *Anredera cordifolia* leaves. **Method :** Activity of antilipid peroxidation was performed by ex vivo using liver homogenates of male Swiss-Webster mice. Animals were divided in 5 groups: low dose sample, middle dose sample, high dose sample, statin group, vitamin C, vitamin E and blank (Na-CMC). All of sample, standard and blank were given for 7 days to rat orally. On day 8th all animals were dissected and its liver was taken. Then liver was washed with physiological NaCl. Furthermore, 10% liver homogenates was prepared in buffer Tris HCl pH 7.4. **Result :** Percentage of lipid peroxidation inhibition was measured by UV-Vis spectrophotometry at wavelength 532 nm, and compared to simvastatin. Percentage of lipid peroxidation inhibition of *Anredera cordifolia* leaves ethanolic extracts with low dose, middle dose and high dose were 56.67%, 65.21 %, 68.71 % respectively, n-hexane fractions were 34.79 %, 39.39 %, 40.70 %, respectively ethyl acetate fractions were 65.86 %, 69.37 %, 72.87 %, water fractions were 15.10 %, 15.54 %, 15.75 %, respectively, vitamin E 79.65 %, vitamin C 66.08 % and simvastatin75.05%. **Conclusion :** Ethyl acetate fraction showed no significant difference compared to simvastatin, vitamin C and vitamin E ($p<0.05$). The ethyl acetate fraction of *Anredera cordifolia* leaves gave the best effect in percentage of lipid peroxidation inhibition and significantly different from the n-hexane fraction and water fractions.

Keywords : *Anredera cordifolia,* Antilipid Peroxidation.

PO-PY-005

In Vitro Antimycobacterial Activity of n-Hexane Extract of Binahong (*Anredera cordifolia*) Leaves and Ursolic Acid against *Mycobacterium tuberculosis*

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Background: The resurgence of tuberculosis caused by *Mycobacterium tuberculosis* (Mtb) is associated with the rapid spread of multidrug-resistant, therefore the development of new antimycobacterials is necessary. **Objective:** The aim of this study was to evaluate the antimycobacterial activity of n-hexane extract of binahong leaves and ursolic acid (UA) by susceptibility test using Lowenstein-Jensen media. **Methods:** Mtb H37Rv strain, streptomycin-rifampicin resistant strain, and isoniazid-ethambutol resistant strain were evaluated by susceptibility test using a serial number of extract concentration (50 - 1000 µg/mL) and UA (25–150 µg/mL). MICs was read as minimum concentration of drugs that completely inhibit visible growth of organism. UA content in binahong leaves was determined by Thin Layer Chromatography (TLC) of *binahong* extract was run with a mixture of toluene, ethyl acetate, and formic acid (30:15:1 v/v/v) as mobile phase. **Results :** The results showed that MIC of n-hexane extract of *binahong* leaves against Mtb H37Rv strain was 500 µg/mL, against Mtb streptomycin-rifampicin resistant strain was 500 µg/mL, and against Mtb isoniazid-ethambutol resistant strain was 250 µg/mL, while UA showed MIC at 50 µg/mL against the three different strains of Mtb. TLC result showed that n-hexane extract contained of UA with Rf of 0.59 revealed violet spot under UV lamp at 366 nm. **Conclusions :** n-hexane extract of *binahong* leaves exhibit significant antimycobacterial properties, which appear to be primarily associated with the presence of triterpenoid. This results indicate that UA may serve as a promising lead compound for future antimycobacterial drug development.

Key words : Binahong leaves, ursolic acid, tuberculosis

PO-PY-006

Study on Antyhypertensive Effect of Ethanolic Extract of *Sonchus Arvensis* Leaves in Rats Induced Epinephrine

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Background: *Sonchus arvensis* Linn. or tempuyung is a plant that has pharmacological effect as anti inflammatory, analgesic, hypoglycemic, kidney stone breaker and xanthine oxidase inhibitor agent. **Objective:** The objective of this study is to evaluate the effect of ethanolic extract of *Sonchus arvensis* leaves as an antihypertension. **Methods:** The extraction is done using maseration with ethanol 96% and evaporated using rotary vacuum evaporator. Doses of ethanol extract were 50, 100, and 200 mg/kg bw with administered orally. The antihypertensive effect was evaluated by non invasive method using tail cuff instrument, the effect was determined through the capability of the extract to inhibit the increase of systole and diastole blood pressure induced with epinephrine 0.5 mg/kg bw intraperitoneal. **Results:** Ethanol extract at doses of 50 and 100 mg/kg bw could inhibit the systolic and diastolic blood pressure increase in rats induced with epinephrine. Ethanolic extract at a dose of 100 mg/kg bw had significant antihypertensive effect compared to positive control group ($p<0.05$), and comparable with propranolol group as a drug referance. **Conclusion:** Ethanol extract at a dose of 100 mg/kg bw could prevent the increase of systolic and diastolic blood pressure in epinephrine induced rat and can be expected to be used as antihypertensive drug.

Keywords: *Sonchus Arvensis*, Antihypertension, epinephrine

PO-PY-007

Antipyretic Activity of *Plectranthus Scutellarioides* [L.] R.Br Leaf Extract on Vaccine Induced Mice

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Background : *Plectranthus scutellarioides* [L.] R.Br. leaves contain secondary metabolites that is estimated to have antipyretic activity. **Objective :** This study was aimed to determine antipyretic activity and effective dose *Plectranthus scutellarioides* leaves extract. **Methods :** The extraction method used was maceration with ethanol 70%, while and the antipyretic activity test assay was carried out on diphtheria-pertussis-tetanus (DPT) vaccine-induced male white Swiss Webster mice. Mice were divided into nine groups. Each mice was induced with 0.1 ml of the DPT vaccine. The first group was given PGA 2%. Groups of two to five were given various dose of paracetamol difference doses of 0.325; 0.65; 1.3; and 2.6 mg/20 g BW, respectively. Groups of six to nine were given the leaf extract Plectranthus scutellarioides extract dose of 1.4; 2.8; 5.6; and 11.2 mg/20 g BW, respectively. Measurement data were statistically analyzed using SPSS 21. **Results :** The results showed that the leaf extract of Plectranthus scutellarioides can lower the temperature of a fever. Effective dose of extract as an antipyretic dose was 5.6 mg/20 g BW. **Conclusion** The ethanol extract of Plectranthus scutellarioides leaves has antipyretic activity in mice with the effective dose of 5.6 mg / 20 g BW.

Keywords *: Plectranthus scutellarioides, DPT vaccine, ethanol extract, antipyretic*

PO-PY-008

Cytotoxic Activity from Ethanol Extract and Fractions of Sea Cucumber (*Stichopus horrens*) on HCT-116 Colon Cancer Cells

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Background: Colorectal cancer is a gastrointestinal cancer that occurs most often around the world, coupled with an increased incidence in various countries over the last 20 years. Sea cucumber (*Stichopus horrens*) has the potential as an anticancer agent for possessing cytotoxic activity against A549 lung cancer cells and TE1 esophageal cancer cells. **Objective:** This study was conducted to determine the cytotoxicity of extracts and fractions of sea cucumber (*Stichopus horrens*). **Methods:** The cytotoxicity of extracts and fractions of sea cucumber (Stichopus horrens) against HCT-116 colon cancer cells with Water Soluble Tetrazolium Assay. **Results:** The results showed that ethanol extract, n-hexane fraction, ethyl acetate fraction, and water fraction of sea cucumbers have cytotoxicity against HCT-116 colon cancer cells with IC_{50} values respectively 92.09 µg/mL, 45.64 µg/mL, 193.91 µg/mL, and 291,79 µg/mL. The strongest cytotoxicity shown by n-hexane fraction. Results of testing the cytotoxicity on HaCaT normal cells showed that the ethanol extract, n-hexane fraction, ethyl acetate fraction, and water fraction provided a cytotoxicity effect with IC_{50} values repectively 211.51 µg/mL, 112.88 µg/mL, 418.89 µg/mL, and 606.49 µg/mL. **Conclusion:** The results of this study indicate that the sea cucumber of ethanol extracts and n-hexane fractions are quite effective to inhibit the proliferation of HCT-116 colon cancer cells.

Keywords: Sea cucumber (*Stichopus horrens*), HCT-116 colon cancer cells, Cytotoxicity, HaCaT normal cells, Water Soluble Tetrazolium Assay.

PO-PY-009

Antibacterial Activities of Ethanolic Extract and Its Fractions of *Anredera cordifolia* (Ten.) Steenis Leaves

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Background: Antimicrobial resistance is a major threat to global public health. Therapeutic options for this case are extremely limited, therefore it is needed to develop the new antibacterial agent. Antibacterial screening from plant is an alternative to start the invention of new antibacterial. **Objective:** This study aims to determine antibacterial activity of ethanolic extract and its fractions of *Anredera cordifolia* leaves. **Methods:** Ethanolic extract of *A. cordifolia* leaves was prepared by reflux method and phytochemical screening of extract was determined. Extract was separated by fractionation using hexane and ethyl acetate and monitored by thin layer chromatography. A two-fold serial microdilution method was used to determine the minimum inhibitory concentration (MIC) against *Staphylococcus aureus* (ATCC 6538), MSSA, MRSA, *Bacillus subtilis* (ATCC 6633), *Bacillus cereus* (ATCC 11778), *Escherichia coli* (ATCC 8939), and *E. coli* H7 (O156). **Results:** The ethanolic extract of *A. cordifolia* contained alkaloid, flavonoid, saponin, and steroid/triterpenoid. Ursolic acid and oleanolic acid were found in ethanolic extract and hexane fraction. Ethanolic extract demonstrated antibacterial activity against *S. aureus* and MRSA (MIC 512 µg/mL). The hexane fraction denoted activity against *S. aureus* (MIC 256 µg/mL), *B. subtilis*, and *B. cereus* (MIC 512 µg/mL). The ethyl acetate fraction only had activity against *S. aureus* (MIC 512 µg/mL). The aqueous fraction had no antibacterial activity. **Conclusions:** The hexane fraction showed the highest antibacterial activity and can be used to determine the active compounds.

Keywords: *Anredera cordifolia*, ethanolic extract, fraction, antibacterial activity

PO-PY-010

Aphrodisiac Activity of *Polycilas scutellarium* Leaf Extract and its Effect on Blood SGPT Level in Wistar Rat

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Backgound: Mangkokan (*Polycilasscutellarium*) is an ornamental plant that is often growing as a hedge plant.This plant part has been tested its pharmacological activity and their role in inflammatory response, hair loss and growth and as an anti-oxidant activity had been published. **Objective**: This study aim is to investigate the aphrodisiac effect of mangkokan leaf extract and its safety through sub-chronic toxicity test. **Method**: Aphrodisiac activity of mangkokan leaf extract was tested in Wistar rat. Mangkokan leaves extracted by maceration using ethanol as solvent. Three doses of extract were tested *i.e*., 500, 1000, and 1500 mg/Kg body weight and sildenafil used as a standard. All are given orally, once a day for 7 consecutive days. For sub chronic toxicity test, the extracts are administered orally once a day for 28 days. Observation of the sexual behavior on test animals was performed on the 8th day. The influence of the extract on blood SGPT and creatinine were measured on day 7, 14, 21 and 28. Data obtained were analyzed statistically with Duncan method. **Result**: Result showed that the extract at dose 1000 and 1500mg/KgBB had shown the significant effect to stimulate sexual activity compare to the sildenefil effect. In sub-chronic toxicity test, the blood SGPT level of animal received 1500 mg/kg BB increased significantly on day 7^{th}. **Conclusion**: based on the result, it can be concluded that mangkokan extract have aphrodisiac activity, however the used of the extract should be concerned primarily on the high dose because it could influence liver function.

Keywords: *Polycilas scutelarium, aphrodisiac activity, sub chronic toxicity test, ALT and creatinine level*

PO-PY-011

Effects of Prenatal T-2 Toxin Exposure on Preweaning Behavioral, Physical Development and Reproductive Capability in Postnatal of Swiss-Webster Mice

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Methods: Pregnant mice were administered intraperitoneally with 0.05 and 0.15 mg/kg body weight (bw) T-2 toxin dissolved in propylene glycol-water solution (1:1) on days 7-9 (A) and 10-12 (B) of gestation. The dams were allowed to deliver and their litters on day 4 days of age were adjusted to eight pups. In preweaning development selected pups were examined for their reflex, motoric and sensoric development. Physical development and reproductive capabilities were also examined. **Results:** The offspring in the 0.05 and 0.15 mg/kg bw of B group showed a significantly faster successful time in surface righting reflex ($p < 0.05$) and showed a significantly longer capability in finding the swimming direction in the swimming test at day 8 ($p < 0.05$). The offspring in the 0.15 mg/kg bw of B group showed a significantly faster successful time in the cliff avoidance response ($p < 0.05$). In the hind limb support when suspended, the offspring in all T-2 toxin exposed group responded faster than those in the control group. The offspring in the 0.05 mg/kg bw of A group showed a longer successful time in the visual placing response, whereas the B group is faster than the control group. Physical development of the offspring in the T-2 toxin group are comparable to those in the controls, except for the first onset of the estrous cycle, which was delayed compared to the control group. The reproductive capability of the offspring in all T-2 toxin exposed groups was not significant statistically than those in the control group. **Conclusion:** These results showed that T-2 toxin exposed during prenatal period influenced reflex development, did not influence physical development and reproductive capability in postnatal F_1 Swiss Webster mice.

Keywords: Swiss-Webster mice, prenatal development; T-2 toxin; behavoral

PO-PY-012

Acute - Oral Toxicity of Liman (*Elephantopus scaber* L.) Leaves Extract and Coriander (*Coriandrum sativum* L.) Seed Extract

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Backgroud: Liman (*Elephantopus scaber L.*) and coriander (*Coriandrum sativum L.*) are plants that be used in traditional medicine, liman used to cure asthma, diarrhea, cough, sores and cold, relief of pain, and aphrodisiac, while coriander used to cure nausea, irregular menstruation, cold, sprue and gastritis. Traditional medicine must fulfill the requirement of quality, safety, and efficacy in order to be used by human. Until now there are no data regarding acute toxicity test of the two plants on rats orally. **Objective:** This study aims to test the acute – oral toxicity of liman leafe xtract and coriander seed extract on female Wistar rats. **Method:** The study was design using a fixed dose test with a dose of 5000 mg/kg bw administered orally and five rats in each group.The observation was performed during 14 days, the animals were observed for toxic symptoms, number of dead, index of some organs i.e., lungs, heart, liver, stomach, spleen, kidney, and uterus. **Result:** The results showed that after giving a single dose of the two extracts, there is no mortality and toxic symptoms occur on respiratory and nervous systems, behavior, eyes, skin, fur, and mucous membrane. There are also no significant differences in organ index. The LD_{50} of the two extract is more than 5000 mg/kg bw. **Conclusion:** Based on the result, liman leaves extracts and coriander seed extract can be classified as practically not toxic.

Keywords: acute toxicity, $LD_{50,}$ liman, coriander

PO-PY-013

Cytotoxic Activity of Detam 1 Soybean and Jati Belanda (*Guazuma ulmifolia*) Extracts on SV40 MES 13 Cell

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Background: The amount of Diabetes mellitus patients in Indonesia is predicted to be continually increasing. Lifestyle and pancreatic dysfunction in producing insulin, have been known as the main causes. Furthermore, diabetes mellitus type 1 and 2 can progressively develop, resulting in complication known as "diabetic glomerulosclerosis". Diminished glomerular basement membrane causes failure in urine filltration, that causes presence of albumin in urine. Natural sources in Indonesia has been reported to contain bioactive compounds that possess medicinal properties. Jati Belanda (*Guazuma ulmifolia*) and Detam 1 soybean has been known to act as antiobesity and antidiabetes due to presence of its secondary metabolite. **Objectives:** This study aimed to determine cytotoxic activity of extract of Detam 1 soybean, Jati Belanda, and combination of extracts, toward SV40 MES 13 cell (Glomerular Mesangial Kidney, *Mus musculus*). **Methods:** Cytotoxic activity was measured with 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxyme-thoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium(MTS) assay. Concentrations used were 3.125, 6.25, 12.5, 25, 50, and 100 µg/mL. **Results:** Both Jati Belanda and Detam 1 soybean extract at concentration of 3.125, 6.25, and 12.5 µg/mL showed no toxicity toward SV40 MES 13 cell, as indicated by >90% viable cells, whilst at concentration of 25, 50, and 100 µg/mL showed toxicity, as indicated by <90% viable cells. The combination of extracts showed no toxicity only at low concentration (3.125 µg/mL). **Conclusion:** Thus, Jati Belanda and Detam 1 soybean extract at concentration of 3.125, 6.25, 12.5 µg/mL and the combination of extracts at 3.125 µg/mL were considered safe toward SV40 MES 13 cell.

Keywords: Diabetic glomerulosclerosis, Jati Belanda, Detam 1 Soybean, SV40 MES 13 cell.

PO-PY-014

Anti-Obesity Effect *Solanum betaceum* Cav Extract in Mice

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Background : Obesity is an excessive fat accumulation in the body, and can not spoil the appearance of the body but also inflict some risks of diseases. One of the plants that has the effect of anti obesity as empirically is tree tomato which has been researched on the effect of the extract of tree tomato (*Solanum betaceaum* Cav) to the body weight of white female mice. **Objective :** The aims of this research was to understand the anti obesity effect of ethanol extract in tree tomato (*Solanum betaceaum* Cav). **Methods :** A number of 30 white female mice were dividied into 6 groups. Group 1 was given a suspension of (CMC 0,2% w/v) as a negative control. Group II was given a suspension Xenical® as a positive control. Group III, IV, V, and VI were given ethanol extract in tree tomato (*Solanum betaceaum* Cav), with a dose 75 mg / kg, 125 mg / kg, 175 mg / kg and 225 mg / kg. each sample was given to mice orally everyday, with a dose of 1 ml / 20 g weight, and a half hour later mice were given fat rich feed for 18 hours, then followed by using weight, the amount of food consumed and abdominal circumference measurement. The treatment phase had been done for 7 days in a sequent. The data were analyzed by one way ANOVA and followed by LSD test. **Results :** The results showed tree tomato (*Solanum betaceaum* Cav) ethanol extract with concentration of 175 mg/kg had the greatest anti obesity effect.

Keywords : Anti-obesity, Tree Tomato, Weight

PO-PY-015

Hepatoprotective Activity of Water Extract Of Mexican Sunflower Against Paracetamol Induced Hepatotoxicity in Rats

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Background: Mexican sunflower (*Tithonia diversifolia* (Hamsley) a. Gray) is a wild plant that is believed to have some usefulness as antidiabetic, antimalaria, liver disease drug and a sore throat drug. **Objective:** Based on it above the research has been done to prove scientifically that leaves mexican sunflower efficacious as hepatoprotective. **Methods:** The research was done in *Wistar* rats induced with paracetamol of 2500 mg/kg bw po. Testmaterial used was water extract of mexican sunflower leaves at doses 50, 100 and 200 mg/kg bw. Hepatoprotective activity done with protection method and all of data analysed using t-test method. **Results:** The result showed that all groups doses of water extract of Mexican sunflower had significantly higher protection against serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvate transaminase (SGPT) levels increase compared to control group. **Conclusion:** So we can conclude that water extracts of Mexican sunflower leaves have hepatoprotective activity.

Keywords : Mexican sunflower, hepatoprotective, paracetamol

PO-PY-016

Effect of Oral Administration of Roselle Calyx (*Hibiscus Sabdariffa* L.) Ethanol Extract on Kidney and Liver Function Of Male and Female Wistar Rats

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Background : Roselle calyx empirically has been used as diuretic, antihypertensive, antidiabetic and antihyperuricemic agent. In our study, acute toxicity test of ethanol extract of Roselle calyx (*Hibiscus sabdariffa* L) up to 5,000 mg/kg body weight did not show any toxicity. However, repeated administration of the extract may cause toxic effect. **Objective:** The aims of this research is to study the influence of Roselle calyx ethanol extract to kidney and liver functions of Wistar rats after 90 days once daily administration. **Methods:** Six group of rats were used in this study including the extract group of 40, 120, 1000 mg/kg body weight, control group, satellite control and satellite of 1000 mg/kg body weight group. The extract were administered orally for 90 days. Observation were done on day 91 and day 121 for satellite group including kidney and liver index, blood biochemistry, SGPT and SGOT activities, creatinin levels, urinalysis and histology. **Result :**. The result showed that Roselle calyx ethanol extract were non toxic, no influence in creatinin levels, SGPT and SGOT activities, kidney and liver index, pH of urine, and no cell damage based on kidney and liver histologic observation **Conclusion :** The ethanol extract of Roselle calyx (*Hibiscus sabdariffa* L*)* administered orally at the doses of 40, 120 and 1000 mg/kg body weight for 90 days were safe to kidney and liver of wistar rats.

Keywords: *Hibiscus sabdariffa* L., ethanol extract, calyx, kidney, liver, toxic

PO-PY-017

Acute Toxicity Studies on Combination of κ-Carrageenan and Glucomannan as Soft Capsule Shell and Combination of Ginger Exctract – VCO as Soft Capsule Filler

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Background : κ-Carrageenan is a prospective gelling agent to substitute gelatine in vegetarian soft capsule. The non-gelatine shell formulation was prepared to deliver a standardized herbal medicine contain ginger extract and VCO. **Objective** : Acute toxicity study was conducted in order to ensure the safety of shell formulation with new combination of κ-Carrageenan – Glucomannan, filler formulation with new combination ginger extract – VCO and its mixture as a composition of final dosage form. **Methods** : Female Wistar rats (8 weeks aged) were used for limit test study based on OECD 420 guideline. There were 3 groups of testing animal with 5 animals for each group. Acute toxicity studies were started with sighting study when the test substance was administered to a single animal at a dose of 2000 mg/kg followed by the main study by dosing of a further four animals at this level. Animals are observed individually after dosing at least once during the first 30 min, periodically during the first 24 h, with special attentions given during the first 4 h, and daily thereafter, up to 14 days. **Results** : No death nor evidence of toxicity were observed during acute toxicity studies for combination of κ-Carrageenan – Glucomannan, Ginger extract – VCO and mixture of its. All animals on the first group which were administered κ-Carrageenan – Glucomannan combination, the second group which were administered ginger extract – VCO, and the third group which were administered mixture of κ-Carrageenan – Glucomannan and ginger extract – VCO showed normal behaviour, neurogic and otonomic respond during the first 4 h after test substance administration. The average increase of body weight for the first group were 11.0 ± 5.15 g and 6.8 ± 14.82 g for 7 days and 14 days of monitoring respectively. The average increase of body weight for the second group were 20.0 ± 2.92 g and 6.8 ± 4.76 g for 7 days and 14 days of monitoring respectively. The average increase of body weight for the third group were 2.0 ± 14,42 g and 9.0 ± 10.16 g for 7 days and 14 days of monitoring respectively. There were no abnormality of organs were observed for three groups of animal at the end of the studies. **Conclusion** : Those three test substances can be catagorized as GHS 5 or likely to be nontoxic.

Keywords : κ-Carrageenan, Glucomannan, Ginger extract, VCO, Acute toxicity

PO-PY-018

Pepino (*Solanum muricatum*. Ait) Ethanol Extract Activity to SGOT and SGPT Level in White Male Rats (Sprague Dawley)

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Background : Solanum muricatum fruit (Solanum muricatum. Ait) has been long used as traditional medicine. One of them as hypercholesterol drugs. **Objective :** The purpose of the research for to know liver disordes result toxic effect from ethanol extract. **Method :** Solanum muricatum fruit be given orally with dose variation. The first group as negative control given Na.CMC 1%, the second group (I dose) be given dose as 0,8514 gram/KgBW, the third (II dose) given dose as 1,7028 gram/KgBW, and the last group given dose twice from dose II as 3,4056gram/KgBW. **Results :** The result of the research showed an increase enzyme levels of SGPT Respectively 11,30%, 13,00%, and 49,72% then SGOT 26,12%, 27,21%, and 37,45%.

Keywords: Solanum muricatum, SGPT, SGOT

PO-PY-019

The Study of Screening Anthelmintic Activity of *Karika* Fruit, Leaf, and Seed Ethanol Extracts (*Carica pubescens* Lenne & K. Koch)

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Background : Helminthiasis is a still health problem in developing countries. Indonesia has prevalence rate of 45-65% incidence of ascariasis particularly high risk in toddlers and elementary school-age children. *Karika (Carica pubescens* Lenne & K. Koch) is a local plant which can only grow well in upland areas of Dieng, Wonosobo. **Objective:** To investigate the effect of *karika* fruits, leaves and seeds ethanol extract as direct ovicidal, indirect ovicidal, and vermicidal using *Brine Shrimp Lethality Test* (BSLT*)* and conventional methods. **Methods:** The seeds, fruits, and leaves of *karika* were extracted by reflux using ethanol. The *in vitro* BSLT method was performed by incubating nauplii and eggs of *Artemia salina* L. in test solution, while the conventional test used eggs and worms of *Ascaris lumbricoides* var *suum*. **Results:** A linear correlation was found between the BSLT and the conventional method in the percentage of dead *Artemia* nauplii and eggs with that of *Ascaris* eggs and worms. Anthelmintic screening with BSLT method had given a result that *karika* seed of ethanol extract had the highest ovicidal and larvacidal activity with LC_{50} of 288 µg/ml and 319 µg/ml, respectively. *Karika* seed of ethanol extract gave the highest anthelmintic activity as direct ovicidal, indirect ovicidal, and vermicidal with LC_{100} of 5, 125, and 50 mg/ml, respectively. **Conclusion:** BSLT method gave a comparable result with conventional method in screening anthelmintic activity. *Karika* seed of ethanol extract had the highest anthelmintic activity.

Keywords: karika (*Carica pubescens* Lenne & K.Koch), ascariasis, BSLT

PO-PY-020

Effect of Ethanol Extract Of *Physalis angulata* Linn on Anemia on Animals Model of Rheumatoid Arthitis

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Background: Rheumatoid arthritis (RA) is an autoimmune disease that attacks synovium in joints and also can cause anemia. *Physalis angulata* Linn is used to treat several diseases, such as anemia. **Objective:** This research is conducted to evaluate the effect of ethanol extract of *Physalis angulata* on anemia on animals model of RA. **Methods:** Extract of *P. angulata* is made using Soxhlet apparatus. Induction of animals model of RA is done with 0.1 ml Complete Freund Adjuvant intraplantar. Animals models were divided into five groups, which were normal, positive control, 50 mg/kg bw of extract of *P. angulata*, methotrexate, combination of 50 mg/kg bw of extract of *P. angulata* and methotrexate. Anemia parameters were erythrocyte, hematocrit, and hemoglobin. **Results:** The results showed that extract of P. angulata or methotrexate alone could increase the number of erythrocyte, hemoglobin, hematocrit compared to control positive group ($p<0.05$). Combination of extract of P. angulata and methotrexate could not increase the number of erythrocyte, hemoglobin, hematocrit compared to control positive group. **Conclusion:** It can be concluded that extract of *P. angulata* could reduce risk of anemia on animal model of RA, but it could not given as adjuvant of methotrexate.

Keyword : *Physalis angulata*, rheumatoid arthitis, anemia, adjuvant

PO-PY-022

Effect of *Brugmansia suaveolens* (Humb. & Bonpl. Ex Willd) Bercht. & Prescl.) Leaves Water Extract on Cutaneous Anaphylaxis Reaction in Male Wistar Rats Allergic Ovalbumine

Mutiara Sandi Asih, Ita Nur Anisa, Andreanus.A

Background : Amethyst leaf *(Brugmansia suaveolens* (Humb. & Bonpl. Ex Willd) Bercht. & Prescl.) has been widely used in traditional medicine as an asthma medication. Several studies have proven bronchodilators and anti-inflammatory activity of leaf amethyst mountain. **Objective :** This study aims to determine the inhibitory ability of amethyst leaf to the active cutaneous anaphylaxis reaction. **Mehods :** Rats Wistar male made allergic to ovalbumin by sensitized to ovalbumin 0.2% in the Al (OH)3 20% subcutaneously with a volume of administration of 0.5 mL to produce high immunogenicity and ovalbumin 1% in the Al (OH) 3 20% intramuscularly with volume administration 0.1 mL to avoid irritation due to the presence of adjuvant (H0). After 12 days (H12) shaved backs of rats, At H13 Na CMC control the dosage given oral doses of 0.5%, comparator drug cromolyn sodium subcutaneous dose of 2 mg / kg bw and water extract of leaf amethyst oral doses 22:25; 36.50; 44.45 mg / kg bw. 15 minutes later the rats given ovalbumin fsiologis 0.1% in NaCl 0.9% with a volume of 0.05 mL Award in intrakutan on the backs of rats to generate anaphylactic reaction indicates a positive reaction. Also injected NaCl 0.9% with a volume of 0.05 mL Award in intrakutan on a different area as a blank. Active cutaneous anaphylactic reactions were observed every hour for 8 hours. **Results :** The results showed all doses test extract has an effect compared with the control group ($p < 0.05$), but still below the comparator drugs. Dosage water extract of leaf amethyst mountain has the highest effect is dose of 22:25 mg / kg bw per cent reduction by the highest bump area on the hour to 1 amounted to 40.17 ± 10:52%.

Keywords: Leaf amethyst mountain, cromolyn sodium, ovalbumin, anaphylaxis, cutaneous active.

PO-PY-023

Development of Dysmenorrhea Animal Model and Anti-Dysmenorrhea Activity Testing of *Artemisia vulgaris* L. in Female Swiss Webster Mice

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Background : Primary dysmenorrhoea is a widely common complaint among young women during menstruation. It is a painful menstrual cramps without any evident with gynaecological abnormalities. *Artemisia vulgaris* L. is traditionally known to have efficacy in dealing with various problems of the menstrual cycle. **Objective :** This study aims to develop dysmenorrhea animal model and also test the activity of anti-dysmenorrhea of *Artemisia vulgaris* L. leaves ethanol extract in Swiss Webster mice. **Method :** To induce dysmenorrhea, the mice were given estradiol 0.01 g/kg bw subcutaneously for 7 to 15 days. On the last day, the mice were injected intraperitoneally with oxytocin a dose of 2 IU/kg bw and 3 IU/kg bw. The dysmenorrhea pain was observed through writhing response. The female mice were devided into five groups : normal, positive control, 250 mg/ kg bw *Artemisia vulgaris* L. extract, 500 mg/kg bw *Artemisia vulgaris* L. extract, 15 ml/kg bw Kiranti and 52 mg/kg bw ibuprofen group. **Results:** Dysmenorrheal pain in mice occured by giving estradiol 0.01 g/kg bw for 15 days and on the 16^{th} day were given with 3 IU/kg bw oxytocin intraperitoneally. Group treated with 250 mg/kg bw extract and 500 mg/kg bw extract presented significantly lower writhing response compared with the control group ($p<0.05$). The 500 mg/kg bw extract had a higher onset of writhing compared to the control group ($p<0.05$). **Conclussion :** The optimum dysmenorrhea model in mice was established by giving estradiol 0.01 g/kg bw for 15 days and on the 16^{th} day were given 3 IU/kg bw oxytocin intraperitoneally. 500 mg/kg bw and 250 mg/kg bw *Artemisia vulgaris* L. leaves ethanol extract had the anti-dysmenorrhea effect in female Swiss Webster mice.

Keywords : dysmenorrhea animal model, *Artemisia vulgaris* L., anti-dysmenorrhea

PO-PY-024

The Study of Antibacterial Activity of Several Antibiotics and Curcumin in Combination against *Escherichia coli* and *Staphylococcus aureus*

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Background: Bacterial infection is commonly found in the society. However, the possibility of bacterial resistance and severe adverse effects become major problems. Plant-derived-compound is often expected to improve antibiotics potency, such as curcumin. According to previous study, curcumin has been proven having antimicrobial effect. **Objective:** this study aimed to observe the effect of curcumin in combination with selected antibiotics including neomycin sulphate, ciprofloxacin, trimethoprim, sulphamethoxazol, and ampicillin trihydrate against *Escherichia coli* and *Staphylococcus aureus*. **Methods:** Determination of Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were carried out in this study. The combination test was performed by using paper tape, paper disk and time kill curve. **Results:** The MIC value of neomycin sulphate, trimethoprim, sulfamethoxazole, ampicillin trihydrate, ciprofloxacin and curcumin towards *S.aureus* were 8; 256; 32; <0.015625; 0.125; 64 μg/mL, respectively. Meanwhile, the MIC against *E.Coli* are 16; 64; 32; 8; 0.0625; and 64 μg/mL. The MIC value were used for further observation on combination test. The combination test showed that combination of curcumin and neomycin sulphate, ciprofloxacin, sulfamethoxazole, and ampicillin trihydrate showed additive antimicrobial effect, whereas trimethoprim-curcumin combination represented synergistic effect. Combination of curcumin and all selected antibiotics showed additive effect against *S.aureus*. **Conclusion:** combination of curcumin and selected antibiotics possessed additive effect towards *E.coli*, except that of trimethoprime. Meanwhile, combination of curcumin and all antibiotics showed additive effect towards *S.aureus.*

Key words: antibiotics, curcumin, combination, *E.coli, S.aureus*

PO-PY-025

The Effect of Ethanolic Extract of Kacapiring (*Gardenia augusta* (L.) Merr) on Sleep Quality in Male Wistar Rats

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Background: Sleep disorder causes poor sleep quality. Wither fixing or improving the sleep quality may become an option to prevent such a disorder. Kacapiring or *Gardenia augusta* (L.) Merr. contains secondary metabolite such as crocetin that is potential to increase the quality of sleep. **Objective:** The aim of this research was to examine the effect of *Gardenia augusta* (L.) Merr. in improving the quality of sleep. **Methods:** There were 4 groups of rats included the normal group, crocetin 0.9 mg/kg treated group, gardenia extract 900 mg/kg bw treated group, and gardenia extract 1800 mg/kg treated group. All tested substances were administered orally for 14 consecutive days. Parameters related to sleep quality were observed on day 1 and day 14, inluding sleep latency, sleep duration, sleep efficiency. Sedation rating scale was used to determine the level of sedative effect. **Results:** The crocetin 0.9 mg/kg bw, gardenia extract 900 mg/kg bw and 1800 mg/kg bw on were able to reduce sleep latency and increased the duration of sleep and the efficiency compared to the normal group ($P<0.05$). Results of sedation rating scale showed that crocetin 0.9 mg/kg bw, gardenia extract of 900 mg/kg bw and gardenia extract of 1800 mg/kg bw possessed mild sedative effects. **Conclusion:** The ethanolic extract of gardenia resulted in mild sedative effect in dose dependent manner and improved several parameters related to sleep quality.

Keywords : quality of sleep, gardenia, crocetin

PO-PY-026

Antihypertensive and Diuretic Effects of *Vernonia Amygdalina* Del. Leaf Ethanol Extract

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Background : Cardiovascular disease is one of the major causes of death in the world and hypertension is a risk factor. Traditionally, people use herbal medicine to decrease blood pressure. **Objective** : This research aimed to study the effect of *Vernonia amygdalina* leaf extract as an antihypertensive and diuretic agent. **Method** : Antihypertensive and diuretic effects of the extract was tested in Sprague Dawley rats. The rats were induced to become hypertensive by administered 0.2 g/kg bw of 2% NaCl and 1.5 mg/kg bw prednison orally once a day for 14 days. Hypertensive rats were selected and grouped into 2 groups for 2 doses of extract, 1 for control (received only vehiculum), and 1 for standard (captopril 2.25 mg/kg bw). Standard and extract were given orally for 7 consecutive days. Sistolic and diastolic blood pressures were measured using non-invasive direct *tail-cuff* (CODA®) before induction (H_0) and 7th days after extract administration. Diuretic effect were carried out according to Lipschitz test. **Results:** The rats became hypertensive after 14 days of induction. After 7 days of extract administration, the two doses of extracts (100 and 200 mg/kg bw) could decrease sistolic blood pressure significantly ($p<0.01$). The high dose of the extract seemed more potent in decreasing sistolic and diastolic blood pressure (32,25% and 27,7%) compared to captopril (28,33% and 25,98%). On diuretic test, the two doses of extract *i.e*. 50 and 100mg/kg bw showed *Lipschitz-value* on 24 hours urine collection i.e., 1.14 and 1.21, similar to *Lipschitz-value* of furosemid i.e., 1.17, which can be categorized having diuretics effect. **Conclusion:** Based on those results, it can be concluded that the two doses of *Vernonia amygdalina* leaves ethanol extract have antihypertensive and diuretic effect.

Keywords: Diuretic effect, Hypertension, *Lipschitz-value*, *Vernonia amygdalina* leaf

PO-PY-027

Hepatoprotective Effect of *Vernonia Amygdalina* Del Leaf Ethanol Extract on Wistar Rat Induced by Antituberculosis Drugs

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Background : Rifampicin and INH are the first line medication to treat tuberculosis. The long term use of these drugs can cause liver damage. Hepatotoxic effect of those drugs may occur due to the formation of free radicals. Empirically, Vernonias have antioxidant activity which may scavenge the free radicals and is expected to have hepatoprotective activity. **Objective** : This study was conducted to evaluate the hepatoprotective effect of *Vernonia amygdalina* ethanolic extracts. **Method** : Fresh leaves were processed into crude drug then extracted with Soxhlet method in ethanol 96% v/v. The obtained extract was then concentrated and characterized. Hepatoprotective activity were tested on male Wistar rats. A combination of INH (27 mg/kg) and rifampicin (54 mg/kg) were used as an inducer of liver damage and were given orally 1 hour before extract administration. Parameters observed were the activity of the enzyme alanine transferase (ALT), serum albumin level, and liver index. **Result** : The two doses of the extracts could prevent liver damage, starting on day 14 indicated from ALT level. Based on albumin concentration and ALT activity, the high dose of extract (100 mg/kg) showed more potent as a hepatoprotector compared to low dose (50 mg/kg). Group treated with a high dose showed liver index significant smaller compared to positive control which is indicated a hepatoprotective activity. **Conclusion** : Based on the results, *Vernonia amygdalina* ethanolic extracts can be used to protect the liver when treated with a combination of INH and rifampicin as an antituberculosis drug.

Keywords: Hepatoprotector, Rifampicin, INH, *Vernonia amygdalina*

PO-PY-028

In Vitro Antimicrobial Activity and Antagonist Effect of Interactions between Bacteriocins Isolated from Selected *Lactobacillus* with Standard Antibiotics against Certain Resistant Bacteria

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Background: The discovery of new antibacterial agents becomes a necessary nowadays due to an increase of bacteria resistant to many antibiotics. The present study was aimed at evaluating the antibacterial activities of 4 *Lactobacillus sp*., e.a. *L. brevis*, *L. delbrueckii*, *L. plantarum*, and *L. rhamnosus*, and antibacterial activity of bacteriocin isolated from the selected Lactobacillus. The interaction of bacteriocin with standard antibiotics was evaluated as well. **Methods**: Antibacterial activity of samples were tested by agar diffusion method to determine inhibitory area and microdilution method to determine the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC). Resistant bacteria used in this study was Methicillin Resistant *Staphylococcus aureus* (MRSA), Methicillin Resistant Coagulase Negative *Staphylococcus* (MRCNS), Multi-drug Resistant *Pseudomonas aeruginosa* (MDRPA). **Results:** *L. brevis* supernatant had a relatively higher diameter of inhibition zone, MIC and MBC against to Gram-negative bacteria than the other supernatant cultures. The diameter of inhibition zone of *L. brevis* against MRSA, MRCNS, and P. aeruginosa MDR respectively were 12.0±0.23 mm, 11.8 ±0.4 mm, and 11.2±0.15 mm. MIC and MBC of *L. brevis* supernatant were respectively 6.25% and 12.5% against MRSA and MDRPA. Furthermore MIC and MBC of *L. brevis* supernatant against MRCNS both was 6.25%. Diameter of inhibition zone of *L. brevis* bacteriocins compared to *L. brevis* supernatant against *P. aeruginosa* MDR were respectively 14.7±1.11 mm and 11.2±0.65 mm. The combination of the bacteriocin with standard antibiotics against resistant bacteria had FICI value higher than 1. **Conclusion**: Bacteriocins have a role in the antibacterial activity of supernatants *L. brevis*. Interaction between *L. brevis* bacteriocin with meropenem, tetracycline and ciprofloxacin against resistant bacteria are antagonist.

Keywords *:* Antibacterial, Bacteriocins *L. brevis, Pseudomonas aeruginosa MDR, MRSA,MRCN*

OR-CP-001

Non-Specific Treatment of Diarrhea from Four Primary Health Centre in Four Provinces of Indonesia

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Background: Based on various research and studies, the accuracy of the drugs treatment for non-specific diarrhea is still poor, especially since the use of antibiotics. Primary Health Centers (Puskesmas) as a primary health care should be able to give a rational treatment. This research was conducted to four Puskesmas, from four the provinces in Indonesia, Jakarta (DKI), West Java, East Java, and North Sulawesi. **Objective:** This study aims to determine the accuracy of the drug treatment and the dose based on The Basic Guidelines for the Treatment in Primary Health Center. **Methods:** This study based on the data treatment of non-specific diarrhea from April to June 2013, which is reported to the health ministry. **Results:** The average results based on appropriate drugs treatment, respectively are: DKI 34.57%; Northern Sulawesi 34.12%; East Java 31.24%, and West Java 9.93%, while the dose of the drug treatment are 100% appropriate to the guidelines.

Keywords: Diarrhea, primary health centers, drug treatment, The Basic Guidelines for the Treatment in Primary Health Center, Puskesmas

OR-CP-002

Analysis of Health-related Quality of Life Determinants in Adult Ashmatic Patients in a District Hospital in Jakarta

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Objective: To determine asthma control and patients' compliance levels, and to evaluate the appropriateness of medicine use in relation to asthma severity and determinants of health-related quality of life (HRQoL). **Methods:** During this prospective study, adult asthmatic patients who currently experienced asthma attack were evaluated in asthma clinic of a district hospital in Jakarta and administered study questionnaires (asthma control, medication adherence and asthma quality of life questionnaire). Demographic variables and data related to asthma control, patients' compliance level and the appropriate use of medications were summarised using descriptive statistics. The determinants of HRQoL were determined using bivariate and multivariate regression analysis. All data were analysed using SPSS version 22.0. **Results:** There were 11 males and 43 females aged approximately 45 years old. More than 50% of the patients had uncontrolled asthma and low level compliance to their medications. Nearly all medicines used are inappropriate according to National Asthma Treatment Guideline. Bivariate correlation test revealed four factors which significantly determined the total score of HRQoL, namely asthma duration (P=0.033), asthma control level (p=0.007, asthma severity level) (p=0.001) and the presence of smoke exposure in neighbourhood (p=0.032). Further, multivariate analysis showed only one factor namely the presence of smoke exposure which significantly affected patients' quality of life. **Conclusion:** This study uncovers the majority of patients had uncontrolled asthma status and low level of compliance to their medications. In addition, this study highlights the exposure of smoke exposure particularly in patients' neighbourhood as the solely determinant of HRQoL amongst asthmatic patients.

Keywords: asthma, health-related quality of life

OR-CP-003

The Comparation Effectiveness of Amitriptyline Versus Gabapentin and Evaluation Their Side Effect As Neurophatic Pain Therapy in Elderly with Type II Diabetes Mellitus

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Background: Neuropathy in diabetes mellitus is a disorder that occurs in the peripheral nervous system. The incidence of diabetic neuropathy was found more prevalent in elderly (44%) compared to adult (24%). Amitriptyline and Gabapentin are widely used on treatment of neuropathic pain. **Objective:** Variations in the results of research related to effectiveness and safety of both drugs, causes the need further research to determine the best and safest therapy to treat the pain of diabetic neuropathy, especially in geriatrics. **Methods:** A prospective cohort study involving 70 elderly patients who treated with Amitriptyline or Gabapentin were observed during 4 weeks, with the target outcome were neuropathy pain reduction ≥ 2 unit and incidence of adverse events. **Result:** The whole subject in this research who got Amitriptyline or Gabapentin decreased pain scale ≥ 2 units compared to baseline. Comparison head to head at low and therapeutic doses, Amitriptyline showed reduce pain intensity greater than Gabapentin ($p < 0.05$), while on therapeutic doses show there was no difference in efficacy between two drugs ($p > 0.05$). The adverse events on low and therapeutic doses showed Amitriptyline (91.43%) has significantly greater ($p < 0.05$) of adverse event compared into Gabapentin (51.43%), but there was no statisticaly difference on therapeutic doses in both groups ($p > 0.05$). **Conclusion:** Amitriptyline was found relatively better in reducing diabetic neuropathic pain intensity compared to Gabapentin, but the adverse events was higer than Gabapentin.

Keywords: Diabetes Neuropatic Pain, Effectiveness, Side Effect, Amitrptyline, Gabapentin.

OR-CP-005

The Off-Label Use of Oxcarbazepine in Indonesia

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Background: Oxcarbazepine is a second-generation anticonvulsant drug that is a keto analog of carbamazepine. Oxcarbazepine was approved by The National Agency of Drug and Food Control Indonesia (NA-DFC) for generalized epilepsy, tonic-clonic primary and partial epilepsy with or without secondary generalization. However, as other anticonvulsants, oxcarbazepine is also often used without approved indication (off-label). **Objective**: The aim of this study is to investigate the off-label use of oxcarbazepine. **Methods**: This research is an observational study with retrospective data collection. Data were obtained from four hospitals in Yogyakarta, namely Dr. Sardjito Hospital, UGM Hospital, PKU Muhammadiyah Hospital and Bethesda Hospital. Off-label use of oxcarbazepine was identified based on official registration by NA-DFC Indonesia. **Results**: The use of oxcarbazepine in 2014 was 224 prescriptions, which 117 (52.68%) was off-label. Most off-label indications according to ICD-10 were cephalgia 48 (41.03%), followed by trigeminal neuralgia 35 (29.91%), stroke 6 (5.13%) and others 29 (23.93%). **Conclusions**: From these study, the off-label use of oxcarbazepine was mostly in the cases of neuropathic pain.

Keywords: oxcarbazepine, off-label, indications, Indonesia

OR-CP-007

Comparison of Pain Outcome in Osteoarthritis Patients Treated with A Combination of Diacerein and Meloxicam, and Meloxicam Alone at Orthopedic Clinic of RSUD dr. Mohammad Soewandhie Surabaya

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Background: Osteoarthritis is a progressive chronic disease with the loss of articular cartilage. In managing osteoarthritis, inadequate pain relief often occurs, particularly with a single NSAID therapy. **Objective:** In this research, pain outcome of osteoarthritis patients treated with a combination of Diacerein and Meloxicam vs Meloxicam alone was evaluated. **Methods:** This research was conducted at RSUD dr. Mohammad Soewandhie Surabaya by using RCT design. Pain outcome was evaluated by pain intensity and area under the curve (AUC) of pain score in week 0-4th. **Results:** There were a significant different ($p<0.05$) in pain intensity seen in 3rd and 4th weeks after treated with a combination of Diacerein and Meloxicam, and with Meloxicam only. However, there were no different in AUC pain score between combination and single therapy. **Conclusion:** Combination therapy of Diacerein and Meloxicam was more effective than Meloxicam alone. A significant effect of a combination therapy of Diacerein and Meloxicam occurred at 3rd week. The prolong study in order to get the differences in AUC pain score are needed.

Keywords : osteoarthritis, diacerein, meloxicam, pain intensity

OR-CP-008

Effectiveness Of Prophylaxis Antibiotic Patients Cesarean (*Sectio Caesarea*) in Islamic Ibnu Sina Hospital Pekanbaru in January to July 2015

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Background: The risk of infection form caesar surgery (Sectio Caesarea) can be decrease by administration of prophylactic antibiotics. A research on the effectiveness of prophylaxis antibiotic used on patient cesarean surgical in Islamic Ibnu Sina Hospital Pekanbaru.**Objective:** The purpose of this research was to determine the effectiveness of the use prophylaxis antibiotic in patients cesarean (*Sectio Caesarea*) in Islamic Ibnu Sina Hospital Pekanbaru in January to July 2015. **Methods:** This research is a descriptive observational study design. Sampling technics are *purposive sampling*. Data from the medical record search. **Results:** The medical record of 66 researched cesarean section of prophylaxis antibiotic used for all the patients is ceftriaxone with dosage of 1 gram given intravenously pra operation. Assessment of the effectiveness of viewing the body temperature, pulse, breath, and leukocytes. The usage of prophylaxis antibiotics as effective is (100%) patient is not happen for infection sign after cesarean section**. Conclusions:** The usage of prophylaxis antibiotics as effective on patients cesarean surgical in Islamic Ibnu Sina Hospital Pekanbaru.

Keywords : antibiotic, prophylaxis, cesarean, ceftriaxone, effectiveness

OR-CP-010

Effectiveness of Analgesics and Adverse Drug Reaction on Post-Operative Patients

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Background: Pain is one of symptoms experienced by postoperative patients. This symptom is usually treated with analgesics. However, the efficacy of these drugs are different and usually subjective to the patient condition. Besides, these drugs have several adverse drugs reactions. **Objective:** The objective of this study was to evaluate the effectiveness of the use of analgesic and the incidence of Adverse Drug Reaction (ADR) on postoperative patients at 'Aisyiyah Hospital in Padang and Pariaman, West Sumatra. Data were collected prospectively from July to October 2015. **Methods:** This study was conducted by means of purposive sampling method. A number of 39 samples met the inclusion criteria, consisted of 19 patients at Padang 'Aisyiyah Hospital and 20 patients at Pariaman 'Aisyiyah Hospital. The degree of pain was measured by using Visual Analogue Scale (VAS), while the incidences of ADR were assessed and analyzed descriptively. **Results:** Data showed that the use of analgesic could relieve postoperative pain at 'Aisyiyah Hospital in Padang and Pariaman by 89.5% and 85%, respectively. Incidence of ADR that occured at Padang 'Aisyiyah Hospital (63.2%) and Pariaman 'Aisyiyah Hospital (60%) comprised nausea, vomiting, dizziness, constipation and itchy skin. Most of the ADR were caused by combination of ketorolac and tramadol (97.6%). **Conclusion:** The study concludes that analgesics were used with high efficacy but with some incidences of ADR.

Keywords: analgesic, effectiveness, Adverse Drug Reaction (ADR)

OR-CP-011

Evaluation of Drug Management and Service Quality of a Public Primary Health Care Pharmacy in Bandung

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Background: In national health coverage era, public primary health care pharmacy must be supported by good drug management and service quality. These include human resources, pharmaceutical inventory management, and pharmacy service quality. **Objective:** This paper empirically evaluates the drug management that consist of planning, procurement, storage, distribution, and documentation aspects; and also how patients perceived pharmacy service quality using SERVQUAL tool. This survey included five service quality dimensions: tangibility, reliability, responsiveness, assurance and empathy. **Methods:** Drug management was evaluated through triangulation method (observation, interview and checklist) and a self-completion Likert-scale questionnaire developed using a convenience sampling technique were given to patients that received medicine from pharmacy. **Results:** The pharmacy management has been categorized as having excellent management with the mean score 88.89% of all aspects and gap analysis showed mean gap score for five service quality dimensions of -1,01; -0.73 for responsiveness, -0.88 for reliability, -0.74 for assurance, -1.87 for empathy, -0.82 for tangibility, showing that patient expectation was still not met. Satisfaction level for pharmacy service was 82.53 % which is categorized as good. Factor analysis implies that the SERVQUAL model is not the best tool to evaluate service quality in this setting. **Conclusion:** This paper provides useful information to primary public health care provider that the pharmacy unit is not providing service quality level expected by patients and needs improvement in many variables. Five quality dimensions in SERVQUAL tool do not best measure the construct in primary health care setting.

Keywords: drug management, service quality, pharmacy, public primary health care, evaluation

OR-CP-012

Self-Medication Pattern among Andalas University Students, Indonesia

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Background: Self-medication patterns vary among different population and influenced by many factors, such as age, gender, income and expenditure, self-care orientation, education level, medical knowledge, satisfaction and perception of illnesses. Irrational self-medication could lead in increasing side effect and unnecessary expenditure, not only for individual but also for society and government. **Objective:** To described self-medication practice pattern among Andalas University student, Indonesia. **Methods:** This study is descriptive - cross sectional study by using questioners that distributed to Andalas University students that have done self-medication practice in past 3 months. The questionnaire distributed on 19 canteens which spread in all Andalas University campus. The sample size was determined to get 95% confiddent interval, then the data was analysed statistically using SPSS. **Results:** The study found that reasons of students did self-medication practice because they feel the illnesses was not seriously (48.1%), and medication were used were analgesic or antipyretic (65.7%). The study also shown that most of respondent used more than one of drugs (51.2%), information about medication mostly come from parent, family and friends (60,2%), got the medication from pharmacy (64.3%) and usually read instruction on brochure before took the medicine (52.3%). Only few of respondent feel better after self-medication practice (43.5%), while inappropriate used of drug mostly happen on both antibiotic (61.0%) and antihistamine (45.0%). **Conclusion:** Self-medication practice among Andalas University students is far from ideal, thus education and information about rational self-medication practice needed to be done.

Keywords: self-medication, university students, public health, public health pharmacy

OR-CP-013

Are Pharmacy Graduates in An Indonesian University Prepared to Deliver Patient Care?

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Background: Pharmacists' roles in providing patient care remained limited in Indonesia. **Objective:** This study aimed to determine the preparedness of pharmacy graduates from one university in Indonesia to deliver patient care. **Methods:** Pharmacy graduates (both registered pharmacists [106] and recent graduates [45]) eligible for registration, were sent a validated self-administered survey. The survey sought their perceptions about whether they had acquired 16 patient care related attributes. Further, it sought their opinion on the desirability of having those attributes **Results:** Sixteen of 104 (15.4%) registered pharmacists and 40 of 45 (88.9%) recent pharmacy graduates participated in the study. More than 50% of participants in both groups were female and most participants were aged in their 20s. Of the recent pharmacy graduates the majority perceived they had at least partially acquired four of 16 list attributes. Male and female recent graduates had significantly different beliefs about their leadership ability (p=0.004). By comparison, most registered pharmacists perceived they had 10 out of the 16 listed attributes**.** In addition, Fisher's exact test indicated that higher proportions of registered pharmacists perceived having certain attributes (i.e. caring and compassionate nature and satisfaction at interpersonal relationship in their professional life) compared to recent pharmacy graduates. However, both groups demonstrated similar perceptions of the desirability for all attributes. **Conclusion:** The findings of this study suggested that pharmacy graduates could be better prepared to deliver patient care, and that curriculum redesign with expansion of experiential learning is required.

Keywords: pharmacy graduates; preparedness, patient care, Indonesia

OR-CP-014

Effect of Education through Short Message Service (SMS) to Adherence Diabetic Patients

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Background: Poor adherence and lack understanding about medication instructions for use of oral antidiabetics are the key factors that inhibited the control of blood sugar levels so that it needs intervension to improve medication adherence. **Objective:** The giving of education through the Short Message Service (SMS) patients with type 2 diabetes mellitus (DMT2) is expected to improve patient adherence to therapy. **Methods**: This study was conducted with quasi-experimental design with prospective data collection. The subjects of this study were 50 patients with DMT2 outpatient RSUD West Nusa Tenggara province who had received oral antidiabetic drug therapy least six months prior to adherence measurement. Patients were classified into two groups (a control group and the intervention group). Data collection was conducted by doing interview and Morisky Modification Adherence Scale (MMAS) questionnaire. **Results**: The results showed that the increase of adherence in the intervention group at 1.15±1.04 and the control group 0.72±0.90. These results indicate that there are significant differences between the scores MMAS in the control group and the intervention group. Characteristic factors research subject are gender, education, occupation, treatment duration, and age. All of them did not affect the adherence statistically (P>0.05). **Conclusion**: The giving of education through SMS can improve adherence and there are no factors that affect the characteristics of the study subjects with DMT2 adherence.

Keywords: SMS, Adherence, Diabetes

OR-CP-015

Effect of Education through Application of "Digital Pillbox Reminder" to Improve Type 2 Diabetes Mellitus (DMT2) Patients Adherence in Mataram NTB General Hospital

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Objectives: The purpose of this research is to determine the effect of education by applicating Digital Pillbox Reminder in order to improve type 2 diabetes mellitus (DMT2) outpatient adherence Internal Disease Polyclinic Mataram General Hospital (RSUD). **Methods**: This study was conducted through quasi-experimental design using patients data collected from April to May 2016, prospectively. Subjects who met the inclusion criteria were divided into two groups: the treatment and control groups. Pregnant women and deaf patients are excluded. Through interviews and filling questionnaires data obtained were further analyses using Medication adherence Report Scale (MARS). **Results**: Results showed that there was an increased in adherence in the treatment group by 1.28±1.06 and in control group by 0.35±0.74. However, this increased was not different statistically. **Conclusion**: Based on the result, educated DMT2 outpatient through Digital Pillbox Reminder is not effective. However this tool can be used to improve patient adherence.

Keywords: Digital Pillbox Reminder, Adherence, Diabetes

OR-CP-016

Effectiveness of Analgesics and Adverse Drug Reaction on Post Operative Patients in Two Indonesian Hospitals

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Objective: This study was aimed to evaluate the effectiveness of analgesic and to investigate the incidence of Adverse Drug Reaction (ADR) on postoperative patients at 'Aisyiyah Hospital in Padang and Pariaman, West Sumatra. Datas for this study were collected prospectively from July to October 2015. **Methods:** This study was conducted by means of purposive sampling method. A number of 39 samples were met the inclusion criteria, consisted of 19 patients at Padang 'Aisyiyah Hospital and 20 patients at Pariaman 'Aisyiyah Hospital. The degree of pain was measured by using Visual Analogue Scale (VAS), while the incidence of ADR were assessed and analyzed descriptively. **Results and conclusions:** The datas showed that effectiveness of analgesic to relief postoperative pain at 'Aisyiyah Hospital in Padang and Pariaman were 89.5% and 85%, respectively. Incidence of ADR that patients experienced at Padang 'Aisyiyah Hospital (63,2%) and Pariaman 'Aisyiyah Hospital (60%) were nausea, vomiting, dizziness, constipation and itchy skin. In addition, 36.8% and 40% of patients at Padang and Pariaman 'Aisyiyah Hospitals did not experience any incidence of ADR.

Keywords: analgesic, effectiveness, Adverse Drug Reaction (ADR)

OR-CP-017

Drug-Related Problems in Type 2 Diabetic Patients with Hypertension : A Prospective Study

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Objective : Type II diabetic patients whom also diagnosed with hypertension often received complex medication regimen. The situation may lead to the increase risk of drug-related problems (DRPs). The aim of the study was to identify the DRPs on type II diabetic patients who also diagnosed with hypertension in the following domains: type of problems, causes of the problems and type of interventions in order to resolve the DRPs. **Methods :** The prospective study was conducted from October to December 2015 at a secondary-care hospital in Indonesia involving 90 inpatients who meet the predetermined inclusion criteria. Identification and classification of DRPs was based on the Pharmaceutical Care Network Europe (PCNE) version 5.01. Correlation among subject's independent factors and the number of DRPs was also analyzed. **Results:** As many as 261 DRPs were identified, averaging 2.88 (SD=0,23) problems per patient. Drug choice problem was the most frequent problems (n=144, 55.17%) while drug/dose selection was the main causes (n=184, 62.16%). From a total 155 interventions, majority was conducted at patient/carer level (n=94, 60.65%). Bivariate analysis shown that the number of medication ($r=.49$, $p<.01$) and the length of stay ($r=.25$, $p<.05$) significantly correlated with the number of DRPs. Based on linear regression analysis, the number of medication significantly predicted the number of DRPs ($b=.50$, $p<.001$). **Conclusion:** Since the risk of DRPs in type II diabetic and hypertension patients relatively high, early detection by pharmacist is needed to ensure the safety and effectiveness of drug therapy.

Key words: type 2 diabetes mellitus, hypertension, drug-related problems, clinical pharmacy services, medication error

OR-CP-018

Application of A Healthy Food in Lowering Blood Pressure in Elderly Hypertensive Patients

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Background: Hypertension, which one the highest prevalence disease in Indonesia, especially in elderly group. Stroke caused by hypertension is one leading cause death in Indonesia. There are two-risk factors group in hypertension,*i.e.*,factor that cannot be changed and factor that can be changed such as dietary habits and nutrition, life style, and obesity. Lifestyle changed starting with the consumption of healthy food is a great solution to cure hypertension. **Objective:** The objective of this research is to applies healthy food to reduce the blood pressure in groups of hypertensive elderly patients in Bandung. **Methods:** The research is begin with interview to get subjects meet the inclusion criteria. The interview is used to determine a healthy food that is in accordance with the subject food consumed daily. Subject where dividedinto two groups, *i.e.*, test and control groups with 16 subject in each groups. Experiment was carried out in seven days by deliver lunch and dinner box to each subject. Parameter determined is blood pressure changed, body weight and BMI which was observed in three periods, before, day 3, and day 7 after given healthy food. **Results:** Result showed that there was a reduced in systolic blood pressure significantyly ($p<0.05$) at the 3 days and 7 days after treatment, from (152,06 + 15,38 mmHg) corupaced to (135,31 + 10,33 mmHg) on day 3 and (125.56 + 9.95 mmHg) on day 7. While body weight and BMI were not changed. **Conclusion:** Through this result, can be concluded that the healthy food develop in this research reduced the blood pressure of elderly patient as an adjunctive therapy for hypertension.

Keywords: hypertension, elderly, diet, healthy food, non-pharmacology therapy

OR-CP-019

Implementation of Home Pharmacy Care for Improving the Quality of Life of Patients with Type 2 Diabetes Mellitus in Cilacap

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Background: Complication and routine treatment which is often not accompanied by adequate therapy monitoring in type 2 Diabetes Mellitus (DM) can influence the quality of life of patient. **Objective:** This research aims is to implement home pharmacy care in order to improve the quality of life of patients with type 2 DM. **Methods:** This study was designed using a quasi-experimental, non equivalent control group with were the participants of chronic disease management program. The subjects were grouped as home care and non home care groups consist of 16 patients each obtained by purposive sampling that met the inclusion criteria *i.e.* undergone type 2 DM more than one year, received antidiabetic drug, exist in a conscious condition and accept health services in the city of Cilacap. The quality of life of patient assessed by questionnaire WHOQOL-BREF. Fasting Blood Glucose (FBG), Post-Prandial Blood Glucose (PPBG), and Random Blood Glucose (RBG) were also observed during the study. **Results:** Through the paired t-test at the end of study, the quality of life of home care group increased significantly ($p<0.01$), mainly for general ($p<0.01$) and physical health domains ($p<0.05$). FBG, PPBG, and RBG of home care group also decreased significantly ($p<0,01$). In the non home care group, there were no change of the quality of life and FBG as well as PPBG. **Conclusions:** Based on these results, home pharmacy care is required to improve the quality of life and lowering FBG, PPBG, as well as RBG patients with type 2 DM in Cilacap city.

Keywords: home pharmacy care, type 2 DM, quality of life

OR-CP-020

Provision of Patient Medication Counseling Service in Atertiary-Care Eye Hospital In Bandung: A Gap Analysis of Patient's Need, Standard and Service Provider Resources

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Background: Lack of sufficient knowledge about their health problems and medications is one cause of patients' nonadherence to their pharmacotherapeutic regimens leading to non-optimal outcome therapy. Patient education and counseling can overcome this problem, improve patient adherence and reduce medication-related problems. **Objective:**The aims of this study was to identify patient's need, healthcare professionals' support, pharmacists' readiness and step to be taken to meet the standard for performing patient medication counseling service.**Methods:**Study was started with sending questionnaires to hospitalized-patient to identify the patients' need and to other healthcare professionals to recognize their supports, followed by survey of pharmacists' readiness. Gap analysis was thencarried to identify the additional resources to be provided for conducting the service. **Results:** About 103 patients were enrolled and eager for drug counseling to be implemented with pharmacist as healthcare counselor. Approximately 46 nurses were participated; while for doctors, of the 60 questionnaires sent, there were 25 respondents as active medical doctor. All of nurses and doctorssupport pharmacist to provide the service; whereas pharmacists (n=4) are very much willing to conduct patient medication counseling. Gap analysis of patients' need, standard and service provider resources concluded additional resources should be furnished, e.g. information module consist of information which is needed by the patient, standard operational procedure, and updated-reliable literatures. Due to lack of pharmacist, counseling service only be delivered to patient who has a complex antibiotic regimen therapy.**Conclusion:**Our data showed that patient medication counseling service in this center could be quickly implemented.

Keywords : provision of new service, patient medication counseling service, gap analysis, tertiary-care eye hospital

OR-CP-021

Pathogen distribution and antibiotic resistance pattern in the intensive care unit (ICU) of a single private hospital in Bandung, Indonesia

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Background: Antibiotic resistance in the ICU setting has emerged as critical problem influencing therapy outcomes, e.g. enhanced patient morbidity, higher mortality rates, and increased health-related costs. To reduce these problems, antibiotic should be administered only if necessary and prescribed based on local susceptibility data of individual pathogens against particular antibiotic. **Objectives:** This study was designed to determine the pathogen distribution and the antibiotic resistance pattern in the ICU. **Methods:** About 282 secretory isolates were obtained retrospectively (January-December 2014) from the clinical and diagnostic division of one hospital after routine handling of submitted specimens. All collected isolates were identified and tested for resistance using VITEK® 2 compact (bioMérieux, France), following guidelines of CLSI. The resistance threshold value was set sensitivity below than 50%. **Results:** *Acinetobacter baumannii* isolates showed an antibiotic resistance profile of 100% to imipenem and meropenem. *Klebsiella pneumoniae* had resistance to aztreonam, amoxicillin-clavulanic acid, ampicillin-sulbactam, and cephalosporins. *Pseudomonas aeruginosa* showed an antibiotic resistance profile of 100% to imipenem and ampicillin. *Stenotrophomonas maltophilia* isolates resisted imipenem, amoxicillin-clavulanic acid, ampicillin, and fosfomycin. *Klebsiella pneumoniae* (ESBL) showed resistance to gentamicin and netilmicin. Whereas for gram positive bacteria, *Streptococcus mitis* / *Strep. oralis* isolates showed resistance to ceftazidime and cefotaxime. *Staphylococcus haemolyticus* had resistance to beta-lactam group antibiotic and clindamycin, *Staphylococcus epidermidis* (MRSE) isolates was resistance to sulfamethoxazole-trimetoprim. **Conclusions:** The high prevalence of antibiotic resistance to *A. baumannii*, *K. penumoniae*, *P. aeruginosa*, *S. maltophilia*, *K. pneumoniae* (ESBL), *Sp. mitis*, *S. haemolyticus*, *S. epidermidis* (MRSE) isolates has an impact on limited available treatment choices.

Keywords: Antibiotic, Bacteria, Resistance, Pattern, Intensive Care Unit

OR-CP-022

Medication-related Problems on Patient with Renal Impairment in Tertiary Teaching Hospital in Bandung

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Background: Renal impairment may leads to drug accumulation and other pathological conditions. **Objective:**The study was aimed to identify medication-related problems related to renal function impairment. **Methods:** A retrospective observational study was conducted to 176 subjects of a tertiary teaching hospital inpatients whom were hospitalized between January to March 2015. Patients whom prescribed by drugs met the predetremined criteria were studied. A medication use criterion was created based on up-to-date evidence-based literature, and was used as a basis for Drug Related Problems analysis. **Results:** 54.59% of the total hospitalization days per patient was found to have inappropriate dosing while 21.61% of total hospitalization days per patient was found untreated indication, mostly anemia (29.23%). 31.99% medication without indication was identified, and 5 patient experience worsened renal function. A total 604 drug-drug interactions were documented. **Conclusion:** Medication-related problem is very common in renal impairment patients. Careful monitoring and early problem identification based on a medication-use criteria is important to avoid and to resolve medication-related problems.

Keywords: medication-related problems, renal impairment, medication-use criteria

OR-CP-023

The Analysis of Satisfaction Level in BPJS Health Insurance Towards Primary Health Care

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Background: Social Security Agency or BPJS is an institution that organizes the National Health Insurance (JKN) which is health insurance system using mechanisms of social health insurance. Patient satisfaction is important thing because it will affect the sustainability of the JKN system**.Objective:**This studywas aimed to determine the satisfaction level of BPJS patients at a primary health care. **Methods :**The present study was observational descriptive which using cross sectional surveydesign in the period of June 2016 at two primary health care (PHC) in Bandung. The data were takenusing questionnaires and equipped with qualitative data obtained from interviews to deepen the findings in the field. The correlation between patient characteristis and satisfactionlevel was analyzed using chi square analysis. **Results:**There were 172 respondents from two primary health care during the study.All questionnaire were validated and reliable by $p<0.05$ and cronbach's alpha value was 0.947. Overall, the percentage of satisfaction level for very high satisfy, satisfy and quit satisfy were 54.22%, 40.86% and 4.82% for PHC A and 57.3%, 35.96%, 3.37% plus 3.37% for low level of satisfaction in PHC B respectively. The biggest satisfaction level in PHC A and PHC B were tangible dimension (85.7%) and emphaty dimension (78.1%) while the smallest satisfaction level in PHC A and PHC B were reliable (80.2%) and asurance (75.9%). There were no correlation between patient characteristic with level of satisfaction ($p>0.05$). **Conclusion :**Overall, the respondents felt higly satisfy related to the service of BPJS Health insurance at Primary health care.

Keywords : BPJS, satisfaction level, primary health care

OR-CP-024

The Impact of Neuroprotector Therapy, Sociodemography Characteristics and Comorbidities on Health Related Quality of Life (HRQoL) in Stroke Patient of General Hospital Centre Dr. M. Djamil Padang

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Background: Stroke is the third most common cause of death worldwide.Neuroprotector is one of the drug that used in stroke rehabilitation. Sociodemography and Comorbidities are factors that could affect the outcome of stroke. Health Related Quality of Life (HRQoL) is a comprehensive assessment method to understand the disease burden of stroke patients. **Objective:** This study examined the impact of sociodemographic characteristics (gender, age, and occupation), type of neuroprotector, and comorbidities on HRQoL in stroke patients. **Methods:** The research was conducted between January-March 2016. The patients were interviewed by using Stroke Specific Quality of Life (SSQoL) that have been translated to Indonesian. The sociodemographic data of patients were collected by interviewing the patients which were confirmed by their medical records. Data of stroke type and duration, comorbidities, and type of neuroprotector that was received by patients also obtained from medical record. Statistical analysis t-test and one-way ANOVA were used to analyze the impact between sociodemography characteristics, neuroprotector therapy and comorbidity of stroke patients to their HRQoL. Analysis of univariance was used to analyze the impact of interaction among the type of comorbidities, dose of neuroprotector, sociodemographic and other factor such as type of stroke and the recurrent of stroke to HRQoL. The 95%confidence intervals was considered to determine the significance. **Results:** Total amount of 82 stroke patients were participated in this study. There was no significant impact between sociodemographic factors against HRQoL and the dose of citicoline as neuroprotector ($p>0.1$). There is a significant impact between comorbidities on HRQoL of stroke patients ($p<0.05$). **Conclusion:** Our results demonstrated that only comorbidities that significantly affect HRQoL in stroke patient, and the dose of citicoline as neuroprotector and sociodemography did not affect HRQoL.

Keywords: Stroke, HRQoL,sociodemography, neuroprotector, comorbidities

OR-CP-025

Evaluation of the Rationality of Drug Use for Acute Pharyngitis Associated with the Incidence and Prevalence of the Disease at Ibrahim Adjie and South Cimahi Community Health Centers

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Background: Indonesia is one of the top five countries with the highest acute respiratory infection (ARI) cases, as many as 6 million episodes per year. Result of Basic Health Research of 2013 showed that the prevalence of ARI in 2007 and 2013 were not different (25.5% and 25.0%, respectively). Acute pharyngitisaccount for the top ten cases of outpatients with ARI, with viruses as the most common causes (40-60%). Identifying the cause of acute pharyngitis is a key point in determining the optimal treatment.**Objective:** This study was aimed to evaluate the rational use of drugand its irrational impactas well as thecorrelation of the drug use with the incidence and prevalence of acute pharyngitis. **Methods:** This study was a descriptive and observational study, carried out retrospectively and concurrently at two community health centers,*i.e.*, Ibrahim Adjie and Cimahi Selatan. **Results:** There were 80.01% over prescription of antibiotics in the treatment, with a total of 8.98% of antibiotics of non-treatment option, and 62.43% irrational usedof corticosteroids. The incidence and prevalence of acute pharyngitis at Ibrahim Adjie health center were 2.45 and 2.31%, respectively with irrationality rate of approximately 83.82%. Those recorded atSouth Cimahi health centers howed 2.11% of incidence and 2.00% of prevalence with irrational rate of approximately 91.29%. **Conclusions:**Based on the data,it can be concluded that there are still irrational use of medicines in the treatment of acute pharyngitis. The increase in disease incidence and prevalence might indicatethe declining health services quality.

Keywords: acute pharyngitis, rational use of drugs, incidence, prevalence

OR-CP-026

Evaluation of Drug Used and Clinical Nurition in Stroke Patients at TNI AU Dr. Salamun Bandung Hospital

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Background : Stroke still becomes a heavy burden on public health issue in Indonesia. Stroke is caused by varied etiology and risk factors that can potentially lead to Drug Related Problems (DRPs). Nutrition aspects become an important factor in the management of the common problems that occurs in stroke patients such as dysphagia. **Objective :** Evaluate the use of drug and nutrition in stroke patients. This study also determines the improvement of quality of life in stroke patients. **Methods :** This research is an observational study with evaluative descriptive design which is done concurrently in TNI AU Dr. Salamun hospital from January until March 2015. **Results :** The number of calories in food and frequency of feeding in stroke patient is appropriate. However, there are several micronutrient that are not sufficient for the minimum requirement per day. From the aspect of drug use, the result shows that Drug Related Problems that occur are untreated indication (26.58%), medication without indication (29.69%), inappropriate dosage (3.12%), drug interaction (79.68%), and inappropriate drug selection (3.12%). The analysis of quality of life using Barthel index gives results that there are differences of quality of life of ischemic stroke patients (p=0.000) and hemorrhagic stroke patients (p=0.003) after therapy. **Conclusions :** The energy and nutrient requirement of the patient is appropriate. However, from the aspect of drug use still requires communication among doctors, pharmacists, and nutritionists in order to eliminate drug-drug interaction and drug-food interaction that may cause adverse effect. In general, stroke patients in this research have an increased quality of life of stroke patients.

Keywords : Stroke, drug therapy, clinical nutrition, quality of life

OR-CP-027

Identification of Drug-Related Problems in Outpatient Prescribed Polypharmacy at One Eye Center Hospital in Bandung: A Pharmacist Contribution to Improve Drug Safety

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Background: Patients who take more medications for the treatment of several conditions are prone to have drug-related problems (DRPs). Medication-use review conducted by pharmacist can identify DRPs and prevent downstream harms to the patients. **Objective:** We investigated the occurrence of DRPs amongst outpatient prescribed polypharmacy. **Methods**: A retrospective cross-sectional study has been carried out in infection clinic at one eye center hospital in Bandung. Only prescriptions that contained more than five medications (polypharmacy) were collected and analyzed for the prescription completeness based on the hospital prescription form and Peraturan Menteri Kesehatan No. 58/2014. Furthermore, DRPs were identified and classified according to PCNE (Pharmaceutical Care Network Europe). **Results**: From 602 prescriptions that were analyzed, only 16.6% prescriptions contain diagnosis information, 67.9% contain doctor's name, and 64.6% contain allergic information. Furthermore, approximately 362 cases of DRPs were identified, namely 67 cases of inappropriate dosage frequency, 19 cases of inappropriate therapy duration, 2 cases of untreated indications, 177 cases of drug duplication, and 97 cases of drug interactions. **Conclusion**: DRP in polypharmacy prescription was 0.6 or there would be 3 kind of DRPs occurred in every 5 prescriptions. Our data urged for pharmacist contribution to identify and prevent DRPs in order to enhance patient safety by making sustainable medication-use review.

Keywords: DRPs, infection polyclinic, prescription, polypharmacy, medication-use review

OR-CP-028

Anticancer dose adjustment for patients with renal and hepatic dysfunction: from scientific literature evidence-based to daily clinical routine application

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Background : Most anticancer agents exhibit a narrow therapeutic index, i.e., a small change in plasma concentrations due to insufficiency of organ function can lead to inefficacy or an unacceptable degree of toxicity. Based to our knowledge, in clinical daily routine physician wasn't equipped with a simple tool to calculate the appropriate dose for particular patient. **Objective :** This study was designed to provide an easy tool to adapt chemotherapeutic dose for patients with hepatic or renal dysfunction in order to maximize therapy outcomes. **Methods:** A dose adaption guideline for anticancer drugs was developed based on literature review and then it was applied to cancer patients at the medical ward for outpatients in the Centre for Integrated Oncology, Universitätklinikum Bonn, Germany. An algorithm was generated to enhance the efficiency of the dose adaption process. Finally the dosing guideline was converted into an easy-to-use excel tool. **Results :** A total of 105 patients were enrolled in this study and 422 dose adaptation recommendations have been made. About 350 out of 422 recommendations were responded by the physicians; of these, a proportion of 90 % was accepted. The algorithm simplifies the dose adaptation decision process and provides information which laboratory parameters are necessary for dose adaption and whether the dose adjustment for a specific anticancer agent is needed. The easy-to-use excel tool provides a recommended individual anticancer dose based on patient characteristic and laboratory result. **Conclusion:** Our approach transfers scientific evidence to daily clinical routine and enhance efficiency process in oncological drug therapy.

Keywords: Anticancer, Dose adjustment, Renal dysfunction, Hepatic dysfunction

PO-CP-001

The Rational Use of Antibiotics in Patients Suffering from Urinary Tract Infection at Internal Medicine Ward of R. Said Sukanto Bhayangkara Hospital Jakarta

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Background : Urinary tract infection (UTI) was caused by proliferation of microorganisms in the urinary tract, where under this circumstance bacteria, virus and other microorganisms are present in the urine. Improper use of antibiotics in these patients might lead to antibiotic resistance and can be harmful to the patient. So thus how important is to evaluate the rationality use of the antibiotics in these patients. **Objective :** This study aimed is to determine the rationality use of antibiotics in UTI patients at Bhayangkara R. Said Sukanto Hospital. This study was conducted retrospectively with data sources derived from medical records and laboratory finding from UTI patients. **Methods:** Samples were taken using total sampling method and 130 patients who met the inclusion criteria were chosen. About 79.2% of the patients were women and 80% of the group of women selected were in their productive age (21-40 years old). **Results:** By using Gyssens rationality test, results showed that the number of UTI patients in category VI was 6.5%, category V 0.6%, category IVc 1.9%, category IVb 1.2% , category IVa 43%, category IIIb 38%, category IIIa 4.5%, category IIc 0%, category IIb 1.9%, category IIa 0.6% and category I was 0.6%. **Conclusion:** Although the hospital did not have Microbiology Laboratorium facilities for bacterial culture and sensitivity test, however, through Gyssens rationality test, it can be concluded that treatment of UTI patients at the R. Said Sukanto Bhayangkara Hospital were not rational.

Keywords : urinary tract infection, rational use of antibiotics, *Gyssens* criteria

PO-CP-002

Evaluation of Used of Sulphonylurea Group as an Oral Antidiabetic Drug In Type II Diabetes Mellitus in A Private Hospital In Bandung

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Background: Diabetes mellitus is a metabolic disorder characterized by hyperglycemia due to insufficient production of insulin or a decrease in the relative insensitivity of cells to insulin. Type II diabetes mellitus characterized by insulin resistance and relative insulin deficiency. One of the oral antidiabetic drugs used for the treatment of type II diabetes mellitus is sulphonylurea. The mechanism action of sulfonylurea is by stimulating insulin secretion by pancreas, so this drug is only effective when pancreatic beta cells are still able to produce insulin. **Objective:** This study aimed to evaluate the drug use of sulphonylurea group as an oral antidiabetic drug. **Methods:** The methodology of this study was consist of literature review related to diabetes mellitus, determination of patient's, drug's, drug use evaluation's criteria, and data retrieval retrospectively. The data obtained was collected from December 2014 to February 2015 in a private hospital in Bandung. Seventy four medical record of type II diabetes mellitus patient were collected. **Results:** Among 74 patients, 35.14% was 45-70 years old, 46 female and 28 male, with 49% cases without complications and 51% cases with complications. Those patient received appropriate treatment that met the indication, dose, patients, and drug, however not for drug interaction. **Conclussions:** The use of sulfonylurea group for the type II diabetic patient at the private hospital was appropriate only to indication, dose, patients, and drug. It was concluded that the use of sulfonylurea group fulfill the 5 rights of drug administration but there were drug interaction caused by polypharmacy.

Keywords: antidiabetic, drug use evaluation, type II DM, sulfonylurea

PO-CP-003

The Effects of Hypertension Treatments in Quality of Life of Patients With Chronic Kidney Disease Receiving Hemodialysis in RSUP Dr. Hasan Sadikin Bandung

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Background: Hypertension is the leading cause of chronic kidney disease (CKD) through a process that resulted in loss of a large number of functional nephron on progressive and irreversible. The Kidney Disease Outcome Quality Initiative (K/DOQI) of The National Kidney Foundation (NKF) recommends a target blood pressure values of < 130/80 mmHg in CKD patients, it can reduce the risk of cardiovascular disease. **Objective :** The purpose of this study is to understand the antihypertension medication effects to the quality of life of hemodialysis patients in RSUP DR.Hasan Sadikin Bandung. **Methods :** The design of study is cross sectional observational with concurrent medical record with patients daily status analyses during December 2015 - February 2016 with questionnaire by the Kidney Disease and Quality of Life (KDQOL-36. **Results :** The analysis result shows significant differences in the reduction of systolic (p=0, 011) and diastolic (p=0, 023) blood pressure in each group of antihypertension therapy. Furthermore, 2 combination of antihypertension therapy gives the most significant different in reduction of systolic and diastolic blood pressure (p=0, 001). **Conclusions :** Second combination of antihypertension therapy can be reduce of blood pressure better than other therapy. Second combinations of antihypertension therapy is best for decrease of blood pressure and creatinin serum. In all domain of quality of lifes, symptom/problems have a highest score, and burden of kidney disease have a lowest score of quality of life.

Keywords : chronic kidney disease, hemodialysis, antihypertension, KDQOL, quality of life.

PO-CP-004

Analysis of The Effect of Hypertension Treatments in Cardiovascular Events and Quality of Life of Chronic Kidney Disease Patients Receiving Haemodialysis in RSUP Persahabatan

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Objective: Hypertension is a complication of chronic kidney disease (CKD) and a risk factor of cardiovascular disease. This study is aimed to determine the effects of antihypertensive drugs related to cardiovascular disease events and quality of life in CKD patients undergoing haemodialysis at RSUP Persahabatan. **Methods:** cross sectional observational with concurrent medical record and analysis of patient *as* determined by physician's diagnosis during 3 months period. *Kidney Disease and Quality of Life* (KDQOL^{TM}-36) was used as a questionnaire tool. **Result:** The combination of 2 antihypertension drug therapy gives the most significant different in reduction of systolic and diastolic blood pressure (p=0.001). The Combination of 3 antihypertension drug therapy shows better average score of quality of life. There were significant relationships between cardiovascular events with maintained both systolic (p=0.019) and diastolic (p=0.001) blood pressure. Cardiovascular events was also highly associated with quality of life (p=0.001). The associated quality of life aspects were signs and symptoms that occurred due to the disease (p=0.034), burden of renal disease (p=0.019) and mental health (p=0.021). **Conclusion:** a maintained blood pressure could prevent and reduce the risk of cardiovascular disease in CKD, which leads to improve quality of life.

Keywords: hypertension, cardiovascular events, antihypertensive drug therapy, chronic kidney disease, quality of life.

PO-CP-005

The Prevalence of Type 2 Diabetes Mellitus in Yangon Through Socio-Demographic Characteristics of Participants and Finding of Drug Related Problems

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Background: Health disparities continue to be a major public health problem confronting the health care system including social and economic inequality. Descriptive study was conducted elderly patients with type 2 diabetes who attended at of No (2) Military Hospital in Yangon, Myanmar from April, 2013 to February, 2014. **Objective:** The objectives of this study were to find out the prevalence of type 2 diabetes mellitus through socio-demographic characteristics and, drug related problem in these patients. **Methods:** The total of 52 participants enrolled in this study. The socio-demographic characteristics data were collected by face to face interview which include age, gender, marital status, occupation, education, disease duration and family history. Drug related problems which are indication; effectiveness, safety and non-compliance, were identified and resolved in respondent's home by giving information and counseling. **Results:** Male 23 (44.2%) and female 29 (55.8%) were included and 28(53.8%) were retired person and16 (30.8%) were dependent. Participants 38 (73.1%) were married, 12 (23.1%) were widow and widower and two (3.8%) were divorced. Among 52 patients, most of the patient were, 21 (40.4%) who were age 70 to 75years; 19 (36.5%) who have suffered from type 2 diabetes mellitus for eleven to fifteen years duration;17 (32.7%) who were graduates; 26 (49.9%) who had family history of diabetes. Non-compliance 36 (72%) were the most common problem. The effectiveness and safety were 10 problems (20%) and 4 problems (8%) respectively. No indication and indication errors did not occurred. **Conclusions:** Pharmacist's responsibilities become more important in the development of health care system.

Keywords: type 2 diabetes mellitus, socio-demographic characteristics, drug related problem, information and counseling

PO-CP-006

Cost Effectiveness Analysis of The Use of Alpha and Beta Erythropoietin in Chronic Renal Failure Patients at Hemodialisa Installation of A Government Hospital in Bandung

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Background Erythropoietin is an approach to the final stage in the anemia treatment of chronic kidney disease. **Objective** This study is a comparative cost effectiveness analysis of the increase in hemoglobin (Hb) between the use of erythropoietin alpha and erythropoietin beta. Effectiveness of therapy is the difference with the initial Hb after administration of erythropoietin for four times the provision. **Methods** Research using the hospital's perspective, cost components in the analysis is the package hemodialysis therapy, laboratory tests, and the cost of erythropoietin. **Results** The results of the cost-effectiveness analysis in patients with doses administered 1 ampoule (2000ui) weekly, obtained Average Cost Effecetitiveness Ratio (ACER) value of erythropoietin alpha (Rp.8,213,414.63 per g / dL) better than ACER value is the use of erythropoietin beta (Rp.13,150,566.04 per g / dL). In patients with doses given one ampoule (2000ui) twice a week, ACER value is the use of erythropoietin beta (Rp.3,202,465.00 per g / dL) is better than the use of erythropoietin alpha (Rp.5,218,301.00 per g / dL). **Conclusions** Based on this study concluded that erythropoietin alfa therapy is more cost-effective in the administration dose of 1 ampoule weekly compared with erythropoietin beta and erythropoietin beta administration more cost-effective in the administration dose of 1 ampoule twice a week compared with erythropoietin alpha.

Keywords: anemia, hemoglobin, erythropoietin alpha, beta erythropoietin, cost effectiveness analysis

PO-CP-007

Evaluating inhaler usage technique among asthma and COPD patients at a primary health care unit : a pilot study in Selangor Malaysia.

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Objective: Inhaler is the most preferable device to deliver medication in order to treat asthma and Chronic Obstructive Pulmonary Disease (COPD). Incorrect usage of inhaler influences the clinical effectiveness of the delivered drug.A pilot study was conducted to determine the appropriateness of inhaler handling technique among asthma and COPD patients. **Methods:** 92 subjects whom diagnosed with asthma and COPD, aged between 18 to 64 years old were observed in this cross-sectional study. Consenting subjects on inhaler, who attended medical out patients clinic at a primary health care unit in Selangor, Malaysia were asked to demonstration how they use the inhaler while an inhaler administration checklist were used to assess each patients inhaler technique. Information on demographics, disease symptoms history and handling technique of the device education were obtained. Data was analysed using descriptive statistical methods. **Results:** Of total 92 patients, 48 were using pressurised metered dose inhalers (pMDIs), 19 were using dry powder inhalers (DPIs) and 25 were using pMDI with DPI. Only 4 out of 92 patients correctly handle the device (4.3%). **Conclusion:** Majority of asthma and COPD patients use their inhaler inaccurately. Patients prescribedby inhalation medications should have routine assessment of their inhaler technique at every visit and corrected if found to be poor.

Key words: Asthma, COPD, pMDIs, DPIs, Inhaler technique

PO-CP-008

Correlation Study of Disease Activity Score and Serum Cartilage Oligomeric Matrix Protein Level of Rheumatoid Arthritis Patients in Bandung, Indonesia

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Background: Rheumatoid arthritis (RA) is a systemic autoimmune disease, characterized by erosive arthritis in the synovial joints. Cartilage oligomeric matrix protein (COMP) is a potential biomarker for RA and the RA severity related to disease activity score (DAS). **Objective:** This study was designed is to determine the correlation between DAS28 and the serum COMP level in Indonesian RA patients. **Methods:** The subjects are patients who visit the rheumatology clinic at one governmental hospital in Bandung, Indonesia. DAS was determined by the QxMD Software based on erythrocyte sedimentation rate and serum COMP level was determined by enzyme-linked immunosorbent assay (ELISA). Statistical analysis was conducted with IBM SPSS Statistics 23. **Results:** DAS28 value was 3.36 ± 0.16 which indicate the moderate disease activity. Serum COMP level was 843.80 ± 35.79 ng/ml in RA patients and 830.00 ± 48.92 ng/ml in normal controls. **Conclusion:** There is no correlation between DAS28 and serum COMP levels in RA patients (*P* value = 0.496 and rho = 0.129).

Keywords: Autoimmune disease, RA monitoring, COMP, DAS28, Bandung

PO-CP-009

Survey of Cosmetics Safety Knowledge Level and Qualitative Analysis of Hydroquinone and Mercury in Selected Samples

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Background: Cosmetics, which are consumed frequently by society, have to be free from hazardous ingredients. NADFC stated that mercury and hydroquinone are prohibited to be used in Indonesia. Knowledge of cosmestic safety is still limited. **Objective: t**his study was aimed to compare people's knowledge of hazardous ingredients in cosmetics. Further, identifications of hydroquinone and mercury were carried out in cosmetics. **Methods:** 300 respondents were divided by each 100 of students of School of Pharmacy ITB (SP), society, and consumers of beauty clinic. Hydroquinone qualitative analysis was performed using thin layer chromatography eluted with n-hexane and acetone whereas mercury testing was using a color reaction with diphenylcarbazone. Parameters that used to compare knowledge's level were name and function of mercury, name and function of hydroquinone, and how to differentiate hazard ingredients in cosmetic. **Results:** Students of SP obtained the highest score in name (95%) and its function (57%). Consumers of society and clinic revealed in a level of knowledge of mercury in 70 and 60 %, respectively. In amount of 28 and 31 % knew its function. About 37 and 25 % of students and clinic consumers had aware of hydroquinone, 22 and 15 % acknowledged its function. 39 and 31 % stated that they could differentiate the type of cosmetics. In the lowest position, society showed 3% of respondents aware of hydroquinone, 2% know its function, and 18% could differentiate the cosmetics. 10 samples of cosmetics that are most frequently used based on questionnaire and four random samples of cosmetics purchased in the market were tested. **Conclusion:** Based on the results of questionnaires and random, there is no samples containing hydroquinone. However, 10% sample results of the questionnaire and 50% of random sample of cosmetics contain mercury.

Keywords: survey, cosmetic, hydroquinone, mercury, identification

PO-CP-010

Detection of Several *Bla* Genes of Ceftriaxone-Resistance *Escherichia coli* from Clinical Isolates

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Background: Beta lactamase production among *Escherichia coli* is one of the principal mechanisms that augment resistance to antibiotics especially ceftriaxone. In the current study the molecular detection of several class A and C of beta lactamases among ceftriaxone-resistant *E.coli* was evaluated. **Methods:** A total of 25 ceftriaxone-resistant *E. coli* samples from various clinical specimen were collected from a microbiology and clinical biology of a hospital in Bandung. The ceftriaxone-resistant *E. coli* samples were identified using Vitek®. The beta lactamase enzyme (Bla) production among ceftriaxone-resistant *E. coli* isolates were detected by using beta lactamase touch test (Oxoid®) contained nitrocefin. The detection of several *bla* genes such as *bla*TEM, *bla*SHV and *bla*CTX-M and *bla*CMY2 producing *E. coli* was assessed by PCR method. **Results:** Among the 20 ceftriaxone-resistant *E. coli* isolates, *bla* genes was found in 15 (60%) of the isolates. Among beta lactamase producers, *bla*CTX-M, *bla*TEM, *bla*CMY2, and *bla*SHV were found in 50% ; 33.3; 8.3%, and 8.3% of the isolates, respectively. **Conclusion:** The present study showed that Bla CTX-M production is more prevalent in our clinical ceftriaxone-resistant *E.coli* isolates.

Keywords : *bla* gene, ceftriaxone, *Eschericia coli*, resistance

PO-CP-011

Knowledge of Medicine Management in A Densely Populated Subdistrict in Bandung

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Background: Error in the management of medicine by consumer potentially generate a health risk as well as the environmental problems. **Objective:** The aim of the study was to to determine the knowledge level of residents of a densely populated subdistrict in Bandung, regarding the management of medicines at home and to see the influence of Community Based Interactive Approach (CBIA) method of education to the knowledge level of the community. **Methods:** The research was a descriptive study involving 237 sample subjects of Kebonwaru Subdistrict as respondents. Respondents were interviewed for data collection using the validated questionnaire to obtain information regarding how to get, to use, to store, and to dispose medicines. The pre-test and post-test CBIA questionnaire was analyzed using Wilcoxon tests to see the difference in the participant knowledge before and after the education. **Results:** Most of respondents often buy medicines in pharmacy (n=143, 60.4%) and read drugs information indicated on the packaging before using medicines (n=181, 76.4%). However, most of respondents do not have a medicine storage box at home (n=157, 66.2%) and dispose medicine with the wrong way (n=166, 70.1%). As many as 34 respondents (14.34%) do not know how to store the medicine properly. The analysis showed there is a significant difference ($p<0,05$) between the knowledge of respondents before and after the education using CBIA methods. **Conclusion:** The community knowledge level regarding how to get and to use medicines is fair. However, the community still lack of knowledge regarding how to store and dispose medicines. The CBIA method effectively increase the community knowledge regarding the management of medicines at home.

Keywords: management of medicines, patient knowledge, Community Based Interactive Approach method (CBIA)

OR-PB-001

Bioactive Secondary Metabolites from Balinese Marine Sponge and Nudibranch

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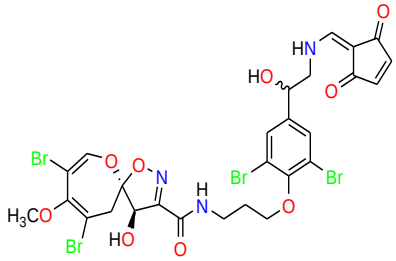
Background: Secondary metabolites play a valuable role as a starting point in drug discovery process. Among marine organisms, sponges and nudibranch mollusc (Mollusca: Gastropoda: Nudibranchia) have been the prolific sources of bioactive secondary metabolites with diverse chemical structures and promising bioactivities. **Objectives:** This study was aimed to isolate and determine the structures of bioactive natural products from the Balinese marine sponge *Aplysinella strongylata* and the nudibranchs *Hypselodoris infucata* and *Glossodorishi kuerensis*. **Methods:** The samples were collected from Tulamben beach Bali, an unexplored site but rich in marine biodiversity. The separation and purification of the metabolites were achieved by mean of NP-flash column chromatography and HPLC. Structure elucidations of the isolated compounds were completed by analysis of spectroscopic dataset including ^{1}H and 2D NMR. **Results:** A series of bromotyrosine-derived alkaloid consisting a spirooxepinisoxazoline moiety were identified from the extract of *A. strongylata*. One of the metabolites, 19-hydroxypsammaplysin E (**1**), showed the best antimalarial activity, with an IC_{50} value of 6.4 µM. The absolute configuration of psammaplysin series compounds has been assigned as (*6R, 7R*) using experimental and calculated electronic circulardichroism (ECD) data and NMR analysis of MPA esters prepared from theacetamide derivative of psammaplysin A. **Conclusion:** A furano sesquiterpen, (–)-furodysinin (**2**), was identified for the first time from the nudibranch *H. infucata*. The compound inhibited the growth of HeLa cell line at IC_{50}102.7 µg/mL.Two new scalarane sesterpenes(**3-4**) were characterized from an organic extract of a single specimen of the nudibranch *G. hikuerensis*.



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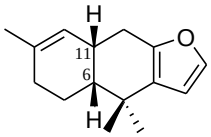

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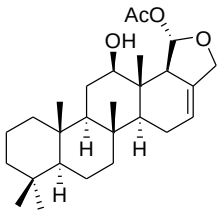

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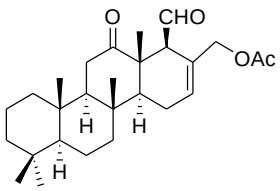

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Keywords: sponge, nudibranch, bioactive, Bali

OR-PB-005

Determination of Sun Protective Factors (SPF) and Antioxidant Activity of Ethanolic Extract of Rambutan Rind (*Nephelium lappaceum* L.)

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Background: The fruit peel of rambutan (*Nephelium lappaceum* L) / rambutan rind are organic garbage with many potential health benefits but have not been used optimally. **Objective:** This study aims to determine the sun protective factor (SPF) and antioxidant activity of ethanolic extract of rambutan rind. **Methods:** The rambutan (*Nephelium lappaceum* L) rind was extracted by maceration method using ethanol 96% as solvent. A simple, rapid and reliable in vitro method was used to assess the SPF values by measuring the absorbance of diluted extract between 290-320 nm at every 5 nm intervals using Ultraviolet Spectrophotometry. The SPF values were calculated based on the recorded absorbance using a simple mathematic equation developed by Mansur. The antioxidant activity of rambutan rind was determined by the 1,1-diphenyl-2-picryl-hydrazil (DPPH) assay whereas vitamin C as control. **Results:** The SPF values of rambutan rind in concentration series of 50, 100, 150 and 200 ppm were 6,47±0,45 , 9,26±0,28, 13,01±0,33, and 16,17±0,63 respectively. The IC_{50} value of rambutan rind was 41,47 ± 3,89 µg/ml whereas the IC_{50} value of vitamin C was 24,87 ± 0,69 µg/ml. **Conclusion:** Based on the result, the ethanolic extract of rambutan rind has potential as sunscreen and antioxidants.

Keywords: rambutan rind, SPF, antioxidant, IC_{50}

PO-PB-001

Chemical composition of essential oil from aerial parts of Pohpohan (*Pilea trinervia* (Roxb.) Wight)

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Background: *Pilea trinervia* (Roxb.) Wight or pohpohan belonging to the family Urticaceae is widely distributed in West Java. *Pilea trinervia* has an unique odor. Generally, it caused by essential oil content. Essential oils are volatile and liquid aroma compounds from natural sources, usually plants. **Objective:** In this research, chemical composition of essential oil from aerial parts of Pohpohan (*Pilea trinervia* (Roxb.) Wight) was analyzed. **Methods:** The chemical composition of the essential oil from aerial parts of Pohpohan, obtained by steam and water distillation, was investigated by GC–MS. **Results:** The fresh of arial parts yielded 0.4 % of volatile oil and it was colorless. A total of 34 compounds were detected. The major components were: 2 (10) pinene (14.85%); 1R-alpha-pinene (12.95%) and sabinene (12.66%); o-menth-8-ene (8.33%) and germacrene-D (5%). **Conclusion:** A total of 34 compounds were identified from Pohpohan essential oil with 2 (10) pinene, was one of the major constituents.

Keywords: *Pilea trinervia*, essential oil, GC-MS

PO-PB-002

Antioxidant Activity, Total Phenolic and Flavonoid Contents of Leaves and Stem of Idat (*Cratoxylum glaucum* Korth.)

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Background: Idat (*Cratoxylum glaucum* Korth.) is a spesies in the family Hypericaceae. Idat fresh leaves are usually consumed in local Indonesian cuisine, some species of this genus have been used in folk medicine.**Objective:** This study was aimed to determine antioxidant activity, total phenolic and flavonoids compounds from leaves and stem of Idat. **Methods:** Crude drug was extracted by reflux using solvent with increasing polarity, n-hexane, ethyl acetate, and ethanol. The extracts were vaporated using rotary vaporator. Chromatogram pattern on each extracts were observed by thin layer chromatography. Antioxidant activity were done using DPPH (2,2-diphenyl-1-picrylhydrazyl) and CUPRAC (CUPric Reducing Antioxidant Capacity). Determination of total phenolic and flavonoid content were performed by spectrophotometry UV-Visible. **Results:** Crude drugs of Idat leaves and stem contain flavonoids, saponins, phenols, tannins, quinones and steroids/triterpenoids. Ethanolic leaves extract (L-3) showed the best DPPH Scavenging activity with IC_{50} 13.53 µg/ml and ethyl acetate leaves extract (L-2) showed the best CUPRAC capacity with EC_{50} 5.027 µg/ml. While, ethanolic stem extract (S-3) had DPPH Scavenging activity with IC_{50} 14.94 µg/ml and CUPRAC capacity with EC_{50} 7.98 µg/ml. Ethanolic stem extract (S-3) showed the highest total phenolic content following by ethanolic leaves extract (L-3) (21.67 and 19.13 mg GAE/100 mg GAE/100 mg respectively). Ethyl acetate stem extract (L-2) showed highest total flavonoid content following by ethanolic leaves extract (9.04 and 5.76 mg QE/100 mg respectively). **Conclusions**: Flavonoid and phenolic compounds were the major contributors in antioxidant activities of leaves and stem of Idat.

Keywords: Antioxidant; DPPH; Flavonoid; Hypericaceae; *Cratoxylum glaucum*

PO-PB-003

Four Phenolic Compounds from Two Species of Cassia and Their Antibacterial Activities

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Background: In a drug discovery program to combat various diseases, many natural chemicals originating from Indonesian tropical plants including *Cassia grandis* and *C. alata* have been investigated in our study. These genus of plants are known as rich sources of phenolic compounds. **Obejectives**: This study aimed to reveal the isolate compound and their antibacterial activity. **Methods**: The structures of the compounds were determined based on spectroscopic data (^{1}H-NMR, ^{13}C-NMR (1D and 2D). The antibacterial activity was carried out by microdilution method and evaluated against four pathogenic bacteria*; Staphylococcus aureus* ATCC 25923, *Bacillus substilis, Escherichia coli* ATCC 25922 and *Salmonella typhi.* **Results:** Four phenolic compounds, piceatannol (1), resveratrol(2), kaempferol (3), and emodin (4) have been isolated from *C. grandis* and *C. alata*. Minimum inhibitory concentration (MIC) of piceatannol, resveratrol, emodin, and kaempferol ranged between 25-100 μg/mL while the minimum bactericidal concentration was equal or more than 100 μg/mL, showed moderate activities.

Keywords: *Cassia grandis*; *C.alata*; phenolic compounds; pathogenic bacteria

PO-PB-004

A Study to Compare Polyphenol Oxidase Activity in Purple Eggplant (*Solanum melongena* L.) in Citrate and Phosphate Buffer

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Background: Stability of polyphenol oxidase (PPO) activity is influenced by the change in pH of a buffer solution. Changes in pH a buffer solution will cause the denaturation of a protein and the inactivity enzyme, so, it's need for a buffer elections. **Objectives:** In this work, we have studied the compare of citrate and phosphate buffer for synthesis the PPO extract in purple eggplant (*Solanum Melongena* L.). **Methods:** Isolation of PPO extract in purple eggplant, with homogenization followed by centrifugation at pH 6 and the room temperature. PPO activity in purple eggplant extract, have been studied with phenol and catechol, by kinetic properties of the initial rate, based on a spectrophotometer methods. **Results:** PPO activity in purple eggplant with phenol and catechol are 60.58 and 29.46 units/mL (citrate buffer); 54.86 and 28.90 units/mL (phosphate buffer), respectively. Specific activity of PPO in phenol and catechol are 65.54 and 31.87 units/mg (citrate buffer); 59.74 and 31.47 units/mg (phosphate buffer), respectively. PPO in purple eggplant extract, has been applied to samples contaminated by phenol, produced the conversion of phenol to quinone are 17.84% (citrate buffer) and 17.19% (phosphate buffer), respectively. FTIR Characterization of PPO, has indicated, the functional group of carboxylic acid OH, C=O, C=C aromatic and C-N group. **Conclusion:** Citrate and phosphate buffer is stable solvent for the PPO in purple eggplant extract, as it gives the activities as a biocatalyst, although only a little power to the degradation of wastewater contaminated phenol. It is possible to work more effectively if PPO immobilized in a polymer matrix.

Keywords: purple eggplant extract, PPO activity, citrate buffer, phosphate buffer

PO-PB-005

Dipeptidyl Peptidase-IV Inhibitory Activity and Acute Toxicity of Bungur Leaves (*Lagerstroemia loudonii* Teijsm. &Binn.)

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Background: The leaves of *Lagerstroemia loudonii* Teijsm.&Binn. (Lythraceae) have been traditionally used as antidiabetes, anti-inflamatory, diuretic, antibacterial, antioxidant and anti-obesity. Dipeptidyl peptidase-IV (DPP-IV) is serine protease, belonging to the prolyloligopeptidase family. DPP-IV inhibitor was therapeutically used in the treatment of type 2 diabetes mellitus. **Objective:** The focus of this research was to determine DPP-IV inhibitory activity of ethanol extract and fractions of *bungur* leaves and the acute toxicity of the ethanol extract. **Methods:** Crude drug was extracted by reflux methods using 96% ethanol for one hour. The assays of DPP-IVinhibitor was performed with modification methods of Al-Masri using 96 micro well plates, Sitagliptin was used as standard inhibitor DPP-IV. In acute toxicity, the rats were given per oral of a single dose of ethanol extract of bungur leaves at grade doses (250-5000 mg/kg) **Results:** LD_{50} of ethanol extract of *bungur* leaves was greater than 5000mg/kg. There was no side effect of the extract of *bungur* leaves observed. The ethanol extract of *bungur* leaves, fraction of n-hexane, ethyl acetate, and sitagliptin as standard inhibitor had shown to inhibit DPP-IV activity at 2.5 µg/ml with inhibitory percentage of 60.22±2.0; 13.37± 1.88; 15.21± 0.72; and 74.77±0.3% respectively. **Conclusion:** Ethanol extract of *bungur* leaves at the doseup to 5000 mg/kg, is non toxic. This study supports the application of *Lagerstroemia loudonii* Teijsm.&Binn in traditional medicines, especially as antidiabetic herbal medicine.

Keywords: Bungur, *Lagerstroemia loudonii*Teijsm.&Binn, dipeptidyl peptidase-IV, acute toxicity

PO-PB-006

Antioxidant Activity of Various Extracts of Tanduk Banana [*Musa* (Aab *Group*, Plantain *Subgroup*) "Horn"], Peels and Correlation with Total Phenolic, Flavonoid, Carotenoid Content

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Background: Reactive oxygen species (ROS) from both endogenous and exogenous sources may be involved in the etiologies of various human's diseases such as arteriosclerosis, cancer, neurodegenerative diseases, inflammation process, and aging. Many evidences showed that natural antioxidant may be useful in preventing the deleterious consequences from oxidative stress. Based on several researches, the peels of the banana (*Musa sp.*) have been proved as having antioxidant activity. **Objectives:** The aims of this research were to determine antioxidant activities of various extracts of *tanduk banana* peels, total phenolic, flavonoid, and carotenoid content of each extract and analyze their correlation with DPPH-radical scavenging activity. **Methods:** Antioxidant activity was determined by 2,2-diphenyl-1-picrylhydrazyl (DPPH) method; phenolic, flavonoid, and carotenoid content was evaluated by UV-vis spectrophotometry method by UV spectrophotometry, while correlation between total phenolic, flavonoid, carotenoid content and their antioxidant activities were analyzed by Pearson's method. **Results:** Ethyl acetate extract of *tanduk banana peel* (density of its 1% extract was 0.84 g/ml) presented the highest antioxidant activity by DPPH method (IC_{50} 1.39 ± 0.10 μg/ml), while IC_{50} ascorbic acid was 0.70 ± 0.03 μg/ml. The highest total flavonoid result was given by ethyl acetate extract (0.474 ± 0.02) g QE/100 g, while ethanol extract gave the highest phenolic total (0.6953 ± 0.0095) g GAE/100 g, and the highest carotenoid total (0.77167 ± 0.0085) g BE/100 g. The total phenolic, flavonoid, and carotenoid content of three extracts had no significant correlation with their DPPH-radical scavenging activities. **Conclusion:** Phenolic, flavonoid, and carotenoid compound all together contributed to the antioxidant activity of *tanduk banana peel* with DPPH method.

Keywords: antioxidant, DPPH, phenolic, flavonoid, carotenoid, tanduk banana, peels

PO-PB-007

Antioxidant Activity and Total Flavonoid Content of *Tithonia diversifolia* Leaves Extracts

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Background: *Tithonia diversifolia* (Hemsley) A. Gray (*T. diversifolia*) has indicated the presence of natural antioxidant such as flavonoids that may contribute to the protection from disease. **Objective:** To evaluate the antioxidant activity and to determine the total flavonoid content of n-hexana, ethyl acetate, and methanol extracts of *T. diversifolia* leaves in order to find possible sources for future novel antioxidant. **Methods:** The antioxidant activity was determined by 2,2-diphenyl-1-picryl-hydrazyl (DPPH) method. The total flavonoid content of extracts are determined by in vitro chemical analysis using Spectrometry UV. **Results:** The IC_{50} value of n-hexana, ethyl acetate and methanol extracts based on the DPPH method respectively were 322.71, 190.36 and 35.54 µg/ml and the total flavonoid content respectively were 3.95, 11.00 and 1.67%. **Conclusions:** This study suggest the possibility of using leaves extract of *T. diversifolia* as an antioxidant agent.

Keywords: *Tithonia diversifolia*, antioxidant, flavonoid

PO-PB-008

Isolation of Sinensetin and Another Methoxyflavone from Kumis Kucing (*Orthosiphon stamineus,* Benth.)

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Backgrouund: *Kumis kucing* (*Orthosiphon stamineus*,Benth.) is one of medicinal plants that has been used traditionally since long time ago. Several traditional use of this plant have been also proved by scientific researches, so that this plant has been developed from traditional use to rational phytotherapy with some indications. Sinensetin is a marker compound of *kumis kucing* plant for standardization of herbal medicines containing this plant. Since kumis kucing has many pharmacological activities, it is assumed that the compounds which are responsible for the activities not only sinensetin, so that the other compounds could probably be a marker compound of this plant. **Objectives:** to isolate methoxy flavones and optimize the isolation procedures. **Methods:** Extraction was done using Soxhlet apparatus with ethyl acetate as a solvent. Ethyl acetate extract of kumis kucing (*O. stamineus*, Benth.) was separated with liquid-liquid extraction using $CuCl_2$ solution to clean up the chlorophyll contents. Ethyl acetate fraction was further separated using vacuum liquid chromatography (VLC) with gradient elution. Fraction 10 and 11 was separated with chromatotron provided sinensetin-containing fraction. Isolated compounds were characterized using specific reagent, spectrophotometry UV, LC-MS, NMR-^{1}H and NMR-^{13}C. **Results**: After purification with preparative thin layer chromatography, it was found three compounds, they are predicted sinensetin, compound OS1 and OS2. Based on UV-Visible spectrum, isolate OS1 had λ_{max} at 267 and 319 nm. After adding shift reagens, there did not give bathochromic or hipsochromic shift. Based on NMR-^{1}H spectrum, isolate OS1 had chemical shift at 3,82; 3,88; 3,90; 4,01,6,55; 7,10 and 7,99 ppm, Isolate OS2 had λ_{max} at 269 and 328 nm**.** Isolate OS1 was supposed to be 5,7,8,4'-tetramethoxy–flavone which has one free OH group in ring A or ring B and isolat OS2 was supposed to be sinensetin. **Conclusion**: Sinensetin and a methylated flavone have been successfully isolated from kumis kucing.

Keywords: Kumis Kucing, *Orthosiphon stamineus*, Indonesian Medicinal Plant, Methylated Flavones, Sinensetin.

PO-PB-009

Phytochemical Screening of (*Piper retrofractum* Vahl.) Leaves

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Background: Cabe jawa (*Piper retrofractum* Vahl.) is an Indonesia original folk medicines. The used part of *Piper retrofractum* are leaves, fruits and roots, as antibacterial agent, antiseptic agent and antipiretic. **Objective:** The aim of the research were to identified the secondary metabolits content in piper leaves. **Methods and Results:** The extraction with ethanol solvent of piper leaves using maseration and refluks techniques. The phytochemical screening of maseration and refluks extract has identified similar secondary compounds such as alkaloid, polyphenol, flavonoid, tanin, saponin, quinon, monoterpenoid and sesquiterpenoid, and then steroid, triterpenoid. The fractination of each extract has been identified qualitatively using Thin Layer Chromatograph (TLC) methode. The chromatogram pattern of ethanolic extract, etil asetat fraction, n-hexane fraction shows monoterpenoid, sesquiterpenoid and steroid, triterpenoid. The identified of alkaloid from etil asetat fraction, n-hexane fraction using piperin as standard. The identified of flavonoid from ethanolic extract and etil asetat fraction using NH_3, sitro borat, $AlCl_3$ as spray reagent. **Conclusion:** The secondary metabolits can be identified qualitatively much in maseration extract than refluks extract.

Keywords: *Piper retrofractum* leaves, ethanolic extract, phytochemical screening.

PO-PB-010

Analysis of Total Phenolic and Genistein from Methanol Extract of Soybean Seed (*Glycine max* (L.) Merr) Detam-1 and Detam-2 Varieties

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Background : Soybean (*Glycine max* (L.) Merr) contain phytochemical compounds such as phenolic that have many classification including flavonoid. Isoflavones is one of flavonoid compounds which is responsible for soybean's antioxidant activity. One of isoflavones compounds that can be found in soybean is genistein. Phenolic and genistein contents in soybean can be different depend on many factor including variety. **Method :** Soybean was extracted with n-hexane to remove fat, than extracted with methanol 80% and concentrated. Total phenolic of methanol extract were analyzed by spectrophotometric method and genistein compound by TLC-Densitometry method. **Results :** Total phenolic compounds of Detam-1 and Detam-2 varieties was 12,56±0,24 mgGAE/g sample and 19,93±0,5344 mg GAE/g sample. Genistein compound of Detam-1 and Detam-2 varieties was 0,0127±0,0005% and 0,03±0,0009%. **Conclusion :** The results have significantly different concentration and can be concluded that total phenolic and ginestein compound of Detam-2 variety more than Detam-1 variety.

Keyword: soybean (*Glycine max* L. Merr.), total phenolic, ginestein

OR-PC-002

Phenolic Acids and Flavonoid Profiles of Various Extracts of *Clitoria ternatea* Flower

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Background: *Clitoria ternatea* flower has potential utility in traditional medicine as anti-inflammation. **Objective:** The aim of this present study was to assess constituents of various extracts of *Clitoria ternatea* flowers qualitatively which composed the phenolic acids and flavonoid profiles based on their chromatographic analysis. **Methods:** There were four extracts from different maceration techniques. The maceration solvent of each extract were 70% ethanol, aquabidest, 70% ethanol + 0.1% HCl 37%, and aquabidest + 0.1% HCl 37%, respectively. The profiles of each extract was analyzed by mass spectrophotometer techniques (LCMS/MS). **Results:** There were four constituents which qualitatively were significantly different in the extracts. They were potassiated sucrose, water-free benzylic alcohol and two constituents from fragmentation of alkyl chain. The molecules were detected at m/z 381, 104, 133 and 147, respectively. The highest relative intensity value (100%) of the precursor ion at m/z 381 was detected in the ethanol extract while in the aquabidest extract, the precursor ion with the relativity intensity value > 80% was detected at m/z 133. The relative intensity of precursor ions at m/z 104 and 147 were higher in the ethanol (highest in ethanol+HCl) and aquabidest extracts respectively. **Conclusions:** The relative intensity of phenolic acid molecules was detected higher in the ethanol extract than the aquabidest extract. Potassiated sucrose molecule was the predominate flavonoid profile of various extracts of *Clitoria ternatea* flower.

Keywords: *Clitoria ternatea*, chromatographic analysis phenolic acids profile, and flavonoid profile.

OR-PC-003

Oxidation of Molecule with Vicinal Diols and Reductive Amination with Cysteamin for Thiolation of Excipient

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Background : Chitosan is a cationic polymer which is precipitated on media of pH above 6.5. **Objective** : The purpose of this research was to synthesize and characterize novel cationic thiolated polymers which are dissolved over a broad range of pH. In this regard molecules with vicinal diols-cysteamine conjugates were synthesized. **Methods** : Oxidative ring opening with periodate and reductive amination with cysteamine were performed in order to immobilize free thiol groups to the exipients. Ellman tes was performed to determine the amount of free thiol groups of the resulting thiomers. **Results** : Unmodified hydroxypropylcellulose (HPCM) available commercially was oxidized with sodium periodate to prepare HPCM-CHO. The viscosity of the reaction mixtures decreased after 2 h. The same result was obtained when the reaction was allowed to proceed for 24 h. Results from pH study demonstrated that there was no change in pH of the solution during the reaction. HPCM-cysteamine was of white color and odorless. The polymers had a fibrous structure and were hydratable in aqueous solutions. The rate of cysteamine immobilization to HPCM-CHO increases with the weight ratio of cysteamine to HPCM-CHO, the decrease in pH values from 8 to 5 and the reaction time. The reactions at pH 5 for 72 h led to the highest degree of thiolation. Controls were prepared in the same manner as HPCM-cysteamine but omitting $NaCNBH_3$ during the coupling reaction serving as negative control showed only a negligible amount of free thiol groups. **Conclusion** : According to these results, HPCM-cysteamine seems to be a promising thiomer.

Keywords: Oxidation, reductive amination, opening ring, thiomer

OR-PC-004

Isolate Identification and Optimation of Incubation Condition of TLB-A as a β-Cyclodextrin Glycosiltransferase (CGTase) Producer

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Background: Cyclodextrin glycosyltransferase (CGTase) is an extracellular bacterial enzyme that converts starch into cyclodextrin (CD), an important oligosaccharide compound that widely used in several industries including pharmaceutical. The high value of CD has been attracted many researchers worldwide, including Indonesia, to find such potential bacteria that produce CGTase. In 2014, our laboratory had isolated a soil bacteria from Bogor, West Java, Indonesia, that produce β-CGTase based on specific characteristic on Horikoshi agar as the screening media. The isolate was called TLB-A. **Objectives:** The aim of this research was to identified TLB-A, optimized the incubation condition for β-CGTase production using this isolate and analyzed the enzyme's activity. **Methods:** Isolate identification was done using conventional and molecular method, i.e. Gram staining, several biochemical characterizations and 16S rDNA based molecular identification; optimization of incubation condition was including time and temperature condition; while the analysis of enzyme's activity was done using zymography assay for starch hydrolysis and β-cyclization activity. **Results:** The results showed that TLB-A was a Gram positive and motile bacilli and has 99% of identity with *Gracillibacillus alcaliphilus* strain SG103. The optimum incubation condition for β-CGTase production by TLB-A was 48 hours at 37^{o}C. The zymography assay showed that the enzyme has starch hydrolysis and β-cyclization activity which are special characteristics for β-CGTase. **Conclusion:** TLB-A might be the first Indonesian *Gracillibacillus* that reported as β-CGTase producer and could be developed further in the next research in producing β-CGTase.

Keywords: cyclodextrin, cyclodextrin glycosyltransferase, CGTase, TLB-A, *Gracillibacillus alcaliphilus*.

PO-PC-001

Characterization, Phytochemical Screening and Isolation of Essential Oil from Basil Leaf (*Ocimum basilicum* L.)

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Background: Basil leaf from family Lamiaceae, as one of the aromatic plants that contain essential oils, utilized by many people. For the purpose of increasing the utilization, do research that includes characterization, phytochemical screening, isolation of volatile oil and component analysis by GC-MS. **Objective:** Characterizing, skrinning phytochemicals and isolation basil leaf essential oil. **Methods:** The simplicia powder was examinated of characterized includes macroscopic, microscopic examination, water content, water soluble extract, ethanol soluble extract, total ash and acid insoluble ash assay. Phytochemical screening of simplicia includes alkaloids, flavonoids, glycosides, saponins, tannins and steroids examination. Isolation of essential oil by distillation method and essential oil component analyzed by GC-MS. **Results:** The characterization of simplicia: water content of 4.99%; water soluble extract content of 9.61%; ethanol soluble extract content of 4.81%; total ash content of 5.27%; acid insoluble ash content of 0.82%; contains: flavonoids, tannins, saponins and steroids; basil leaf essential oil obtained 0.997%. Refractive index 1.5120, density 0.9730. GC-MS analyzed of basil leaf essential oil obtained 2-6-Octadienal (18.04%), Isogeraniol (13.95%), beta-Phellandrene (7.99%), alpha-Pinene (6.11 %), and 1-4-Terpeniol (5.49%). **Conclusion:** The characterization of basil leaf simplicia obtained water 4.99%; water soluble extract 9.61%; ethanol soluble extract 4.81%; total ash 5.27%; acid insoluble ash 0.82%. Phytochemical screening contains flavonoids, tannins, saponins and steroids. Basil leaf essential oil obtained 0.997%.

Keywords**:** basil, characterization, screening, isolation

PO-PC-002

Screening of α-Glucosidase Inhibitors from *Terminalia Catappa* L. Fruits Using Molecular Docking Method and *In Vitro* Test

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Background: *Terminalia catappa* L. fruit ethanol extract has inhibitory activity on α-glucosidase with IC_{50} 3.02 µg/mL, therefore can be a potential natural source for the treatment of type II diabetes mellitus. **Objective:** This project was aimed to find the active compound from *T. catappa* fruit using molecular docking, identification ethyl acetate (EA) subfractions and *in vitro* test on α-glucosidase inhibitory activity. **Methods:** Molecular docking using AutoDock 4.2 was performed to predict the binding modes of α-glucosidase enzyme from *Saccharomyces cereviciae* with 13 ligands and standards (acarbose, voglibose miglitol). Docking result determine the highest binding energy (ΔG) and inhibition constanta (Ki) as an active compound. Visualization of amino acid residues were identified with PyMOL and LigPlot. Screening of active compound was carried out with *T. catappa* fruit from EA extract was separated on silica gel column chromatography. Identification EA subfractions using GC-MS method. The *in vitro* test using α-glucosidase enzyme. **Results:** The highest binding energy and inhibition constant is β–sitosterol with ΔG -10.61 kcal/mol and Ki 0.02 µM. Subfractions A, B and C of EA showed that B contain β–sitosterol derivate that is β–sitosterol acetate and sitostenone. Redocking process of β–sitosterol acetate and sitostenone showed ΔG -11.14 kcal/mol and -9.79 kcal/mol with Ki 0,01 µM and 0,07 µM respectively. *In vitro* test of acarbose, EA extract and subfraction B gave IC_{50} 17.52; 192.51 and 296.28 µg/mL. **Conclusions:** The active compounds expected responsible for α-glucosidase inhibitory activity from *T. catappa* fruit were derived from β–sitosterol.

Keywords: α-glucosidase inhibitor, *Terminalia catappa* L., β–sitosterol, molecular docking.

PO-PC-003

The Docking Study of Stigmasterol and Its Analogue as Antimalaria against Targeted Enzyme Dihydrofolate Reductase (DHFR)

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Background: Malaria is a disease which until today still becomes the main problem of the health population in the world. A compound of stigmasterol was predicted has better interaction than Proguanil to bond with enzyme targeted DHFR. **Objective:** This research was to find out and compared the stigmasterol compound and its analogue as antimalaria. **Methods:** The computational chemistry method included the determination of physicochemical parameters which were partition coefficient (CLogP), molar refractivity (CMR), bond of energy HOMO-LUMO & GAP also determine the similarity of structure with overlaying. The interaction of stigmasterol analysis with their analogue towards enzyme targeted carried out with docking method. **Results:** The study of docking showed that energy affinity from stigmasterol compound, 7-oxo, 7-OH, proguanil, and pirimidin as a native ligand, were -10,5 kcal/mol, -8,2 kcal/mol, -10,5 kcal/mol, -6,9kcal/mol, dan -7,7 kcal/mol, respectively. The measure of a bind of hydrogen which occured in interaction of stigmasterol compound, 7-oxo, 7-OH, proguanil, and pirimidin to enzyme targeted DHFR 1,2,2,1, and 3 binds, respectively. The measure of a bind of hydrogen which produced the best inhibition activity was showed by 7-OH compound, whichhas 2 binds of hydrogen with binding site residue of dihydrofolatereductase in Glu 30 (2,794160 Å) and Ile 16 (2,197597 Å). **Conclusion:** The analogue stigmasterol 7-OH showed better interaction with enzyme targeted DHFR.

Keywords: docking, dtigmasterol, DHFR, docking, antimalaria

PO-PC-004

Antibacterial Activity of Ethanolic Extract of Cinnamon Bark and Honey and Their Combination Effects Against Acne Causing Bacteria

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Background: Acne is the most common skin disorder treated by dermatologists. *Propionibacterium acnes* and *Staphylococcus epidermidis* are the major skin bacteria that cause the formation of acne**. Objectives:** The present study was conducted to investigate antibacterial activity of ethanolic extract of cinnamon bark, honey and their combination against acne bacteria. **Methods:** The antibacterial activity of extract of cinnamon bark and honey were investigated against *P. acnes* and *S. epidermidis* using disc diffusion method to determine the zone of inhibition. Minimum Inhibitory Concentration (MIC) and minimal bactericidal concentration (MBC) were performed using Clinical and Laboratory Standard Institute (CLSI) methods. The interaction combination between extract of cinnamon bark and honey was determined by using a checkerboards method through determine Fraction Inhibitory Concentration Index (FICI). **Results:** The diameter of zone inhibition of extract of cinnamon bark and honey against *P. acnes* were 17.2 and 16.2 mm, respectively, while against *S. epidermidis* were 16.8 and 16.7 mm, respectively. The MIC of extract of cinnamon bark and honey against *P. acne* were 256 µg/mL and 50% v/v, respectively, while against *S. epidermidis* were 1024 µg/mL and 50% v/v, respectively. The MBC of extract of cinnamon against *P. acnes* and *S. epidermidis* were more than 2048 µg/mL, whereas the MBC for honey against *P. acnes* and *S. epidermidis* were 100%. The combination of cinnamon bark extract and honey against against *P. acnes* and *S. epidermidis*, showed synergistic activity with the FICI value 0.625. **Conclusion:** The combination of ethanolic extract of cinnamon bark and honey has potential activity against acne causing bacteria.

Keywords: antibacterial activity, cinnamon, honey, checkerboards method, synergistic activity.

PO-PC-005

Isolation and Antibacterial Activity of Soil-Derived Fungi from Malaysian Forest

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Background: Fungi are eukaryotic organisms that consist of unicellular organisms, namely molds and yeasts, and multicellular organism known as mushrooms. Fungi have a major contribution towards the medical field as they are widely used in developing antibiotics. **Objective:** The aim of this research is to isolate soil-derived fungi from Malaysian forest and test their antibacterial activity against *Bacillus subtilis* and *Escherichia coli*. **Method:** The isolation of fungi from the samples using Sabouraud dextrose agar (SDA) medium. Five pure fungal strains were isolated and then fermented in SDB medium for 21 days. The product of fermentation, the mycelium and broth medium, were extracted by maceration and liquid-liquid extraction (LLE) respectively using ethyl acetate. These extracts were used to determine the antibacterial activity against test bacteria. **Results:** Based on the extract of broth medium, SA 1 showed inhibition against *B. subtilis* and *E. coli* at 256 and 32 µg/mL, respectively. On the other hand, SA 3 showed inhibition at 64 µg/mL against *B. subtilis*. Based on the extract of mycelium, SA 1 showed inhibition against *B. subtilis* and *E. coli* at 512 and 256 µg/mL respectively. SA 3 showed inhibition only against *B. subtilis* at 256 µg/mL. However, SA 4 showed inhibition against *B. subtilis* and *E. coli* at 256 and 64 µg/mL, respectively. **Conclusion:** The result showed that three of the isolate fungi have potential antibacterial against *B. subtilis* and *E. coli*.

Keywords: isolation, fungi**,** antibacterial activity, *Bacillus subtilis, Escherichia coli*

PO-PC-006

Quantitative Analysis of Sodium Diclofenac, Dimenhydrinate, and Chlorpheniramine Maleat Using Fourier Transform Infrared Spectroscopy

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Background: Fourier Transform Infrared Spectroscopy (FTIR) is an analysis method that used for a wide range of chemical compound. FTIR identifies chemical bonds in a molecule by producing an absorption or transmittance spectrum. **Objective**: In this study, FTIR was proposed as a quantitative analysis method for three active pharmaceutical ingredients; sodium diclofenac, dimenhydrinate and chlorpheniramine maleate. **Methods**: The calibration curve was made by preparing a series concentration of standard with potassium bromide. Spectrum of each concentration was derivatized and overlaid. AUC (area under the curve) of certain peak which shows the best linearity then was used as the base for calibration curve design. The quantitative analysis was being done by preparing samples as a potassium bromide pellet (1:100). Samples are measured with commercial matrix's spectrum as the background. The spectrum from each sample was derivatized. Then AUC of peak corresponding to the one being used in a calibration curve was measured. **Results**: From all the three drugs, sodium diclofenac (SD) showed the best result as the difference of 1.56% from the actual content of drug sample. Spectrum of dimenhydrinate (DH) samples was interfered by unknown excipient, causing difficulties in determining a suitable peak for quantitative analysis. This problem could be overcome with the information about matrix composition used by the manufacturer. The signal of chlorpheniramine maleate (CTM) in the sample was covered by matrix's signal because of low concentration (<3%). **Conclusion**: All results suggested that FTIR was suitable for an assay analysis if certain condition were met such as known matrix/excipient and high enough concentration.

Keywords: FTIR, quantitative, derivatitation, sodium diclofenac, dimenhydrinate, CTM.

PO-PC-007

Analytical Method Of 6-Mercaptopurine And 6-Methylmercaptopurine in Vitro Study with Bio-Sampling Venipuncture and Dried Blood Spot

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Background : 6-Mercaptopurine (6-MP) is a cancer chemotherapeutic agent. Metabolic pathway by thiopurine S-methyltransferase (TPMT) to become 6-methylmercaptopurine (6-MMP). Bio-sampling is required to obtain biological sample. Bio-sampling method used is invasive technique (venipuncture) and minimum invasive (dried blood spot/DBS). **Objective :** obtain an optimization and validation analizys in vitro study with bio-sampling venipuncture and DBS. **Method :** Plasma from venipuncture method extraction was done by liquid extraction method using dichlormethane. **Results :** Optimal chromatography condition for analysis was performed using C18 Sunfire^{TM} column (5µm, 250 x 4.6 mm) temperature 30°C, the mobile phase contains a mixture water-methanol-acetonitril with gradient elution, flow rate 1 mL/minute and detected at UV-PDA wavelength of 303 nm. Linear at concentration range of 2-200 ng/mL for 6-MP and 20-2000 ng/mL for 6-MMP. This method fulfill the requirements which refers to the EMEA Guidelines. Bio-sampling DBS with DBS CAMAG paper diameter of 8 mm and extracted with acetonitrile-methanol (1:3) with 5-FU as IS. Separation was performed with Waters Acquity UPLC C18 column 1.7 µm (2.1 x 100 mm) with a mobile phase mixture of 0.1% formic acid in water-0.1% formic acid in acetonitrile with gradient elution and flow rate 0.2 mL/minute. Mass detection is done using Waters Xevo TQD with positive electrospray ionization (ESI) for 6-MP, 6-MMP and negative ESI for 5-FU in Multiple Reaction Monitoring mode. Linear with the range 26-1000 ng/mL for 6-MP and 13-500 ng/mL for 6-MMP. **Conclusion :** This method fulfill the requirements which refers to the EMEA Guidelines.

Keywords: 6-mercaptopurine, 6-methylmercaptopurine, venipuncture, DBS

OR-PS-001

Floating Gastroretentive of Amoxicillin Solid Dispersion Using Hard Alginate Capsules Shell

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Background: Conventional dosage form of amoxicillin has short residence time in stomach due to gastric emptying time effect, so that the treatment of gastric infection is not optimum. Therefore, it is necessary to develop a drug delivery system that can stay longer in the stomach so that the bacterial eradication is more effective. **Objective:** The aim of this study was to formulate floating gastro retentive of amoxicillin by using hard alginate capsules shell. **Methods:**Alginate capsule shell was made by using sodium alginate 80-120 cP. Amoxicillin was prepared in solid dispersion to obtain sustained release requirement for 12 hours. Solid dispersion was prepared by solvent method using polyvinylpyrrolidone (PVP) K30. The solid dispersion was characterized with X-ray diffraction. The dissolution test were carried out by using USP paddle method in simulated gastric fluid. Concentrations of amoxicillin were determined by using spectrophotometer UV at 272 nm. The antibacterial activities of aliquots dissolution were assessed by using agar plate diffusion method against *S. aureus* and *E. coli* as bacterial model. **Results:**The alginate capsules shell were made of sodium alginate 80-120 cP with size 0. The dissolution test results showed that amoxicillin in the form of solid dispersions with weight ratio amoxicillin with PVP K30 was 1:1 provided sustained release for 12 hours. The floating lag time was 0 minute and floating time was more than 12 hours. The X-ray diffraction pattern of amoxicillin solid dispersion had amorphous shape. Antibacterial activity test showed that the dissolution aliquots of floating solid dispersion amoxicillin was effective against *S. aureus* and *E. coli*. **Conclusion:** Based on the results of this study, it is concluded that the alginate capsules shell can be used for preparation of floating gastroretentive of amoxicillin solid dispersion and gives antibacterial effect.

Keywords: Alginate capsules; floating; amoxicilline solid dispersion; antibacterial activity

OR-PS-003

The Use of *Moringa oleifera* Leaf Extract as Adjuvant for Delivery System of HBsAg-loaded Nanoparticle

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Background: Oftentimes, recombinant antigent for the use of vaccine is less immunogenic than live attenuated or inactive vaccine. Hence, a potent adjuvant is needed to enhance immune response. Moreover, the role of vector design is also important to facilitate the improvement of immune response. **Objective:** The aim of this reasearch was to develop HBsAg-loaded nanoparticles and *Moringa oleifera* aqueous leaf extract as adjuvant by using chitosan polymer. **Methods:** Chitosan nanoparticles was prepared by ionic gelation method using sodium tripolyphosphate as cross-linking agent. A system was composed of chitosan core in which HBsAg and *M. oleifera* extract were incorporated. Concentration of HBsAg used in this combination was 10 µg/mL and concentrations of extract were 10, 50 and 100 µg/mL, respectively. In this study, three types nanoparticles were produced, HBsAg-loaded nanoparticles, *M. oleifera*-loaded nanoparticles and combination HBsAg-*M. oleifera* loaded nanoparticles. The nanoparticles formed were characterized for particle size, HBsAg entrapment eficiency using SDS-PAGE and extract entrapment efficiency using total flavonoid method. **Results:** The results showed that particles size were between 150-270 nm. Entrapment efficiency of HBsAg in separated formula was 51% while that in combined formula were approximately 63-73%. Furthermore, entrapment efficiency of extract in separated formula were around 64-91% while that in combined formula were 55-77%. **Conclusion:** Collectively, the system has been successfully developed and it is then plausible to determine the function of the devices to enhance immune response in the future.

Keywords: nanoparticle, chitosan, HBsAg, adjuvant, *Moringa oleifera*

OR-PS-004

Design HBsAg Nanoparticles Vaccine Encapsulating *Phyllanthus niruri* L Extract

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Background: Immunogenicity of an antigen elicits low immune responses that can be modulated by the usage of adjuvant. It is also important to develop nanoparticles technology that mediates efficient delivery of antigen as well as adjuvant. **Objective**: Aim of this study was to design nanoparticles as a cargo which is able to encapsulate HBsAg vaccine and adjuvant *Phyllanthus niruri* L. extract. **Methods**: HBsAg nanoparticles were prepared by ionotropic gelation method using chitosan polymer with sodium tripolyphosphate as a cross linker. Ten µg HBsAg was loaded into the particles and doses of *P. niruri* extract used were 150,250 and 350 µg, respectively. Two types of nanoparticles were produced in which HBsAg alone or combination of HBsAg - *P. niruri* extract was loaded into nanoparticles. Particle size and zeta potential of the particles were characterized. Additionally, entrapment efficiency of HBsAg and *P. niruri* extract was determined using silver staining on SDS-PAGE and quercetin marker by UV spectrophotometry, respectively. **Results**: The size of HBsAg loaded nanoparticles(H-NP) was 179 nm, while *P. niruri* extract loaded nanoparticles (P-NP) is having size of around 295-463 nm. When HBsAg along with *P. niruri* extract were encapsulated, it has around 230-270 nm size. Entrapment efficiency of HBsAg in H-NP was 53% while that in the combination of HBsAg-*P.niruri* loaded nanoparticles (HP-NP) was more than 81%. Furthermore, entrapment efficiency of *P. niruri* extract in P-NP was also more than 81%,while that in the HP-NP was in a range 63-70%. **Conclusion**: Nanoparticles containing HBsAg, *P. niruri* extract and or its combination were successfully produced.

Keywords: HBsAg, *Phyllanthus niruri*, nanoparticles, entrapment efficiency

OR-PS-005

Proliferation and Flowcytometry Characterization of Adipose-Derived Stem Cells After Expansion in Once to Three Times Repeated Freeze-Thawed Outdated Platelet Lysate Containing Medium

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Background: Human adipose derived stem cell (hADSC) can be expanded in outdated platelet lysate containing medium. Processing to get platelet lysate can be done by once, twice, or three times freeze-thaw cycles of thrombocyte concentrate, and the platelet lysate were named F1, F2, and F3, respectively. There was no information whether F1, F2, and F3 containing medium gave the same proliferation potential and surface marker expressions. **Objective:** The aim of this sudy was to know the proliferation and flowcytometry characterization of hADSCs after expansion in F1, F2, and F3 containing medium. **Methods:** hADCSs were cultured in F1, F2, and F3 containing medium. Proliferations were measured on day-2, day-4, day-7, and day-10 The selected surface markers CD90, CD73, CD105 (positive) and CD34, CD45, CD11b, CD19, and HLA-DR (negative) were analyzed using flowcytometry. Difference in proliferations and surface marker expressions between F1, F2, and F3 containing medium were analyzed by one-way ANOVA. **Results:** We found that F1, F2, and F3 showed no significantly different proliferation on day-7 and day-10, but significantly different on day-2 and day-4. The expression levels of CD90 and CD 105 in F1, F2, and F3 containing medium were all above 90%, which correspond with the requirement of International Society for Cell Therapy (ISCT). However, CD73 showed highest (97%) expression on F2 and lowest on F3 (81.8%). Negative markers were highest (6.6%) on F2 and lowest (2.5%) on F1. **Conclusion:** hADSC showed similar profile when cultured in F1, F2, and F3 containing medium.

Keywords: outdated thrombocyte concentrate, freezed-thawed cycles, platelet lysate

OR-PS-006

Overproduction of Recombinant Superoxide Dismutase (SOD) of *Staphylococcus equorum* in *Escherichia coli* BL21(DE3) Using High Density Culture Method

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Background: Superoxide Dismutase (SOD) is metaloenzyme produced in every living organism as natural antioxidant. SOD catalyzes dismutase superoxide ions ($O_2^{\bullet -}$) into hydrogen peroxide and oxygen. SOD widely used in therapies, cosmetics, chemical industry, food and agriculture. This enzyme is generally isolated directly from the organisms in very small concentration with high production cost. High Density Culture method in genetic engineering expected enables faster production of recombinant SOD in greater numbers with lower cost. This study is the beginning of a research series to increase levels of recombinant SOD in *Escherichia coli* BL21(DE3). **Objective**: The aim of this study is to determine the effect of High Density Culture (HDC) Method towards increasing concentration of recombinant SOD of *Staphylococcus equorum* resulted from overproduction in *Escherichia coli* BL21(DE3). **Methods:** HDC Method was performed by concentrated cells as 10 times in Terrific Broth media and induced by Isopropyl β-D-1-thiogalactopyranoside (IPTG). Recombinant SOD then characterized using SDS-PAGE (*Sodium Duodesyl Sulfat Polyacrylamide Gel Electroforesis*) and the concentration compared with control. The activity of SOD was evaluated qualitatively using zymography. **Results:** Recombinant SOD has molecular weight approximately at 25 kDa. HDC method with 10 times concentrated cells has been able to exponentially raise the concentration of recombinant SOD as 2.28 times. The highest concentration of SOD was obtained at the 210th minutes of overproduction at 68065.80 mg/L. Zimograph was showed a clear zone, indicated the activity of SOD. **Conclusion:** HDC method was potentially gain the the concentration of recombinant SOD of *Staphylococcus equorum* in *Escherichia coli* BL21(DE3).

Key words: superoxide dismutase (SOD), high density culture (HDC) method, isopropyl β-D-1-thiogalactopyranoside (IPTG), sodium duodesyl sulfat polyacrylamide gel electroforesis (SDS-PAGE), zymography

OR-PS-007

Plasmid Stability of Two Plasmids Carrying *ccdB* and *ccdA* as Toxin-Antidote Selection System in *Escherichia coli*

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Background: Expression vector is one of the most important components in the production of recombinant protein. At present, most of commercialized vectors use antibiotic-based selection markers.The vector that carrying gene encoding recombinant protein can cause energy exhaustion on host cells, due to replication and expression whish lead to vector instability. Plasmid instability in recombinant cell cultures is a major problem in the protein production. In addition, antibiotic based selection marker has potential to cause spreading of resistance gene and allergic reaction due to residual antibiotic in improper purified product. Hence, alternative selection marker is highly recommend by WHO, FDA and EMEA. To solve both major problems of expression vector, two plasmids have been constructed, pDCS-B and pDCS-A.**Objective:** This study aimed to determine the stability of pDCS-A containing T7 promoter, *cer* region, *ccdA*gene and ampicillin resistance gene and pDCS-B plasmid carrying *ccdB* gene under arabinose induction, p15a *ori* region and kanamycin resistance gene were determined in *Escherichia coli* TOP10.**Methods:**The experiment was performed in flasks containing 20 ml Luria Bertani medium each containing *E. coli* pDCS-A, *E. coli* pDCS-B and *E. coli* pDCS-A pDCS-B with and without 0.05% arabinose induction. The initial bacterial cell optical density (OD600) was set at 0.05. Bacterial cultivations were carried out at 37°C with rigorous shaking. Samples were collected at 20 generations for subsequent plating. Diluted samples were plated on selective either using ampicillin or kanamycin and non-selective LB plates. **Results:** After about 620 generations both of pDCS-A and pDCS-B either alone or coexisting were stable in the absent of arabinose. However, in the presence of arabinose at 155th generation, *E. coli* pDCS-B was less stable than that harboring both plasmids while pDCS-B was lost completely at 217th generation. **Conclusion:**We conclude that expression of *ccdB* gene cause instability in *E. coli* pDCS-B but it can be countervailed by the presence of pDCS-A.

Keywords: plasmid stability, arabinose, selective marker, *ccdA*, and *ccdB.*

PO-PS-002

Curcumin-Gold Nanoparticle: Synthesis and Characterization

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Background: Curcumin1, 7-bis (4-hydroxy-3-methoxyphenol)-1, 6-heptadiene-3, 5-dione is the main active component of *Curcuma longa* L. from Zingiberaceae family. Curcumin have been knownpossess diverse pharmacological effects as therapeutic agent. However, the clinical efficacy of curcumin is limited in humans due to its poor bioavailability after oral administration. **Objective:**Therefore, one of the promising strategy is by applying nanotechnology to enhance bioavailability of lipophilic drugs such as curcumin.We developed curcumin-gold nanoparticles using a simple synthesis method via mild condition of chemical reaction. The formation of gold nanoparticles can be used as a carrier for curcumin for specific delivery into the liver. **Methods:** Curcumin-gold nanoparticles was synthesized by conjugating curcumin with $HAuCl_4$ 1mM.The successful conjugation was indicated by color alteration of the solutions from pale yellow to burgundy red. Conjugation of curcumin-gold nanoparticles was characterized by UV-Vis and Infrared spectrophotometries. In addition, a standard evaluation on nanoparticle was performed such as particle morphology, particle size, polydispersity index and zeta potential. **Results:** The optimum pH of curcumin solution to form curcumin-gold nanoparticle was 9.3 with molar ratio of curcumin to $HAuCl_4$was 1:1.A nearly monodisperse of curcumin-gold nanoparticle was obtained with particle size of 31.1 and polydispersity index of 0.417. Based on FTIR spectrum analysis, a partial interaction between curcumin and $HAuCl_4$ was found. **Conclusion:** Further studies in vitro and in vivo are ongoing to explore the potential use of this construct for advanced delivery of curcumin.

Keywords: nanoparticles, $HAuCl_4$, curcumin

PO-PS-003

Lozenges of Ceremai Leaves Extract: Formulation and Antibacterial Activity

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Background: Ceremai (*Phyllathus acidus)* is a traditional medicinal plant used for treating canker sores (recurrent aphthous stomatitis). *Staphylococcus aureus* is one of the bacterias that mostly causes of canker sores. Lozenge is a suitable dosage form for recurrent aphthous stomatitis medicine. **Objectives:**This study aims to determine influence of concentration of amylun manihot as binder on physical properties of lozenges of ceremai leaves extract, and determine antibacterial activity against *Staphylococcus aureus*. **Methods:** Ceremai leaves was extracted by maceration using ethanol 70% and determined the polyphenol content of an active compound as antibacterial using thin layer chromatography. Lozenges were made by various concentrations of amylum manihot in four formulas. Mucilago of amylum as binder for each formula are 5%, 7.5%, 10% and 12.5%, respectively. Antibacterial activity of ceremei lozenges against *Staphylococcus aureus* was tested using diffusion method. **Results:** Study showed that all formulas have good properties of lozenges. The increase in concentration of binder produced the higher hardness, the lower friability and the longer time of dissolution. Ceremai lozenges also inhibit potentially the growth of *Staphylococcus aureus.*

Keywords: ceremai, lozenges, antibacterial activity

PO-PS-004

Development Oligodeoxy Nucleotide (ODN) Loaded Chitosan-Based Nanoparticles for Inhibiting Gene Target in *Plasmodium falciparum*

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Background: *P. falciparum* infection causing cerebral malaria is very high potential to cause death. As an alternative strategy to solve it, the use ODN that specifically knocks down the gene target in *P. falciparum* and application of nanodevice for delivery system are essential. **Objective**: This study was aimed to design nanoparticles encapsulating ODN for mediating efficientinhibition of gene expression *in vitro*. **Methods**: Two types of chitosan-based nanoparticles encapsulating ODN (OC-NP) were prepared, poloxamer-modified OC-NP(OCP-NP) and PLGA& PVA-modified OC-NP (OCPA-NP). OC-NP and OCP-NP were prepared by ionotropic gelation method, while OCPA-NP was prepared by emulsion diffusion evaporation method. Two types ODN were used, ODN EBA-175 and ODN dhs. Concentration ODN used was 0.5 µM and concentration of poloxamer was varied of 0.1, 0.5 and 5%. Concentrations of PLGA used were in a range of 0.2-2%. Particle size was then characterized. Inhibition of gene target expression in vitro is applied using real time RT-qPCR. **Results**: The size of OC-NP was approximately 122 nm, while OCP-NP is having size in a range of 190-290 nm. The diameter of OCPA-NP was the largest comparing to others of around 450 nm. It is presumably that it is caused by the significant difference in molecular weight of composing materials since MW of poloxamer is one tenth of PLGA-PVA combination. Additionally, the high concentration poloxamer, the smaller size of particles. Function of the particles to inhibit gene expression is in progress. **Conclusion**: ODN can be encapsulated into several promising types of nanoparticles to facilitate inhibition of gene expression.

Keywords: ODN, *Plasmodium falciparum*, nanoparticles, gene expression inhibition.

PO-PS-005

Gel Formulation of Ethanol Extract of Banana Peel (*Musa* ABB Group Bulggoe), Bacteria Activity Test to *Propionibacterium acne* and Irritation Test *In Vivo*

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Background: Acne vulgaris is a disorder of piloesebaceous follicles chronic inflammation characterized by non-inflammatory and inflammatory lesion. Treatment of acne could be done by inhibiting the growth of *Propionibacterium acne*. However, prolonged antibiotic usage whether oral or topical could lead resistance of *Propionibacterium acne*. Banana peel was empirical used as anti acne has its known also has antibacterial activity. **Objective:** The aim of this research is to determine the minimum inhibitory concentration (MIC) of ethanol extracts of Banana peel, to develop in gel formulation, test the antibacterial activity against *Propionibacterium acne*, and also completed with primary irritation test using New Zealand albino rabbit. **Methods:** Banana peel was extracted by reflux method using ethanol 96 %. The minimum inhibitory concentration (MIC) of ethanol extracts was determined using broth micro dilution method. Furthermore, the gel formula, was developed added compatibles additives that its needed in the formula. The formula was evaluated, includes organoleptic, viscosity, pH, antibacterial activity, accerelated physical stability test , and primary irritation test. Stability test was performed for 30 days in room temperature (25 ^{o} C) and (40 ^{o} C) with humidity 75 % . **Results:** After extraction process the extract yield was 9,76 % and the MIC value of ethanol extract of banana peel was 5 mg/ ml . This result of antibacterial activity was equal with 30.56 ppm Tetracycline HCl . After optimized component of the gel formula , the final formula contained 8 % ethanol extract of banana peel, 8 % HPMC, 15 % propilenglycol, 1 % sodium metabisulfit , 13.6 % ethanol 96 % and 54.4 % distilled water . During storage, there was no change of color and odor of the gel formula. Based of statistically analysis using t-student method indicated that was no significantly differences in viscosity and pH during storage, however there was significantly difference ($P< 0.05$) in inhibitory diameter against *Propionobacterium acne*. Primary irritation test of banana peel gel in New Zealand albino rabbit revealed that there was no skin irritation. **Conclusion:** Gel formula consisted of 8 % ethanol extract of banana peel could inhibited the growth of *Propionobacterium acne*. The formula showed stable in color, odor, pH and viscosity, but there was significant reduction of inhibitory diameter during storage about 39-40 %. Primary irritation test exposed that the gel was safe for topical use .

Keywords : Extract ethanol of banana peel, gel formula, stability test, minimum inhibition concentration, *Propionobacterium acne* bacteria , skin irritation test

PO-PS-006

Ex Vivo Permeability Study of Superoxide Dismutase from Citrus Limon Fused to Gliadin Peptides

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Background: Superoxide dismutase (SOD) is antioxidant protein and functions as an active ingredient in many pathophysiological conditions caused by oxygen radical. SOD from lemon (*Citrus limon* L.) has potency as therapeutic protein candidate. In our previous research,the SOD has been produced as three recombinant versions, one with no gliadin peptide (SCL) and two with gliadin peptides as permeability enhancers i.e.LGQQQPFPPQQPYPQPQPF(GliSOD_P51) and QQPYPQPQPF (GliSOD_P61). **Objective:**In this research, rat excised intestine model was performed to study the permeability of rSOD previously constructed. **Method:**All SODs were each overproduced in *Escherichia coli* BL21(DE3) and purified usingNickel-nitrilotriacetic acid (Ni-NTA) column. Permeability study was done by incubating a mixture of each recombinant SODs, lysozyme, and bovine serum albumin (BSA)inside the intestine. The presence of proteinsin inside (Apical, AP) and outside (Basolateral, BL) of the intestine was analyzed by SDS-PAGEanalysis and that for SOD by zymography. **Result:**The SDS-PAGE analysis showed only the presence of GliSOD_P61, lysozyme, albuminin BL.However, many other proteins were present in BL when the permeability testing was done using SOD_Cl and GliSOD_P51. Both lysozyme and albumin were not present in BL in all negative controls without SOD. Zymography result showed there was SOD activity detected in BL when SODs were incubatedin AP indicating that the SODs even was not fused to gliadin could permeate through intestine. **Conclusion:** Based on SDS PAGE analysis, it is unclear whether gliadin peptide and or SOD_Cl are responsible to transport BSA or lysozymethrough intestine.

Keywords: SOD_Cl, GliSOD_P51, GliSOD_P61, gliadin, permeability

PO-PS-007

Formulation and Evaluation of Loratadine Fast Disintegrating Tablets Using Various Superdisintegrants and Diluents

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Background: Fast disintegrating tablets (FDTs) are solid unit dosage forms, which disintegrate rapidly in the mouth without chewing and water. **Objective:**The purpose of this studywas to formulate a good characteristics of loratadine FDTs. **Methods:**Loratadine FDTs were prepared by usingvarious of superdisintegrants such as L-HPC, soy polysaccharide and polacrilin potassium together with diluents such as microcrystalline cellulose, spray dried lactose monohydrate or isomalt. Theeffect of the use of superdesintegrants and diluents can be analyzed by evaluation of tablet parameters.**Results:**All formulations using microcrystalline cellulose and spray dried lactose as diluents showed poor flowabilityand neededto be improved by granulation of the diluents prior to compress into tablets, while the formulation using isomalt as the diluents showed good flowability. The desintegration times of FDTs using isomalt did not fulfil the requirements as it was more than 3 minutes, while tablets using granules of microcrystalline cellulose and spray dried lactose had disintegration time less than 1 minute.The appearanceof the tablets was white in color with smooth surface except for formulation using microcrystalline cellulose granules as diluentstogether with polacrilin potassium as superdisintegrants had rough surface. All the formulation fulfilled the requirement of content uniformity and drug content.All the superdesintegrants used in these study showed a good ability to improve wetting times and the rate of desintegration of tablets. **Conclusion:**Based on tabletrequirement evaluations, formulation using spray dried lactose granules as diluents together with L-HPC as superdisintegrant was chosen as the best formulation.

Keywords: Loratadine, Fast Disintegrating Tablets, superdisintegrant, diluent

PO-PS-008

Open Wound Healing Activity of Slim Snail (*Achatina fulica*) Gel on Experimental Animal

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Background: Wound is a result of physical damage or destruction skin causes an imbalance of normal skin function and anatomy as well as allow the entry of microorganisms into the body so that appropriate care is needed and to prevent infection and blood lossquickly. One of the active substance which can be used as drugs in the treatment of open wounds is hialorunat acid and glycosaminoglycans. Slime snail (*Achatina fulica*) containing acid and glycosaminoglycan hialorunatthat have biological effects that accelerate the process of angiogenesis thereby affecting the speed of wound healing. **Objective:**This study aims to obtain a gel formulation has the best physical properties and stable and to examine the effectiveness of snail slime 20% of open wounds in Wistar rats. **Methods:** These preparations can be made in the form of a gel with varying concentrations of the gelling agents with varies are 0.5% (F_1), 0.75% (F_2), 1% (F_3), and 1.5% (F_4). Based the results of the organoleptic evaluation covers gel formulations, pH, viscosity, and the centrifugation test, F_3 with carbopol concentration of 1% showed the most stable formula. Test the effectiveness of open wound healing experiments were performed on Wistar rats. Pharmacological tests on wound healing compared with a gel containing 10% Povidone-iodine and gel base. **Results:** The results showed that the control group experienced wound healing on day 16, the comparison group (Povidone-iodine 10%) experienced wound healing on day 14. And the test group experienced wound healing snail mucus gel at day 10. **Conclusion:**Based on the results, it can be concluded that carbopol 940 gel containing 1% combined with snail slime 20% effect faster wound healing compared with 10% povidone iodine 10 days.

Keywords: Gel, slime snail (*Achatina fulica*), open wound healing, experimental animal.

PO-PS-009

Ethanol Extract of Purple Cabbage (*Brassica oleracea* L. var. Capitata. f. rubra) Colouris Stability Using Sodium Metabisulfite and Citric Acid

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Background: Purple cabbage (*Brassica oleracea* L. var. Capitata. F. Rubra) is a plant that grows in Indonesia. Several studies have shown that this plant has a compound anthocyanin dye. This gives the compound anthocyanin pigments and can be used as natural dyes. **Objective:** This study aimed to determine the effect of sodium metabisulfite and citrate buffer pH 3 on the stability of the dye from purple cabbage extract. **Methods:** The study began by extracting purple cabbage used maceration method and used the solvent ethanol 96% v/v as well as the addition of citric acid 3%. The extract be thickened with freeze dry method, viscous extract obtained tested. The entire test sample is diluted with citrate buffer pH 3, then only two samples by addition of sodium metabisulfite (0.05% and 0.1%), evaluation includes measurements of the maximum wavelength at 14 pH value, stability testing of irradiating UV rays and rays polychromatic, storage stability testing for 28 days. Measurements using a UV-Visible spectrophotometry where the wavelength of maximum absorbance spectrum and changes absorbance observed. **Results:** The results of the evaluation of the stability of the dye purple cabbage shows that the addition of sodium metabisulfite (0.05% and 0.1%) and citrate buffer pH 3 provides wavelength changes are small in irradiation stability testing and storage stability as compared to the sample not given the addition of sodium metabisulfite. **Conclusion:** It can be concluded metabisulfite and citrate buffer pH 3 would keep the color from purple cabbage extract compared samples were only given citrate buffer pH 3 without the addition of sodium metabisulfite.

Keywords: Purple Cabbage, colour stability, sodium metabisulfite, citric acid, citrate buffer pH 3

PO-PS-010

Nanoemulsion Loaded *Carica papaya* L. Extract as Antioxidant

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Background: Free radical is molecule or molecule fragment which has unpaired electrons at its outermost orbital. Antioxidant is functioned to exterminate free radicals by reacting and forming stabile molecules. In skin, antioxidant compound has function to eliminate excess ROS (Reactive oxygen species) that is produced and/or potentiate the capacity of endogenous antioxidant. Therefore, antioxidant is a potential therapy for UV damaged skin and UV induced melanoma. **Objective:** This research is conducted to determine the optimum formula for papaya extract nanoemulsion which also exhibit the optimum antioxidant activity. **Methods:** Extraction is conducted by maceration method with methanol:water (7:3) as solvent. Materials used in formulation are VCO (virgin coconut oil), tween 80, span 80, PEG 400, and aquadest. Formulation steps include phase selection, surfactant HLB selection, co-surfactant selection, optimization of surfactant and co-surfactant amount, and optimization of extract amount. From the research the optimum formula obtained is 3% papaya extract, 7% aquadest, 8% PEG 400, 17% tween 80, 15% span 80, and 50% VCO. The steps of evaluation of nanoemultion conducted are organoleptic, particle size, morphology, viscosity, stability, and antioxidant activity assessment by DPPH (2,2-diphenyl-1-picrylhydrazil) inhibition. **Results:** From the experiment it is known that the IC50 of papaya extract, papaya extract nanoemulsion, and nanoemulsion base are 27,579 ± 5,867; 15,679 ± 3,192; and 7683,627 ± 1171 ppm. **Conclusion:** It is shown that papaya extract nanoemulsion exhibit greater activity of antioxidant than thus of papaya extract.

Keywords: nanoemulsion, *Carica papaya* L., antioxidant, DPPH