Proceeding

The 1st International Conference on Pharmaceutics & Pharmaceutical Sciences

Drug Delivery Systems: From Drug-Discovery, Pre-formulation, Formulation and Technological Approaches for Poorly Soluble Drugs and Protein
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PREFACE From Chairman

It is our pleasure to present you the proceedings of The 1st International Conference on Pharmaceutics and Pharmaceutical Sciences (ICPPS) organized by The Faculty of Pharmacy Universitas Airlangga Surabaya Indonesia.

The proceeding was produced based on papers and posters presented at The 1st International Conference on Pharmaceutics and Pharmaceutical Sciences (ICPPS), held in Surabaya, Indonesia, 14-15 November 2014.

The proceeding clearly reflects broad interest, from the participants that coming from all around the world.

The papers presented were pharmaceutics and biopharmaceutics; requirements on how to evaluate molecules in discovery and their appropriateness for selection as potential candidate; their development in context of challenges and benefits, together with associated time and cost implications and also requirements to progress through pre-clinical and clinical.

In this an opportunity, I would like to express my appreciation to the editorial team of the proceeding who have been working hard to review manuscripts, and making the first edition of this proceeding be possible.

I would like also to thanks to all invited speakers and presenters who participated in The 1st International Conference on Pharmaceutics and Pharmaceutical Sciences (ICPPS) and your contribution to this proceeding.

Finally, I hope this proceeding will give contribution to the Pharmaceutics and Pharmaceutical Sciences research.

Chairman,

Dra. Esti Hendradi, MSI., Ph.D., Apt
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TABLE of CONTENT

Preface from Chairman ................................................................. ii
Committee .................................................................................. iii
Table of Contents ......................................................................... iii
Author Index ................................................................................. iii

AUTHOR INDEX

COMPARISON OF SODIUM STARCH GLYCOLATE AND CROSSCARMELLOSE SODIUM AS SUPERDISINTEGRANT IN MEFENAMIC ACID FAST DISINTEGRATING TABLET
Adeltrudis Adelsa D, Oktavia Eka Puspita, Amalia Ayuningtyas, Marulita Isadora ......................... 1

STUDY EXPRESSION OF HUMAN ERYTHROPOIETIN EXPRESSION IN MAMMALIAN CELL
Adi Santoso, Popi Hadiwisnuwardhani, Yana Rubiana, Yulaika Romadhani, Endah Puji Septisetyani, Dyaningtyas D.P. Putri ................................................................. 4

ANTIOXIDANT STABILITY ASSAY OF ALPHA TOCOPHERYL ACETATE IN SOLID LIPID NANOPARTICLE SYSTEM (LIPID BASE BEESWAX AND MONOSTEARIC GLISERYL 50:50)
Anggie Widhi, Noorma Rosita, Widji Soeratri ........................................................................ 8

A BIOACTIVE BOVINE HYDROXYAPATITE–GELATIN IMPLANT FOR IN VITRO GENTAMICIN RELEASE
Aniek Setiya Budiatin, M. Zainuddin, Junaidi Khotib, Diah Himawati ............................................ 13

EFFECT OF COMPARISON SURFACTANT AND COSURFACTANT IN WATER/OIL MICROEMULSION IN RELEASE OF OVALBUMIN Microemulsion Water/Oil with Surfactant (Span 80-Tween 80) : Cosurfactant (Ethanol) =5:1, 6:1, and 7:1
Anisa Rizki Amalia, Riesta Primaharinaasti, Esti Hendradi ............................................................. 18

ANALYSIS OF MYCOLIC ACIDS CLEAVAGE PRODUCT OF Mycobacterium tuberculosis BY GAS CHROMATOGRAPHY–FLAME IONIZATION DETECTOR
Asri Darmawati, Deby Kusumaningrum, Isnaeni, Muhamad Zainuddin ............................................ 21

PERIPLASMIC EXPRESSION OF GENE ENCODING ANTI-EGFRvIII SINGLE-CHAIN VARIABLE FRAGMENT ANTIBODY USING PeI8 LEADER SEQUENCE IN ESCHERICHIA COLI
Kartika Sari Dewi, Debbie Sofie Retnoaningrum, Catur Riani, Asrul Muhamad Fuad ....................... 24

IN VIVO ANTIMALARIAL ACTIVITY OF ETHANOL EXTRACT AND ETHYL ACETATE FRACTION OF Alectryon serratus LEAVES ON Plasmodium berghei INFECTED MICE
Aty Widyawaruyanti, Uswatun Khasanah, Lidya Tumewu, Hilkatul Ilmi, Achmad Fuad Hafid, Indah S Santular .............................................................................................. 30

PROFILE OF COMMUNITY PHARMACISTS KNOWLEDGE IN PATIENT ASSESSMENT WITH INFLUENZA SYMPTOMS AND ITS PRODUCTS
Azza Faturrohmah, Arie Sulistyarini, Ana Yuda .......................................................................... 33
SOLUBILITY AND DISSOLUTION STUDY OF KETOPROFEN – HIDROXYPROPYL-β-CYCLODEXTRIN INCLUSION COMPLEX (Prepared by Kneading Method)
Bambang Widjaja, Achmad Radjaram, Arafah Zulhana ................................................................. 37

FORMULATION AND STABILITY TESTING OF MELOXICAM SOLID DISPERSION GEL
Budipratwi Wisudyaningsih, Inka Dewi Nur Anggaraini, Fersi Wardani ........................................ 40

EFFECT OF MENTHOL AS PENETRATION ENHANCER TO DICLOFENAC SODIUM MEMBRANE-TYPED TRANSDERMAL PATCH CHARACTERIZATION
Destria Indah Sari, Esti Hendradi, Junaidi Khotib .................................................................................. 43

PHYSICAL CHARACTERISTICS AND RELEASE STUDY OF OVALBUMIN FROM ALGINATE MICROSPHERES PREPARED BY DIFFERENT CONCENTRATION OF ALGINATE AND BaCl, USING AEROSOLIZATION TECHNIQUE
Dewi Melani Hariyadi, Tristiana Erawati, Sisilia Ernawahyuningtyas ................................................. 46

MUCOADHESIVE TABLET OF ETHANOLIC EXTRACT OF SAMBILOTO (Andrographis paniculata) AS ANTIDIABETIC USING CHITOSAN
Dhadhang Wahyu Kurniawan, Hening Pratiwi, and Lingga Ikaditya ....................................................... 50

PHYSICAL INTERACTION STUDY OF IBUPROFEN-STEARIC ACID BINARY MIXTURE
Diajeng Putri Paramita, Dwi Setyawan, Dewi Isadiartuti .................................................................... 59

MOLECULAR MODELING AND SYNTHESIS OF 1-(3,4-Dichlorobenzoyl)-1,3-dimethylurea
Dian Agung Pangaribowo, Siswadono, Bambang Tri Purwanto ............................................................ 63

EXPRESSION OF RECOMBINANT HUMAN GRANULOCYTE-COLONY STIMULATING FACTOR WITHIN PERIPLASMIC COMPARTMENT OF Escherichia coli USING Pbl LEADER PEPTIDE
Dian Fitria Agustiyanti, Asrul Muhamad Fuad .................................................................................... 66

EVALUATION OF ANTIHYPERURICEMIC ACTIVITY FROM BULBS OF BAWANG TIWAI (Eleutherine palmifolia (L.) Merr.) BY IN VITRO AND IN VIVO STUDIES
Dian Ratih Laksmitawati, Rininta Firdaus, Yulinda, Mediana Astika ....................................................... 72

ANTIOXIDANT ACTIVITY OF 96% ETHANOL EXTRACT OF COMBINATION OF STRAWBERRY FRUIT (Fragaria x ananassa Duch.) AND STARFRUIT (Averrhoa carambola L.) USING ABTS FREE RADICAL SCAVENGING METHOD
Diana Serlahwaty, Indira Natalia Timang .............................................................................................. 76

ENHANCEMENT OF SOLUBILITY AND DISSOLUTION ATORVASTATIN BY MICROCRYSTALLIZATION METHOD
Dolih Gozali, Yoga Windu Wardhana, Ronny Tandela ........................................................................ 79

IN VITRO ANTIMALARIAL ACTIVITY OF DICHLOROMETHANE SUB-FRACTION OF Eucalyptus globulus L. Stem AGAINST Plasmodium falciparum
Elis Suwarni, Achmad Fuad Hafid, Aty Widyawaruyanti ....................................................................... 86

Arcangelisia flavina INCREASES RATS' LEUKOCYTES BUT HAS BIPHASIC EFFECT ON RATS' LYMPHOCYTE Endah Puspitasari, Evi Umayah Ulfa, Vita Ariati, Mohammad Sulthon Habibi .................................. 89
Arcangelisia flava INCREASES RATS’ LEUKOCYTES BUT HAS BIPHASIC EFFECT ON RATS’ LYMPHOCYTES

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INTRODUCTION

As a country rich of natural resources, especially in medicinal plant, Indonesia has many opportunities to develop medicinal sources originated from plants. One of the potential medicinal plant used for cancer chemoprevention agent is Arcangelisia flava. This plant was shown to have antioxidant and cytotoxic activity against breast cancer cell line, MCF-7. These ability were considered to be corresponding to the alkaloid content, especially berberine (Keawpradub et al., 2005). As this plant is easily to be found in Meru Betiri National Park situated in Jember (Koran Jakarta, 2012), we are eager to explore further about this plant.

To be developed as medicine, we have to know its safety. The sub-chronic toxicity assay was chosen to study the safety of ethanolic extract of A. flava leaves (EEAfL) use. This research was done to determine the EEAFL effect on leukocytes and lymphocytes cell count of rats receiving sub chronic EEAFL.

OBJECTIVES

This research was done to determine the EEAFL effect on immune response, especially on leukocytes and lymphocytes cell count of rats receiving sub chronic EEAFL.

MATERIAL AND METHODS

Plant: materials and extraction
The A. flava leaves were collected from Meru Betiri National Park, Jember, Indonesia. They were selected for their freshness, old age, and healthy ones. The leaves were washed thoroughly with water, then, were air dried followed by oven drying at 50°C. The dried leaves were ground and sieved. The ethanolic extract were prepared using 500 g of leaves powder according to the previous study with a slight modification (Keawpradub et al., 2005). The ground-dried leaves was sequentially extracted with n-hexane, chloroform, and ethanol. The extraction was repeated three times for each solvent. The ethanol extract was evaporated under reduced pressure (Heidolph, Laborota) resulting EEAFL. EEAFL was then suspended in CMC Na 1% before being administered to the animal.

Animals
Male Wistar rats (weighing 100-150 g) were housed at a constant temperature and light-dark cycle. Rats were fed with standard feed and water as libitum. The rats were acclimatized and quarantined for at least 10 days prior to the experiment. The animal handling protocols of this study were in accordance with the guidelines of the animal care of University of Jember.

Experimental design
Fifteen rats were devided into three groups. Group I as control, received CMC Na 1 %. Group II received EEAFL 500 mg/kg BW. Group III received EEAFL 1,500 mg/kg BW. The treatment was done orally for 11 days. At the 12th day, the blood sample was collected and analyzed further for leukocytes and lymphocytes cell count.

Statistical analysis
All data were presented as mean ± the stan-
RESULTS AND DISCUSSION

Leukocytes cell count
The leukocytes cell count (Figure 1) of rats receiving EEAfL were increased significantly than that of the control group, either at the dose of 500 or 1,500 mg/kg BW.

Lymphocytes cell count
The lymphocytes cell count of rats receiving 500 mg/kg BW EEAfL was increasing significantly, but the rats treated with EEAfL at the dose of 1,500 mg/kg BW had decreased lymphocytes (Figure 2).

![Figure 1. Leukocytes cell count of rats. Data represented as mean ± SEM (n = 5). Different letter notation expressed significant difference according to Mann Whitney test (p < 0.05).](image1)

![Figure 2. Lymphocytes cell count of rats. Data represented as mean ± SEM (n = 5). Different letter notation expressed significant difference according to Mann Whitney test (p < 0.05).](image2)

Discussion
EEAfL seems to increase the immune response of normal rats, as it was expressed by leukocytes cell count. But it had biphasic effect on lymphocytes, as the higher the dose lowered the lymphocytes cell count. We could say that the high dose of EEAfL decreased specific immune system as it decreased the lymphocytes cell count.

EEAfL contained berberine (Puspitasari and Ulfa, 2013). The higher the dose, the higher the berberine content. Berberine itself is an immunosuppressive agent. It inhibits the activation and proliferation of T cells, but a cytotoxic effect known (Xu et al., 2005). EEAfL might increase the non-specific immune system. Leukocytes consist of neutrophils, lymphocytes, monocytes, eosinophils, and basophils. Lymphocytes play role in specific immune response, while others play in non-specific immune response.

Leukocytes cells count that was increasing while the lymphocytes cell count that was decreasing after treated with high dose of EEAfL suggested that the other kinds of leukocytes involving in non-specific immune response were higher. Water extract of A. flava increases macrophage activity (Florentina, 2013). Thus, EEAfL might also increase the macrophage activity. Still, we need to examined further the these hypothesis.

CONCLUSION
Based on the results, we can conclude that EEAfL increased the immune response on rats, but it had biphasic effect on lymphocytes suggesting that high dose of EEAfL might increased non-specific immune response instead of the specific one.

REFERENCES
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