ICPPS 2014

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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Arcangelisia flava INCREASES RATS' LEUKOCYTES BUT HAS BIPHASIC EFFECT ON RATS' LYMPHOCYTE

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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 chemopreventive 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 choosen 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 0C. The dried leaves were grounded 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 suspensed 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-

dard error of the mean (SEM). Kruskal Wallis assay followed by Mann Whitney test were used to know the significance difference between groups, since the data could not meet the requirement for Anova analysis ($p < 0,05$).

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).

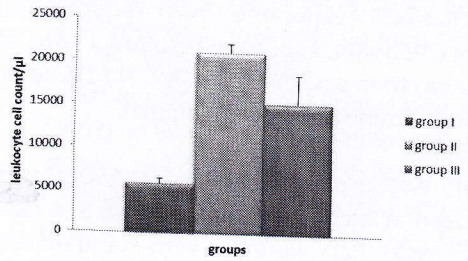

Figure 1. Leukocytes cell count of rats. Data represented as mean + SEM (n = 5). Different letter notation expressed significant difference according to Mann Whitney test ($p < 0,05$).

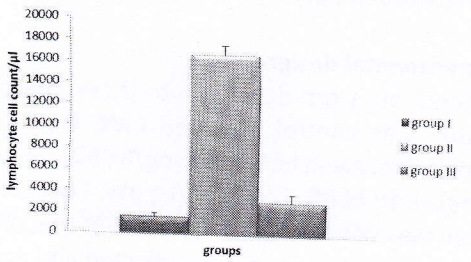

Figure 2. Lymphocytes cell count of rats. Data represented as mean + SEM (n = 5). Different letter notation expressed significant difference according to Mann Whitney test ($p < 0,05$).

Discussion

EEAfL seems to increase the immune [response] of normal rats, as it was expressed by [the] cytes cell count. But it had biphasic [effect] lymphocytes, as the higher the dose [given] the lymphocytes cell count. We could [say that] high dose of EEAfL decreased spesific [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] immunosuprressive agent. It inhibits the [activ]tivation and proliferation of T cells, [but has] cytotoxic effect known (Xu et al., 2005). [So] AfL might increase the non-spesific [immune] system. Leukocytes consist of neutrophils, lymphocytes, monocytes, eosinophyls, and basophyls. Lymphocytes plays role in [specific] immune response, while others play in [non-] specific immune response.

Leukocytes cells count that was [increased] while the lymphocytes cell count that was [de]creasing 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 [increased] macrophage activity (Florentina, 2013). [So] EEAfL might also increase the macrophage [ac]tivity. Still, we need to examined further [to] these hypothesis.

CONCLUSION

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

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