

EFFECT INFLAMMATORY OF LUNASIA AMARA EXTRACT ETHANOLIC ON EXPERIMENTAL CHRONIC ARTHRITIS

Hasnaeni^{1*}, Sudarsono², Arief Nurrochmad³, Sitarina Widyarini⁴

1 Faculty of Pharmacy, Universitas Muslim Indonesia, Urip Sumoharjo Makassar, Indonesia 90231

2 Department of Pharmaceutical Biology, Faculty of Pharmacy, UGM, Sekip Utara Yogyakarta, Indonesia-55281

3 Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, UGM, Sekip Utara Yogyakarta, Indonesia-55281

4 Department of Pathology Anatomy, Faculty of Veterinary Medicine, UGM, Karangmalang Yogyakarta, Indonesia-55281

**E-mail of corresponding authors: hasnaeni.hasnaeni@umi.ac.id*

ABSTRACT

The effect of inflammatory of Lunasia amara ethanol extract (LAE) on Freund's complete adjuvant (FCA)-induced arthritis was investigated. Effect inflammatory assessment was done by measuring paw volume (hind paw swelling), joint diameter, and body weight. The oral administration of LAE (50, 100, and 200 mg/kg BW per day) for 60 days after subcutaneous immunization with FCA. The arthritis score and paw edema were markedly suppressed in the groups treated with LAE. The result suggests that the Lunasia amara Extract ethanolic might be beneficial in the treatment of the chronic inflammatory disorder.

Keyword: Lunasia amara extract ethanolic, chronic inflammation, FCA-induced arthritis

INTRODUCTION

Beta-beta wood is one of the plants of the genus Lunasia family Rutaceae. In general, Family Rutaceae containing compounds essential oils, alkaloids, amides, coumarin, flavonoids, benzoate acids, tannin substances, lignin, phenolic compounds, triterpene tetrasiklik, diterpene, tetraterpen pentacyclic saponins, carbohydrates and slime [1]. Scopoletin compound is one of the compounds contained in the family Rutaceae family is known to have anti-inflammatory, a compound coumarin derivative which is a derivative of phenyl propane. Has done research on beta-beta timber that research on anti-inflammatory activity in mice Balb/c model of rheumatoid arthritis induced Complete Freund's Adjuvant (CFA) of 0.1%. In this research, it is known that there is a decrease in inflammation of 77.35% for all treatments.

MATERIAL AND METHOD

Plant Material

The plant of beta-beta wood (*Lunasia amara* Blanco.) collected at Siawung, South Sulawesi province, Indonesia, in March 2014.

Extraction

Process extraction of the plant is done by maceration. Beta-beta wood of 1000 g was extracted by maceration at room temperature with ethanol 96% for 72 hours.

Mode of feeding

The suspension extract a dose of 50 mg / kg BW, 100mg/kg body weight and 250 mg/kg BW and Sodium diclofenac dose of 2 mg/kg BW, Treatment once daily for 60 days as peroral with a maximum volume of 1 ml/20 g.

Arthritis index measurement edema volume used

Pletismometer on day 0, day 7, day 14, day 21 to day 56 after the induction of Control Freund's Adjuvant (CFA). In preparation for observed histopathology and index arthritis, inflammation, and joint damage.

RESULT AND DISCUSSION :

Has done research on beta-beta timber that research on antiinflammatory activity in mice Balb/c model of rheumatoid arthritis induced Complete Freund's Adjuvant (CFA) of 0.1%. In this research, it is known that there is a decrease in inflammation of 77.35% for all treatments.

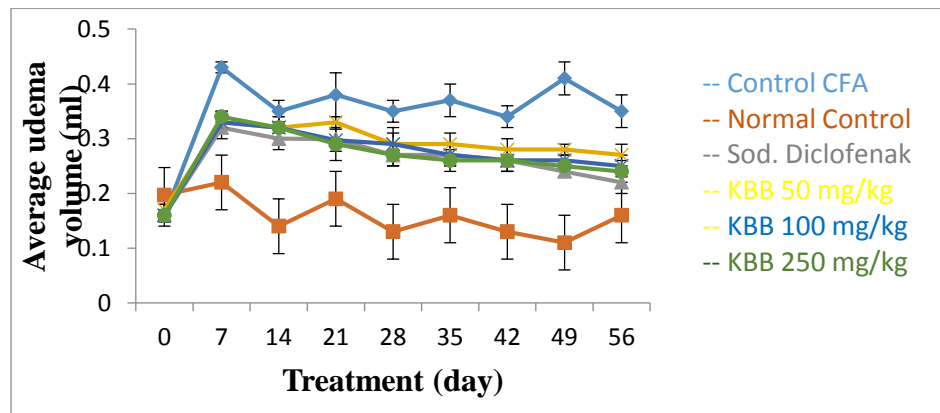


Figure 1 : Average edema volume vs treatment (Control CFA the group induced CFA 0,1% without treatment, normal controls without treatment, Control sodium diclofenac 2 mg/kg, ethanolic extract dose of 50, 100 and 250 mg/kg).

In this research were made on groups of animals that induced chronic inflammation or arthritis which was characterized by an increase of inflammatory cells and edema. In the negative control group (the CFA-induced animal group but not given drugs or extracts), pericondritis occurred and osteoclasts were found. Inflammatory cells formed in all CFA-induced groups were generally high until necrosis occurred. Observations on osteoblasts: osteoblasts formed increased in the extract treated group. This indicates an improvement so that bone formation can be stimulated. This suggests that beta-beta wood has anti-inflammatory effects.

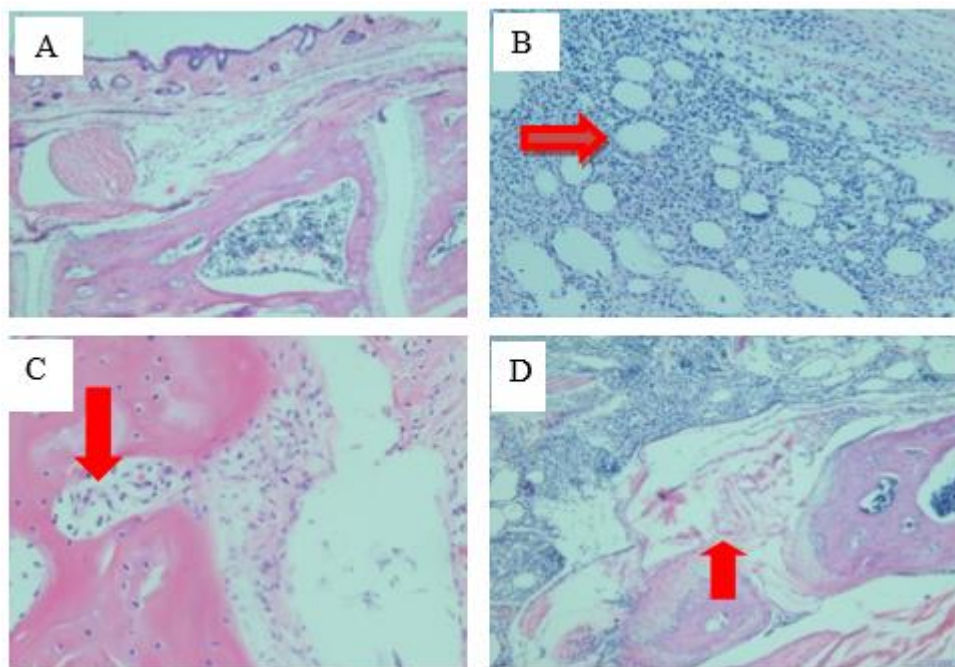


Figure 2. Histological :A. normal controls (HE); B. edema that occurs (HE); C. Perikondritis (HE); D. necrosis due to chronic inflammation

CONCLUSION

The result suggests that the Lunasia amara Extract ethanolic might be beneficial in the treatment of the chronic inflammatory disorder.

REFERENCE :

- [1] Hegnauer, R., 1969, Chemotaxonomi der Planzen, edisi V. Birkkhauser Verlag. Basel andStuttgart.
- [2] Ding, Z., Dai, Y., Hao, H., Pan, R., Yao, X., dan Wang, Z., 2008. Anti-Inflammatory Effects of Scopoletin and Underlying Mechanisms. *Pharm. Biol.*, 46(12), 854–860.
- [3] Sommerfelt, R. M., Feuerherm, A. J., Jones, K., dan Johansen, B., 2013. Cytosolic Phospholipase A2 Regulates TNF-Induced Production of Joint Destructive Effectors in Synoviocytes. *PLoS ONE*, 8(12).
- [4]Kim, H.-J., Jang, S. I., Kim, Y.-J., Chung, H.-T., Yun, Y.-G., Kang, T.-H., dkk., 2004. Scopoletin suppresses pro-inflammatory cytokines and PGE2 from LPS-stimulated cell line, RAW 264.7 cells. *Fitoterapia*, 75(3-4), 261–266.

[5] Iaroshenko, V. O., Erben, F., Mkrtchyan, S., Hakobyan, A., Vilches-Herrera, M., Dudkin, S., dkk., 2011. 4-Chloro-3-(trifluoroacetyl)-and 4-chloro-3-(methoxalyl)coumarins as novel and efficient building blocks for the regioselective synthesis of 3,4-fusedcoumarins. Tetrahedron, 67(41).

