Research Article

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Journal of Animal Research and Nutrition
ISSN 2572-5459

2021
Vol.6 No.3:83

DOI: 10.36648/2572-5459.6.3.83

Isolation Of Secondary Metabolite Di(2-Ethylhexyl) Phthalate From Mangrove Leaves Sonneratia Alba

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Abstracta

Mangroves Sonneratia Alba, is plants that grow in tidal areas with considerable environmental pressure. This condition causes mangrove plants to synthesize secondary metabolites that have certain bioactivity to protect themselves from destruction. The purpose of this study was to isolate secondary metabolites from the mangrove leaves of Sonneratia Alba.

Keywords: Sonneratia alba, Isolation, Characterization. Di(2-ethylhexyl) phthalate

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Received: February 16, 2021; **Accepted:** March 08, 2021; **Published:** March 25, 2021

Citation: Raj V (2021) Isolation Of Secondary Metabolite Di(2-Ethylhexyl) Phthalate From Mangrove Leaves Sonneratia Alba. J Anim Res Nutr Vol.6 No.3:83

Introduction

Mangroves, Sonneratia Alba, is plants that grow in tidal areas with considerable environmental pressures including salinity, sunlight radiation, high organic and mineral content, as well as abundant living creatures such as microorganism and insects(1). This condition causes mangrove plants to synthesize secondary metabolites that have certain bioactivity to protect themselves from destruction(2,3). This is demonstrated by the habits of coastal communities that use mangrove plant raw material extracts for natural medicinal purposes(4,5).Secondary metabolic components in mangrove plant extracts are phenolic, flavonoids, triterpenoids, tannins, alkaloids, saponins(6). The secondary metabolite component makes mangrove plants have bioactivity among others as antioxidants(1), anticancer, antidiabet(1,2), and antibacteria (3).

Sample Collection and DeterminationThe collection of samples of young mangrove leaves of Sonneratia Alba was conducted in January 2020 from the coast of Wori Village of North Sulawesi Indonesia. Sample identification was conducted at the Plant Taxonomy Laboratory of the Faculty of Biology, Faculty of Mathematics and Natural Sciences, University of Padjadjaran, Bandung, Indonesia. The study was conducted from January to November 2020 (6).

Sample Preparation, Extraction, Isolation and Characterization

Fresh samples that had been cleaned were dried in the sun, then it was blended into powder and extracted with methanol (analytical grade - Merck Millipore-Germany), liquid extract was tightened with rotary vacuum evaporator ((Buchi, Zurich, Switzerland)) to produce dry extract. In dry extracts, it was carried out continuous fractionation with water-n-hexan (analytical grade - Merck Millipore-Germany) and water-etilasetat (analytical grade - Merck Millipore-Germany). The result of fractionation was separated and tightened with a rotary vacuum evaporator.The next stage was insulation on the ethylsetate fraction using Column Chromatography (4)with silent phase silica gel 60F254, phase motion n-hexsana-etilasetat, silent phase silica gel 60F254-RP-18,methanol motion phase, and detection of component separation results using Thin Layer Chromatography with the same silent phase and motion phase until the isolate was obtained purely. The insulating procedure Pure isolates were categorized using ECA 500 MHz magnetic resonance (NMR) Nuclear spectroscopy with a magnetic field of 500 MHz (Akishima, Tokyo Japan) for 1H-NMR, FTIR-8400 Shimadzu analysis for IR spectrum analysis and UPLC TQD MS/MS H-Class Waters for MS spectrum analysis(6).

Result and Discussion

Separation and Purification

The process of insulating components was as follows: 30g ethylate fraction mixed with 30g silica gel, inserted into an evaporation flask, dissolved with solvent to taste so that the extract was perfectly mixed with silica gel, and then dried on a rotating vacuum evaporator at 40ºC. Ethylsetate extract was placed on chromatography column which had a diameter of 5.2 cm and height 40 cm, extract comparison with silica gel 1 : 20, 10% elusion was performed using eluent n-hexsana-etilasetat obtained 11 fractions.The next process was the isolation of components in sub fraction no. 3. The sample mass at this isolation

stage was 4.6 grams, macolumn height was 30 cm. Separation used the silent phase of Silica Gel 60F254 and the nhexane-etilasetat motion phase of 9,5:0,5 isocratically with a landfill on each sub fraction of 5 mL. In this separation process, 175 sub fractions were generated. Further detection of separation results using layer chromatography9,5:0,5 found fraction 160-175 which had a value The same RF after the ultraviolet light at wavelengths 254 and 365 nm and used a stainin ethanol (Figure 2) so that these fractions are combined for 33rd stage insulation used a sample mass of 0.33 g with isocratic column chromatography of the silent phase of Silica Gel 60Fwith a column diameter of46 sub fractions. Furthermore, after being analyzed with 2 types of Silica gel 60F254 and phase motion n60F254 RP-18, 100%fraction no 5 oil-shaped with a mass of 124 mg. Isolates have an Rf val Silica Gel TLC 60F254 the Silica gel 60F254–RP .Analysis ofhexaneextract comparison with silica gel 1 : 20, 10% elusion was performed using eluent etilasetat obtained 11 fractions.The next process was the isolation of components in sub fraction no. 3. The sample mass at this isolation stage was 4.6 grams, matrix mass was 46 grams, column diameter was 2.7 cm and column height was 30 cm. Separation used the silent phase of Silica Gel 60F254 and the netilasetat motion phase of 9,5:0,5 isocratically with a landfill on each sub fraction of 5 paration process, 175 sub fractions were generated. Further detection of separation results using layer chromatography (TLC) silica gel 60F254 with eluent n175 which had a value The same RF after the ultraviolet light at wavelengths 254 and 365 nm and used a stain-looking reagent namely H in ethanol (Figure 2) so that these fractions are combined for 3rd stage insulation.

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