ISOLASI METABOLIT SEKUNDER DARI EKSTRAK ETIL ASETAT LICHEN *Parmotrema tinctorum* (Despr Ex. Nyl.) Hale DAN UJI AKTIVITAS ANTIOKSIDAN SERTA PENGHAMBAT XANTIN OKSIDASE

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ABSTRAK

ISOLASI METABOLIT SEKUNDER DARI EKSTRAK ETIL ASETAT LICHEN *Parmotrema tinctorum* (Despr Ex. Nyl.) Hale SERTA UJI AKTIVITAS ANTIOKSIDAN DAN PENGHAMBAT ENZIM XANTIN OKSIDASE

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Penelitian terhadap kajian fitokimia dan pengujian aktivitas farmakologis dari lichen *Parmotrema tinctorum* yang dikoleksi disekitar Danau Bawah, Kabupaten Solok, Sumatera Barat telah dilakukan. Penelitian ini bertujuan untuk mengetahui kekuatan ekstrak sebagai antioksidan dan penghambat enzim XO serta mengetahui senyawa yang terkandung dari ekstrak etil asetat lichen *P.tinctorium.* Thallus kering lichen diekstraksi menggunakan etil asetat, kemudian dilakukan uji aktivitas terhadap antioksidan dan penghambat enzim XO. Didapatkan nilai IC_{50} sebesar 310,8358 µg/mL pada pengujian antioksidan dan 172,877 µg/mL dalam menghambat enzim XO. Ekstrak Etil asetat diisolasi dengan menggunakan metoda kromatografi kolom didapatkan lima senyawa (S1,S2, S3, S4 dan S5) yang di karakterisasi dengan metoda spektroskopi yaitu IR, UV, dan MS. Karakterisasi senyawa S1, S2, S3, S4, dan S5 dengan spektroskopi IR rata-rata didapatkan gugus O – H, C = C cincin aromatik, C – O fenolik, dan karboksilat, sedangkan pada S5 terdapat gugus metil. Identifikasi senyawa S1 dengan Uv-Vis didapatkan λ_{maks} 210,60 nm (0,6) dan dari LC-MS/MS diketahui senyawa S1 memiliki rumus molekul $C_{20}H_{18}O_{11}$ diprediksi sebagai derivat asam konsalazinik. Identifikasi senyawa S2 dengan spektroskopi Uv-Vis didapatkan λ_{maks} 213,20 nm (0,83) dan dari spektrum LC-MS/MS diketahui senyawa S2 memiliki rumus molekul $C_{24}H_{20}O_{10}$ diprediksi sebagai asam giroporat. Identifikasi senyawa S3 dengan spektroskopi Uv-Vis didapatkan λ_{maks} 212,00 nm (0,52) dan dari LC-MS/MS memiliki rumus molekul $C_{16}H_{14}O_7$ diprediksi sebagai asam lekanorat. Identifikasi senyawa S4 dengan spektroskopi Uv-Vis didapatkan λ_{maks} 215,80 nm (0,8) dan dari LC-MS/MS memiliki rumus molekul $C_8H_8O_4$ diprediksi sebagai asam orsellinat. Identifikasi senyawa S5 dengan spektroskopi Uv-Vis didapatkan λ_{maks} 216,20 nm (0,45) dan dari LC-MS/MS memiliki rumus molekul $C_{17}H_{16}O_7$ diprediksi sebagai asam evernat. Dari data LC-MS/MS diketahui senyawa S3, S4, dan S5 berada dalam jalur biosintesis senyawa S2 (asam giroporat).

Kata kunci: lichen, *Parmotrema tinctotum*, isolasi, senyawa, antioksidan, penghambat xantin oksidase

ABSTRACT

ISOLATION OF SECONDARY METABOLITES FROM ETHYL ACETATE EXTRACT OF LICHEN *Parmotrema tinctorum* (Despr Ex. Nyl.) Hale AND ANTIOXIDANT AND XANTHINE OXIDASE ENZYME INHIBITORS ACTIVITY ASSAYS

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Phytochemicals study and pharmacological activity tests on *Parmotrema tinctorum* lichen collected around Bawah Lake, Solok Regency, West Sumatra has been carried out. This study aimed to determine potential of the extract as antioxidant and XO enzyme inhibitor and to determine the compounds contained in the ethyl acetate extract of *P. tinctorium* lichen. The air dried thallus lichen was extracted using ethyl acetate, then tests on antioxidant activity and XO enzyme inhibiting activity was carried out. The IC_{50} value of antioxidant test was 310.8358 g/mL and XO inhibiting test was 172.877 g/mL. Ethyl acetate extract was isolated using column chromatography method, five compounds were obtained (S1,S2, S3, S4 and S5) which were characterized by spectroscopic methods, namely IR, UV, and MS. Characterization of S1, S2, S3, S4, and S5 with IR spectroscopy showed that the average group was O – H, C = C aromatic ring, C – O phenolic, and carboxylate, while at S5 there was a methyl group. Identification of S1 with UV-Vis spectroscopy obtained λ-max of 210.60 nm (0.6) and from LC-MS/MS it was known that S1 has the molecular formula $C_{20}H_{18}O_{11}$ predicted as consalazinic acid derivative. Identification of S2 by UV-Vis spectroscopy obtained λ-max of 213.20 nm (0.83) and from the LC-MS/MS spectrum it was known that S2 has the molecular formula $C_{24}H_{20}O_{10}$ predicted as gyroporic acid. Identification of S3 by UV-Vis spectroscopy obtained λ-max of 12.00 nm (0.52) and from LC-MS/MS the molecular formula $C_{16}H_{14}O_7$ was predicted as lecanoric acid. Identification of S4 by UV-Vis spectroscopy obtained λ-max of 215.80 nm (0.8) and from LC-MS/MS the molecular formula $C_8H_8O_4$ was predicted as orsellinic acid. Identification of S5 by UV-Vis spectroscopy obtained λ-max of 216.20 nm (0.45) and from LC-MS/MS the molecular formula $C_{17}H_{16}O_7$ was predicted as evernic acid. Based on the LC-MS/MS data, it could be concluded that S3, S4, and S5 were in the biosynthetic pathway of S2 (gyrophoric acid).

Keywords: lichen, *Parmotrema tinctotum*, isolation, compound, antioxidant, xanthine oxidase inhibitor