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Antimicrobial efficacy , antioxidant profile and nine alternative active constituents from petroleum ether and ethyl acetate extract of entada spiralis (Article)

[Keberkesanan antimikrob, profil antioksida dan sembilan komponen alternatif aktif dari ekstrak petroleum eter dan etil asetat dari pokok entada spiralis]

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Abstract

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This study aimed to investigate the antimicrobial activity of petroleum ether extracts and the identification of alternative antimicrobial and antioxidative constituents from petroleum ether extract and ethyl acetate extract of Entada spiralis stem. Antimicrobial activity was evaluated through disc diffusion method on five human superficial skin disease-caused microbes such as Staphylococcus aureus, Staphylococcus epidermidis, Microsporum gypseum, Trichophyton mentagrophytes, Trychophyton tonsurans and one plant pathogen namely Erwinia chrysanthemi. The presence of antioxidants was determined from thin layer chromatography (TLC) sprayed with 2,2-diphenyl-1-picrylhydrazyl. The isolation of antioxidant and antimicrobial compounds was performed through preparative TLC. The structure of isolated compounds was determined from gas chromatography mass spectrometry (GCMS) and liquid chromatography mass spectrometry (LCMS) equipped with Wiley Library matching individually. The petroleum ether extract successfully inhibited the growth of all bacteria and dermatophytes in a concentration dependent manner whereby S. epidermis was highly susceptible towards the extract with inhibition zone of 16.0 mm at concentration of 400 mg/mL as well as M. gypseum. Most of the components from petroleum ether extract and ethyl acetate extract developed on TLC were antioxidative which was seen as yellow spots against purple background after spraying with DPPH reagent. Four antioxidative constituents were successfully isolated and tentatively identified as 18,19-Secoyohimban-19-oic acid,16,17,20,21-tetradehydro-16-(hydroxymethyl)-methylester (1), Oxiraneoctanoic acid (2), 9,12-Octadecadienoic acid (3), and 11-O-p-Coumarylnepeticin (4). Five antimicrobial constituents were successfully isolated and tentatively identified as 4-benzyloxy-4-[2,2,-dimethyl-4-dioxolanyl]Butylaldehyde, (5), Isobutyl octadecyl benzoate ester (6), 3',8,8'-Trimethoxy-3-piperidyl-2,2'-binaphthalene-1,1',4,4'-tetrone (7), 1,2,4,5-tetramethylbenzene (8) and Hordatine B (9). Thus, E. spiralis is seen to be a promising source of bioactive ingredients which is very important as the basis of scientific information for the development of natural antimicrobial and antioxidant agents.

SciVal Topic Prominence

Topic: Entada Phaseoloides | Entadamide A | Vitamin B 12 Factor III

Prominence percentile: 39.958

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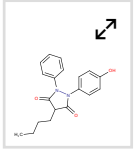
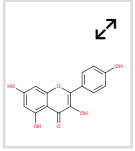
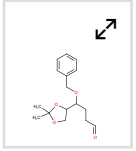
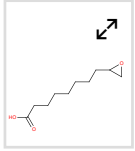
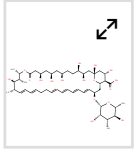
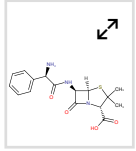

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