Essential Oil Constituents of *Alpinia scabra* and *Alpinia muroldochi*, Two Wild Highland Species from Peninsular Malaysia and Their Anti-Microbial Activity
(Komposisi Minyak Pati *Alpinia scabra* dan *Alpinia muroldochi*, Dua Spesies liar dari Semenanjung Malaysia dan Aktiviti Anti-Mikrobia)

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ABSTRACT

This study investigates the chemical constituents of essential oils and their anti-microbial activity of *Alpinia scabra* and *Alpinia muroldochi*, two wild Zingiberaceae species. The essential oils were obtained by hydrodistillation and the chemical components of the oils were determined by GC-FID (retention indices, RI) and GC/MS analysis. The major components of *Alpinia scabra* rhizome oil are γ-selinene (33.45%), α-selinene (3.64%) and α-terpinol (3.33%) while the major components of the leaves are β-pinene (63.37%), α-pinene (6.58%) and bornol (3.20%). The major compounds of *Alpinia muroldochi* rhizome oil are γ-selinene (15.51%), (E,E)-farnesyl acetate (6.56%), terpinen-4-ol (3.58%) and α-terpinol (3.04%). The monoterpenes, β-pinene (23.83%), sabinene (23.79%) and terpinene-4-ol (10.49%) were the major components in the leaf oil of *A. muroldochi*. The lowest MIC values were recorded for the rhizome essential oils of both *Alpinia* species against all Staphylococcus aureus strains (coated as MSSA, MSRA, Sa7, VITSA, VSRA) with MIC values ranging from 0.04 mg/mL to 2.50 mg/mL. The rhizome oils of both species also showed a broad spectrum of anti-microbial activity as compared to the leaf oils.

Keywords: Anti-microbial agent, hydrodistillation, langkuas, γ-selinene

ABSTRAK

Pameran ini mengeksploitasi kandungan kimiawan minyak padi dan aktiviti anti-mikroba *Alpinia scabra* dan*Alpinia muroldochi*, dua spesies liar daripada keluarga Zingiberaceae. Minyak padi yang diperoleh melalui penyulingan hidro dan komponen kimiawan kedua-dua minyak padi tersebut ditetapkan menggunakan analisis kromatografi gas (GC-FID) (indeks pengeluaran, RI) dan kromatografi gas-spektrometri J/I. Komponen utama dalam minyak padi *A. scabra* adalah γ-selinene (33.45%), α-selinene (3.64%) dan α-terpinol (3.33%) sembari komponen dalam minyak padi daun *A. scabra* adalah β-pinene (63.37%), α-pinene (6.58%) dan bornol (3.20%). Komponen kimiawan dari minyak padi rizom *A. muroldochi* adalah γ-selinene (15.51%), (E,E)-farnesyl acetate (6.56%) dan terpinen-4-ol (3.58%). Analisis menunjukkan bahawa komponen minyak padi rizom *A. muroldochi* juga mempunyai spektrum anti-mikroba yang luas dibandingkan dengan minyak padi daun.