

ABSTRACT

ANTIBACTERIAL ACTIVITY TEST OF ETHANOL FRACTION OF LEAVES AND BARK OF MANGROVE OIL (*Rhizophora apiculata*) AGAINST ACNE-CAUSING BACTERIA

By

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Background: The resistance of acne-caused bacteria to antibiotic treatment so that alternative acne treatment using ingredients from nature is needed. One plant that had the potential to be developed as an antibacterial was mangrove oil (*Rhizophora apiculata*).

Methods: Oil mangrove leaf and bark samples were macerated with 96% ethanol then fractionated with ethyl acetate and n-hexane, then evaporated. The fraction was diluted into five concentrations, namely 1.56%, 3.125%, 6.25%, 12.5%, and 25%. The positive control used 2% *clindamycin* and the negative control used aquades. Antibacterial activity tested by the well diffusion method is carried out by measurement of the inhibitory zone. Furthermore, MIC and MBC tests were carried out.

Results: The mangrove leaf fraction of oil had antibacterial activity against *Cutibacterium acnes* and *Staphylococcus epidermidis* bacteria, namely at a concentration of 12.5% which categorized as weakly antibacterial, with MIC at a concentration of 6.25% and MBC at concentrations of 12.5% and 6.25% respectively. Meanwhile, the stem bark ethanol fraction had antibacterial activity at a concentration of 25% which was categorized as strong antibacterial, with MIC at a concentration of 6.25% and MBC at a concentration of 12.5%. In *Staphylococcus aureus* bacteria, mangrove leaf oil fraction had antibacterial activity at a concentration of 25% which was categorized as medium antibacterial, with MIC at a concentration of 12.5% and MBC at a concentration of 25%. The ethanol fraction of mangrove bark oil had antibacterial activity at a concentration of 25% which was categorized as strong antibacterial, with MIC at a concentration of 6.25% and MBC at a concentration of 12.5%.

Conclusions: The ethanol fraction of the leaves and bark of *Rhizophora apiculata* has been shown to have bacteriostatic and bactericidal abilities against acne-caused bacteria *Cutibacterium acnes*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*.

Keywords: ethanol fraction, *Rhizophora apiculata*, bacteria that causes acne.

ABSTRAK

UJI AKTIVITAS ANTIBAKTERI FRAKSI ETANOL DAUN DAN KULIT BATANG BAKAU MINYAK (*Rhizophora apiculata*) TERHADAP BAKTERI PENYEBAB JERAWAT

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Latar Belakang: Resistensi bakteri penyebab jerawat terhadap perawatan antibiotik sehingga diperlukan alternatif pengobatan jerawat dengan menggunakan bahan-bahan dari alam. Salah satu tanaman yang berpotensi dikembangkan sebagai antibakteri adalah bakau minyak (*Rhizophora apiculata*).

Metode: Sampel daun dan kulit batang bakau minyak dimaserasi dengan etanol 96% kemudian difraksinasi dengan etil asetat dan n-heksana, kemudian dilakukan evaporasi. Fraksi diencerkan menjadi lima konsentrasi, yaitu 1,56%, 3,125%, 6,25%, 12,5%, dan 25%. Kontrol positif menggunakan *clindamycin* 2% dan kontrol negatif menggunakan aquades. Uji aktivitas antibakteri dengan metode difusi sumuran dilakukan dengan pengukuran zona hambat. Selanjutnya, dilakukan uji KHM dan KBM.

Hasil: Fraksi daun bakau minyak memiliki aktivitas antibakteri terhadap bakteri *Cutibacterium acnes* dan *Staphylococcus epidermidis*, yaitu pada konsentrasi 12,5% yang terkategori antibakteri lemah, dengan KHM pada konsentrasi 6,25% dan KBM masing-masing pada konsentrasi 12,5% dan 6,25%. Sedangkan, pada fraksi etanol kulit batang memiliki aktivitas antibakteri pada konsentrasi 25% yang terkategori antibakteri kuat, dengan KHM pada konsentrasi 6,25% dan KBM pada konsentrasi 12,5%. Pada bakteri *Staphylococcus aureus*, fraksi daun bakau minyak memiliki aktivitas antibakteri pada konsentrasi 25% yang terkategori antibakteri sedang, dengan KHM pada konsentrasi 12,5% dan KBM pada konsentrasi 25%. Sedangkan pada fraksi etanol kulit batang bakau minyak memiliki aktivitas antibakteri pada konsentrasi 25% yang terkategori antibakteri kuat, dengan KHM pada konsentrasi 6,25% dan KBM pada konsentrasi 12,5%.

Kesimpulan: Fraksi etanol daun dan kulit batang *Rhizophora apiculata* terbukti memiliki kemampuan bakteriostatik dan bakterisidal terhadap bakteri penyebab jerawat *Cutibacterium acnes*, *Staphylococcus aureus*, dan *Staphylococcus epidermidis*.

Kata Kunci: Fraksi etanol, *Rhizophora apiculata*, bakteri penyebab jerawat.