

## ABSTRACT

### ANTIBACTERIAL ACTIVITY TEST OF 96% ETHANOL AND N- HEXANE EXTRACTS FROM THE BARK OF LINDUR MANGROVE (*Bruguiera gymnorrhiza*) AGAINST *Staphylococcus aureus*

By

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**Background:** *Staphylococcus aureus* infection is the most common cause of pyoderma and skin infections. The treatment for *Staphylococcus aureus* infections typically involves the use of antibiotics. The incidence of antibiotic resistance continues to rise, therefore the need for alternative treatments using plant-based materials such as the bark of *Bruguiera gymnorrhiza* is necessary.

**Objective:** To determine the antibacterial effect of 96% ethanol and n-hexane of *Bruguiera gymnorrhiza* bark against *Staphylococcus aureus*.

**Methods:** The research design is a laboratory experimental study using the wall diffusion method on Mueller Hinton Agar. There are 7 groups, including a positive control with clindamycin, a negative control with distilled water, 96% ethanol and n-hexane extracts at concentrations of 25%, 50%, 70%, 90%, and 100%. Each group was tested in 4 repetitions. The data were obtained by measuring the diameter of the inhibition zone formed around the wells. The data were analyzed using One-Way ANOVA or the Kruskal-Wallis test.

**Results:** The results of this study showed that the average diameter of the inhibition zones for the 96% ethanol extract of *Bruguiera gymnorrhiza* bark were 25% (9,94 mm), 50% (10,74 mm), 70% (12,51 mm), 90% (13,15 mm), and 100% (14,64 mm). For the n-hexane extract of *Bruguiera gymnorrhiza* bark, the average inhibition zone diameters were 25% and 50% (0 mm), 70% (4,58 mm), 90% (9,35 mm), and 100% (9,91 mm).

**Conclusion:** There was an antibacterial effect of 96% ethanol and n-hexane extracts from the bark of *Bruguiera gymnorrhiza* against *Staphylococcus aureus*.

**Keywords:** *Bruguiera gymnorrhiza*, Antibacterial, *Staphylococcus aureus*

## ABSTRAK

### UJI AKTIVITAS ANTIBAKTERI EKSTRAK ETANOL 96% DAN N-HEKSANA KULIT BATANG BAKAU LINDUR (*Bruguiera gymnorrhiza*) TERHADAP *Staphylococcus aureus*

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**Latar Belakang:** Infeksi *Staphylococcus aureus* merupakan penyebab tersering pioderma dan infeksi kulit. Pengobatan untuk infeksi *Staphylococcus aureus* adalah pemberian antibiotik. Kasus resistansi antibiotik terus mengalami peningkatan, sehingga pengobatan alternatif infeksi bakteri dari bahan dasar tanaman seperti kulit batang *Bruguiera gymnorrhiza* sangat diperlukan.

**Tujuan:** Mengetahui efek antibakteri ekstrak etanol 96% dan n-heksana kulit batang *Bruguiera gymnorrhiza* terhadap *Staphylococcus aureus*.

**Metode:** Desain penelitian eksperimental laboratorik dengan metode sumuran pada media *Mueller Hinton Agar*. Terdapat 7 kelompok yaitu kontrol positif berupa klindamisin, kontrol negatif berupa akuades, ekstrak etanol 96% dan n-heksana dengan konsentrasi 25%, 50%, 70%, 90% dan 100%. Tiap kelompok dilakukan pengulangan sebanyak 4 kali. Data diperoleh dari pengukuran diameter zona hambat yang terbentuk di sekitar sumuran. Data diuji dengan *One Way ANOVA* atau *Kruskal-Wallis*.

**Hasil:** Dari hasil penelitian ini, diperoleh rata-rata diameter zona hambat pada ekstrak etanol 96% kulit batang *Bruguiera gymnorrhiza* sebesar 25% (9,94 mm), 50% (10,74mm), 70% (12,51 mm), 90% (13,15 mm), 100% (14,64 mm). Untuk ekstrak n-heksana kulit batang *Bruguiera gymnorrhiza*, didapat rata-rata diameter zona hambat sebesar 25% dan 50% (0 mm), 70% (4,58 mm), 90% (9,35 mm). 100% (9,91 mm).

**Kesimpulan:** Terdapat efek antibakteri ekstrak etanol 96% dan n-heksana kulit batang *Bruguiera gymnorrhiza* terhadap bakteri *Staphylococcus aureus*.

**Kata Kunci:** *Bruguiera gymnorrhiza*, Antibakteri, *Staphylococcus aureus*