

## ABSTRAK

### **KUALITAS DAN BIOAKTIVITAS MINYAK ATSIRI *Eucalyptus teretricornis* SEBAGAI ANTI RAYAP KAYU KERING (*Cryptotermes cynocephalus* Light.)**

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Minyak atsiri *Eucalyptus teretricornis* memiliki manfaat luas di bidang farmasi, industri pangan, serta pengembangan produk ramah lingkungan dalam bidang kehutanan, khususnya sebagai insektisida alami. Penelitian ini bertujuan mengevaluasi sifat fisiko-kimia dan bioaktivitas minyak atsiri *E. teretricornis* terhadap rayap kayu kering. Minyak atsiri diperoleh dari destilasi uap daun segar *E. teretricornis* selama 6 jam. Analisis fisiko-kimia menunjukkan minyak berwarna jernih kekuningan, beraroma khas ekaliptus, dengan bobot jenis 0,910; indeks bias 1,646; kelarutan jernih dalam alkohol 80%; dan putaran optik  $-0,3^\circ$ . Seluruh parameter memenuhi persyaratan SNI 3954:2024, menandakan kemurnian minyak. Analisis GC-MS mengidentifikasi 18 senyawa, dengan lima komponen utama yaitu  $\beta$ -pinene (28,16%), *eucalyptol* (18,57%), *D-limonene* (18,37%),  $\alpha$ -pinene (9,62%), dan  $\gamma$ -terpinene (5,66%). Uji bioaktivitas menggunakan metode kontak (M1) dan non kontak (M2) pada konsentrasi 0,5 g/mL (K1); 0,75 g/mL (K2) dan 1 g/mL (K3) selama 20 jam menunjukkan perbedaan efektivitas. Metode kontak menghasilkan mortalitas rayap 100% pada semua konsentrasi, sedangkan metode non kontak menghasilkan mortalitas 15,5% (K1), 46,7% (K2) dan 53,3% (K3). Penelitian ini menunjukkan bahwa minyak atsiri *E. teretricornis* berpotensi sebagai insektisida nabati ramah lingkungan dengan efektivitas tinggi, khususnya melalui aplikasi metode kontak.

Kata kunci: minyak *eucalyptus*, anti rayap, metode kontak, metode non kontak, konsentrasi

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## ABSTRACT

### QUALITY AND BIOACTIVITY OF *Eucalyptus teretricornis* ESSENTIAL OIL AS ANTI-TERMITE (*Cryptotermes cynocephalus* Light.)

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The essential oil of *Eucalyptus teretricornis* has wide-ranging benefits in the pharmaceutical industry, food industry, and the development of environmentally friendly forestry products, particularly as a natural insecticide. This study aimed to evaluate the physicochemical properties and bioactivity of *E. teretricornis* essential oil against drywood termites. The essential oil was obtained through steam distillation of fresh *E. teretricornis* leaves for 6 hours. Physicochemical analysis showed a clear yellowish color, a characteristic eucalyptus aroma, a specific gravity of 0.910, a refractive index of 1.646, clear solubility in 80% alcohol, and an optical rotation of  $-0.3^\circ$ . All parameters complied with SNI 3954:2024, indicating the purity of the oil. GC-MS analysis identified 18 compounds, with five major constituents  $\beta$ -pinene (28.16%), *eucalyptol* (18.57%), *D*-limonene (18.37%),  $\alpha$ -pinene (9.62%) and  $\gamma$ -terpinene (5.66%). Bioactivity tests using contact (M1) and non contact (M2) methods at concentrations of 0.5 g/mL (K1), 0.75 g/mL (K2), and 1 g/mL (K3) for 20 hours revealed differences in effectiveness. The contact method resulted in 100% termite mortality at all concentrations, while the non-contact method produced mortality rates of 15.5% (K1), 46.7% (K2), and 53.3% (K3). These findings demonstrate that *E. teretricornis* essential oil has strong potential as a plant-based, eco-friendly insecticide with high effectiveness, particularly when applied through the contact method.

Keyword: *eucalyptus* oil, termites, contact method, noncontact method, concentration

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