ABSTRAK

UJI KUALITAS DAN BIOAKTIVITAS MINYAK ATSIRI *Eucalyptus alba* SEBAGAI BIOINSEKTISIDA TERHADAP RAYAP KAYU KERING (*Cryptotermes cynocephalus* L.)

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Penelitian ini mengevaluasi rendemen, komposisi kimia, dan sifat fisiko-kimia minyak atsiri *E. alba* serta bioaktivitasnya terhadap rayap kayu kering (*C. cynocephalus*). Minyak diperoleh dari daun segar melalui destilasi kukus selama lima jam, dimurnikan, dianalisis menggunakan SNI 3954:2024 dan GC-MS, kemudian diuji aktivitas bioinsektisida pada tiga konsnetrasi (0,50; 0,75; 1,00 g/mL) dengan metode kontak dan non-kontak. Mortalitas rayap diamati hingga 30 jam untuk menilai efektivitas perlakuan. Hasil penelitian menunjukkan rendemen rata-rata minyak atsiri *E. alba* sebesar 0,1845%, dengan 14 senyawa teridentifikasi melalui GC-MS, didominasi oleh *α-pinene* (66,76%), *1,8-cineole* (8,33%), dan *α-phellandrene* (6,63%). Sebagian besar parameter fisiko-kimia memenuhi SNI 3954:2024. Uji bioinsektisida menunjukkan mortalitas tertinggi 69% pada konsentrasi 1,00 g/mL (30 jam), dengan metode kontak menghasilkan mortalitas lebih tinggi; *Two-Way ANNOVA* mengungkapkan pengaruh signifikan metode, konsentrasi, dan interaksinya ($p < 0,05$). Minyak atsiri *E. alba* berpotensi sebagai bioinsektisida nabati yang efektif dan ramah lingkungan sehingga perlu dikembangkan formulasi dan diuji pada skala lapangan.

Kata kunci: Minyak *E. alba*, fisiko-kimia, bioinsektisida, anti rayap.

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ABSTRACT

QUALITY AND BIOACTIVITY TEST OF *Eucalyptus alba* ESSENTIAL OIL AS A BIOINSECTICIDE AGAINST DRYWOOD TERMITES (*Cryptotermes cynocephalus* L.)

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This study evaluated the yield, chemical composition, and physicochemical properties of *E. alba* essential oil, as well as its bioactivity against drywood termites (*C. cynocephalus*). The oil was obtained from fresh leaves via steam distillation for five hours, purified, characterized according to SNI 3954:2024 and GC-MS, and tested as a bioinsecticide at three concentrations (0.50, 0.75, and 1.00 g/mL) using contact and non-contact methods. The results showed an average oil yield of 0.1845%, with 14 compounds identified, dominated by *α-pinene* (66.76%), *1,8-cineole* (8.33%), and *α-phellandrene* (6.63%), and most physicochemical parameters met SNI 3954:2024 standards. The highest termite mortality (69%) occurred at 1.00 g/mL after 30 hours, with the contact method yielding higher mortality; *Two-Way ANNOVA* indicated significant effects of application method, concentration, and their interaction ($p < 0.05$). *E. alba* essential oil shows potential as an effective and eco-friendly botanical bioinsecticide, warranting further formulation development and field-scale evaluation.

Keywords: *E. alba* oil, physico-chemical, bioinsecticide, anti-termite.

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