

**UJI SIFAT FISIKO-KIMIA DAN EFEKTIVITAS MINYAK *Eucalyptus brassiana*, *Eucalyptus pellita*, SERTA PERSILANGAN *Eucalyptus brassiana* DAN *Eucalyptus pellita* SEBAGAI ANTI RAYAP KAYU KERING  
(*Cryptotermes cynocephalus* Light.)**

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**INTISARI**

Minyak ekaliptus adalah salah satu komoditas hasil hutan non kayu yang potensial di Indonesia. Minyak ekaliptus memiliki kandungan kimia yang berpotensi sebagai anti rayap, desinfektan, dan insektisida. Oleh karena itu, perlu pengkayaan penelitian mengenai kualitas dan pengembangan minyak dari beberapa jenis ekaliptus. Penelitian ini bertujuan untuk mengetahui rendemen, komposisi kimia, sifat fisiko-kimia dan efektivitas sebagai anti rayap dari tiga jenis minyak ekaliptus.

Penelitian ini menggunakan daun segar dari tiga tanaman ekaliptus yaitu *E. brassiana*, *E. pellita*, serta persilangan *E. brassiana* dan *E. pellita*. Minyak diperoleh dari daun dengan metode pengukusan. Sifat fisiko kimia diuji sesuai dengan Standar Nasional Indonesia 06-3954-2006. Keadaan (warna dan bau) dianalisis secara deskriptif. Komposisi kimia dianalisis menggunakan GC-MS yang disajikan secara deskriptif. Pengujian efektivitas anti rayap kayu kering dari tiga jenis minyak ekaliptus menggunakan metode kontak dan non-kontak. Analisis varian digunakan untuk mengetahui pengaruh tiga jenis ekaliptus terhadap sifat fisiko-kimia dan efektivitas metode kontak dan non kontak. Uji lanjut HSD digunakan untuk menentukan nilai yang berbeda nyata pada analisis varian

Hasil penelitian menunjukkan bahwa rendemen kering dari tiga minyak ekaliptus berkisar antara 0,39% dan 1,13%. Hasil pengujian bobot jenis, putaran optik, indeks bias, kelarutan dalam alkohol, dan kadar sineol dari tiga minyak ekaliptus berturut-turut adalah 0,905 - 0,935; (-1,6°) - (-0,33°); 1,462 - 1,475; 1 : 10 (keruh); and 29,87% - 55,12%. Ketiga minyak ekaliptus menunjukkan warna jernih kekuningan dan berbau khas ekaliptus. Sebagian besar pengujian kualitas minyak ekaliptus sesuai dengan Standar Nasional Indonesia 06-3954-2006. Pengujian kualitas minyak ekaliptus dari tiga jenis minyak ekaliptus memberikan pengaruh perbedaan pada kadar sineol, bobot jenis, putaran optik, dan indeks bias. Minyak ekaliptus pada penelitian ini memiliki 16 - 24 macam senyawa kimia dengan 2 senyawa kimia utama yaitu *1,8-cineole* dan *α-pinene*. Hasil pengujian anti rayap didapatkan mortalitas dengan metode kontak dan non kontak berturut-turut 67,65% dan 100%. Oleh karena itu, metode pengujian anti rayap berpengaruh sangat nyata terhadap mortalitas.

**Kata kunci** : minyak ekaliptus, jenis, metode pengujian rayap, kualitas, komposisi kimia, mortalitas rayap

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**PHYSICOCHEMICAL PROPERTIES ANALYSIS AND EFFECTIVENESS  
OF *Eucalyptus brassiana*, *Eucalyptus pellita*, AND HYBRID OF *Eucalyptus  
brassiana* AND *Eucalyptus pellita* OILS AGAINST DRY WOOD TERMITE  
(*Cryptotermes cynocephalus* Light.)**

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**ABSTRACT**

Eucalyptus oil is one of the prospective non-timber forest products in Indonesia. Eucalyptus oil might content chemicals, which is potential as an anti-termite, disinfectants, and insecticides. Therefore, it requires research on the physicochemical properties and development of various types of eucalyptus oil. This study aimed to investigate yield, chemical composition, physicochemical properties and effectiveness against dry wood termites of three types eucalyptus oil.

Fresh leaves of three spesies eucalyptus, which were *E. brassiana*, *E. pellita*, and a hybrid of *E. brassiana* and *E. pellita* were used as materials for this study. The leaves were distilled by water steam distillation method. Physicochemical properties determined in accordance to the Indonesian National Standard Number 06-3954-2006. State of color and odor were descriptively analyzed. The chemical composition of the three eucalyptus oil was analyzed using GC-MS and presented descriptively. Termite mortality was calculated to evaluate effectiveness three eucalyptus oil against dry wood termites, based on contact and non-contact methods. Analysis variance with  $\alpha = 0,05$  were used to determine the effect of eucalyptus spesies on physicochemical properties and effectiveness of contact and non-contact methods. Tukey HSD was use to identify the different.

The results showed that the dry yield of three eucalyptus oil were in the range between 0,39% and 1,13%. The result of specific gravity, optical rotation, the refractive index, solubility in alcohols, and cineol levels of those three type of eucalyptus oil were 0,905 to 0,935; (-1,6°) - (-0,33°); 1,462 to 1,475; 1 : 10 (cloudy); and 29,87% - 55,12%, respectively. The three eucalyptus oil showed clear yellowish color and the distinctive smell of eucalyptus. Most of the quality parameters of eucalyptus oil met the Indonesian National Standard Number 06-3954-2006. The value of specific gravity, optical rotation, refractive index, and cineol content of eucalyptus oil were significantly different among the three type of eucalyptus oil. Eucalyptus oil in this study consist of 16-24 kinds of chemical compounds, and their two main chemical compounds were *1,8-cineole* and  *$\alpha$ -pinene*. The mortality against dry wood termite based on contact and non-contact method were 67,65% and 100%, respectively. Therefore, anti-termite testing method significantly influence on the mortality.

**Keywords** : Eucalyptus oil, termite, types, termite testing methods, quality, chemical compounds, termite mortality

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