

INTISARI

KUALITAS DAN INSEKTISIDA MINYAK ATSIRI KAYU PUTIH (*Melaleuca cajuputi* Maton & Sm. ex R. Powell) TERHADAP RAYAP KAYU KERING (*Cryptotermes cynocephalus* Light.)

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Minyak atsiri kayu putih (*M. cajuputi*) merupakan komoditas hasil hutan non-kayu yang mengandung senyawa bioaktif dengan aktivitas insektisida alami. Penelitian ini bertujuan untuk mengetahui kualitas minyak kayu putih berdasarkan rendemen, komposisi kimia, sifat fisiko-kimia, serta efektivitasnya sebagai anti rayap terhadap rayap kayu kering. Penelitian ini dilakukan dengan beberapa tahapan, yaitu: (1) minyak kayu putih diperoleh dari penyulingan dengan metode pengukusan; (2) pengujian karakterisasi komposisi dengan menggunakan *Gas Chromatography-Mass Spectrometry* (GC-MS); (3) pengujian sifat fisiko-kimia menggunakan standar mutu SNI 3954:2024; (4) pengujian efektivitas anti rayap dengan metode kontak dan non-kontak pada konsentrasi 0,50 g/mL, 0,75 g/mL, dan 1 g/mL. Analisis varian (ANOVA) digunakan untuk mengetahui pengaruh metode, konsentrasi dan interaksinya. Hasil penelitian menunjukkan bahwa: (1) rendemen minyak kayu putih diperoleh sebesar 0,62%; (2) minyak kayu putih pada penelitian ini mengandung 15 senyawa kimia dengan senyawa kimia utama terdiri atas 1,8-*Cineole* (59,00%), α -*Terpineol* (10,21%), dan *d-Limonene* (6,18%); (3) kualitas minyak kayu putih secara keseluruhan telah memenuhi standar SNI 3954:2024 dengan karakteristik fisiko-kimia meliputi warna jernih kekuningan, beraroma khas kayu putih, berat jenis 0,915, putaran optik $-1,3^\circ$, indeks bias 1,462, serta kelarutan dalam alkohol 80% 1:1 yang jernih; (4) uji anti-rayap menunjukkan bahwa pada metode kontak, mortalitas rayap pada konsentrasi 0,50 g/mL, 0,75 g/mL, dan 1 g/mL masing-masing sebesar 29,33%, 41,8%, dan 54,8%, serta metode non-kontak, mortalitas rayap berturut-turut adalah 21,37%, 29,33%, dan 35,05%. Analisis varian (ANOVA) menunjukkan pengaruh sangat nyata antara metode aplikasi dan konsentrasi minyak atsiri kayu putih terhadap mortalitas rayap kayu kering, dengan mortalitas yang meningkat seiring peningkatan konsentrasi minyak atsiri. Dengan demikian, penggunaan metode maupun konsentrasi pada pengujian anti rayap berpengaruh sangat nyata dalam menentukan tingkat mortalitasnya.

Kata Kunci: *Melaleuca cajuputi*, kualitas, komposisi kimia, anti rayap, mortalitas, *Cryptotermes cynocephalus*

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ABSTRACT

QUALITY AND INSECTICIDAL ACTIVITY OF CAJUPUT ESSENTIAL OIL (*Melaleuca cajuputi* Maton & Sm. ex R. Powell) AGAINST DRYWOOD TERMITES (*Cryptotermes cinocephalus* Light.)

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Cajuput essential oil (*M. cajuputi*) is a non-timber forest product that contains bioactive compounds with natural insecticidal properties. This study aimed to determine the quality of cajuput oil based on yield, chemical composition, physicochemical properties, and effectiveness against drywood termites. The study consisted of several stages: (1) cajuput leaves were distilled using the steam distillation method; (2) chemical composition was characterized using *Gas Chromatography-Mass Spectrometry* (GC-MS); (3) physicochemical properties were evaluated according to the SNI 3954:2024 quality standard; (4) anti-termite effectiveness was tested using contact and non-contact methods at concentrations of 0,50 g/mL, 0,75 g/mL, and 1 g/mL. Analysis of variance (ANOVA) was used to determine the effects of application method, concentration, and their interaction. The results showed that (1) the yield of cajuput oil was 0,621%; (2) the cajuput oil in this study contained 15 chemical compounds with the main components being 1,8-*Cineole* (59,00%), α -*Terpineol* (10,21%), and d-*Limonene* (6,18%); (3) the quality of cajuput oil met the SNI 3954:2024 standart with physicochemical characteristics including a clear yellowish color, the distinctive cajuput aroma, specific gravity 0,915, an optical rotation -1,3°, a refractive index of 1,462, an solubility in 80% alcohol at a ratio is 1:1 clear; and (4) anti-termite tests showed that using the contact method, termite mortality rates at concentrations of 0,50 g/mL, 0,75 g/mL, and 1 g/mL were 29,33%, 41,8%, and 54,8%, respectively, while in the non-contact method, the mortality rates were 21,4%, 29,6%, and 35,2%, respectively. Analysis of variance (ANOVA) indicated that both the application method and the concentration of cajuput essential oil had a highly significant effect on drywood termites mortality, with mortality increasing as the concentration of essential oil increased. Therefore, both of the application methods and concentrations used in the anti-termite test significantly influenced drywood termite mortality.

Keywords: *Melaleuca cajuputi*, quality, chemical composition, antitermite, mortality, *Cryptotermes cinocephalus*

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