ANTIDEPRESSANT POTENTIAL OF MASOI *(Cryptocarya massoia)* ESSENTIAL OIL AROMATHERAPY

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Bogor, Oktober 2025

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RINGKASAN

LIA ROSMA OVIANTI. Potensi Antidepresan Aromaterapi Minyak Atsiri *Masoi* (*Cryptocarya massoia*). Dibimbing oleh BERRY JULIANDI, KANTHI ARUM WIDAYATI, dan IRMANIDA BATUBARA.

Gangguan depresi merupakan masalah kesehatan mental global yang terus meningkat, sementara terapi konvensional seperti fluoksetin sering menimbulkan efek samping. Aromaterapi berbasis minyak esensial dipandang sebagai alternatif alami yang menjanjikan, termasuk minyak esensial *Cryptocarya massoia* (MEO) asal Papua. Minyak ini mengandung senyawa bioaktif utama massoialactone yang diketahui memiliki aktivitas biologis, termasuk potensi memengaruhi sistem saraf. Namun, bukti ilmiah mengenai efek antidepresan MEO masih terbatas.

Penelitian ini bertujuan menilai potensi antidepresan dari inhalasi MEO pada model mencit yang diinduksi kortikosteron. Efek diuji melalui kombinasi pendekatan perilaku, hormonal, dan histopatologi otak. Hipotesis penelitian ini adalah MEO mampu menurunkan waktu imobilitas, menekan kadar kortikosteron, meningkatkan serotonin, serta menurunkan apoptosis di hipokampus dan korteks prefrontal. Dengan demikian, penelitian ini diharapkan memberi bukti awal pemanfaatan sumber daya alam Indonesia untuk pengembangan terapi depresi.

Sebanyak 40 ekor mencit DDY jantan dibagi ke dalam lima kelompok perlakuan yang terdiri dari kelompok normal, kontrol negatif, kontrol positif (fluoksetin), uji A (kortikosteron + MEO), dan uji B (NaCl + MEO). Perlakuan diberikan selama 21 hari dengan inhalasi MEO 5% selama 1 jam per hari. Evaluasi dilakukan melalui Uji Suspensi Ekor dan Uji Renang Paksa, pengukuran kadar kortikosteron dan serotonin dengan ELISA, serta analisis histopatologi otak menggunakan pewarnaan H&E. Komponen kandungan MEO dianalisis dengan *gas chromatography–mass spectrometry* (GC–MS).

Hasil penelitian menunjukkan bahwa massoialactone merupakan komponen dominan MEO. Inhalasi MEO tidak memberikan perbedaan signifikan pada waktu imobilitas, kadar kortikosteron, maupun serotonin dibanding kontrol negatif. Namun, terdapat tren ke arah penurunan imobilitas dan kortikosteron serta peningkatan serotonin. Analisis histopatologi memperlihatkan tidak ada perubahan signifikan pada apoptosis hipokampus dan korteks prefrontal, tetapi jumlah sel di bulbus olfaktorius kelompok MEO lebih rendah secara signifikan dibanding normal dan kontrol positif. Temuan ini menandakan adanya potensi sitotoksisitas lokal terhadap jaringan olfaktori akibat paparan MEO.

Penelitian ini memberikan bukti awal bahwa MEO memiliki komponen aktif yang berpotensi memengaruhi jalur biologis terkait depresi, meskipun belum terbukti signifikan secara statistik. Temuan penting berupa indikasi dampak pada bulbus olfaktorius menekankan perlunya perhatian terhadap aspek keamanan. Oleh karena itu, studi lanjutan dengan sampel lebih besar, variasi dosis, dan evaluasi toksikologi mendalam diperlukan sebelum MEO dapat dikembangkan sebagai aromaterapi antidepresan.

Kata kunci: depresi, inhalasi, kearifan lokal, massoilactone

SUMMARY

LIA ROSMA OVIANTI. Antidepressant Potential of *Masoi* (*Cryptocarya massoia*) Essential Oil Aromatherapy. Supervised by BERRY JULIANDI, KANTHI ARUM WIDAYATI, and IRMANIDA BATUBARA.

Depression is a global mental health problem with a steadily increasing prevalence, while conventional therapies such as fluoxetine are often associated with side effects. Essential oil–based aromatherapy has been regarded as a promising natural alternative, including *Cryptocarya massoia* essential oil (MEO) originating from Papua. This oil contains massoialactone as its major bioactive compound, which is known to exhibit biological activities, including potential effects on the nervous system. However, scientific evidence regarding the antidepressant properties of MEO remains limited.

This study aimed to evaluate the antidepressant potential of MEO inhalation in a corticosterone-induced mouse model. The effects were examined through a combination of behavioral, hormonal, and brain histopathological approaches. The working hypothesis was that MEO would reduce immobility time, suppress corticosterone levels, increase serotonin, and decrease apoptosis in the hippocampus and prefrontal cortex. Accordingly, this study was expected to provide preliminary evidence for the utilization of Indonesia's natural resources in the development of antidepressant therapies.

A total of 40 male DDY mice were divided into five groups consisted of normal, negative control, positive control (fluoxetine), test A (corticosterone + MEO), and test B (NaCl + MEO). Treatments were administered for 21 consecutive days, with MEO inhalation at 5% concentration for one hour per day. Evaluations were carried out using the Tail Suspension Test and Forced Swim Test, measurement of corticosterone and serotonin levels by ELISA, and brain histopathological analysis with H&E staining. The chemical composition of MEO was determined using gas chromatography–mass spectrometry (GC–MS).

The results indicated that massoialactone was the dominant component of MEO. Inhalation of MEO did not produce statistically significant differences in immobility time, corticosterone, or serotonin levels compared with the negative control. However, biological trends were observed toward reduced immobility and corticosterone and increased serotonin. Histopathological analysis revealed no significant changes in apoptosis within the hippocampus or prefrontal cortex, but the number of cells in the olfactory bulb of the MEO groups was significantly lower than that of the normal and positive control groups. This finding suggests potential local cytotoxic effects on olfactory tissue caused by MEO exposure.

In conclusion, this study provides preliminary evidence that MEO contains active components with the potential to influence biological pathways related to depression, although the effects were not statistically significant. The important novel finding of olfactory bulb involvement highlights the need for careful consideration of safety aspects. Therefore, further studies with larger sample sizes, dose variations, and comprehensive toxicological evaluations are required before MEO can be developed as a candidate for antidepressant aromatherapy.

Keywords: depression, inhalation, local wisdom, massoilactone

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Thesis
I intend to acquire a Master's Degree in Animal Biosciences Study Program

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FOREWORDS

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Finally, I sincerely hope this scientific work may contribute meaningfully to the advancement of science.

Bogor, Oktober 2025

Lia Rosma Ovianti

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