ABSTRAK

FORMULASI DAN UJI AKTIVITAS ANTIBAKTERI SEDIAAN DEODORAN *ROLL-ON* BERBASIS MINYAK ATSIRI TERHADAP *STAPHYLOCOCCUS EPIDERMIDIS*

Bau badan merupakan masalah umum yang timbul akibat aktivitas keringat berlebih dan pertumbuhan bakteri kulit, salah satunya *Staphylococcus epidermidis*. Deodoran konvensional biasanya menggunakan garam aluminium sintetis seperti aluminium klorohidrat yang efektif menekan produksi keringat, tetapi berpotensi menimbulkan iritasi kulit. Sebagai alternatif, penelitian ini memanfaatkan tawas (aluminium sulfat terhidrasi) yang dikenal lebih aman, dipadukan dengan minyak atsiri bunga sebagai agen antibakteri dan pewangi alami. Penelitian ini bertujuan untuk mengidentifikasi senyawa utama minyak atsiri lavender *(Lavandula angustifolia)*, ylang-ylang *(Cananga odorata)*, dan frangipani *(Plumeria rubra)*, serta mengevaluasi karakteristik fisikokimia, stabilitas, dan aktivitas antibakteri sediaan deodoran *roll-on* sesuai SNI 16-4951-1988. Hasil analisis kromatografi gas menunjukkan bahwa minyak atsiri lavender didominasi linalool (46,92%) dan linalil asetat (39,38%); minyak atsiri ylang-ylang mengandung trans-kariofilena (30,03%), E,E-α farnesena (10,63%), dan benzil benzoat (4,89%); sedangkan frangipani mengandung dihidro metil jasmonat (19,05%) dan linalool (4,17%). Evaluasi fisikokimia memperlihatkan bahwa ketiga formula stabil secara organoleptik dan homogen dengan pH 6,45–6,89, viskositas 1,636–2,233 cPs, daya sebar 6,3–7,8 cm, daya lekat 8,65–13,55 detik, serta waktu serap 12,33–28,03 detik. Setelah enam siklus *cycling test*, seluruh formula tetap stabil tanpa perubahan warna, bau, maupun homogenitas. Formula frangipani (F3) menunjukkan kestabilan pH dan waktu serap tercepat, sedangkan uji antibakteri memperlihatkan bahwa hanya formula ylang-ylang (F2) yang aktif *terhadap S. epidermidis* dengan zona hambat 0,49 mm. Hasil penelitian ini mengindikasikan bahwa ylang-ylang memiliki potensi terbaik sebagai antibakteri, sedangkan frangipani unggul dalam aspek stabilitas fisikokimia dan kenyamanan penggunaan.

Kata-kata kunci: antibakteri; deodoran *roll-on*; frangipani; lavender; ylang-ylang.

ABSTRACT

FORMULATION AND ANTIBACTERIAL ACTIVITY OF AN ESSENTIAL OIL BASED ROLL-ON DEODORAN AGAINST STAPHYLOCOCCUS EPIDERMIDIS

Body odor is a common problem caused by excessive sweating and the growth of skin bacteria, particularly Staphylococcus epidermidis. Conventional deodorans generally use synthetic aluminum salts such as aluminum chlorohydrate, which are effective in reducing perspiration but may cause skin irritation. As an alternative, this study utilized alum (hydrated aluminum sulfate), known to be safer, combined with floral essential oils as natural antibacterial agents and fragrances. This research aimed to identify the major compounds of lavender (Lavandula angustifolia), ylang-ylang (Cananga odorata), and frangipani (Plumeria rubra) essential oils, as well as to evaluate the physicochemical characteristics, stability, and antibacterial activity of roll-on deodoran preparations in accordance with SNI 16-4951-1988 standards. Gas Chromatography analysis revealed that lavender essential oil was dominated by linalool (46.92%) and linalyl acetate (39.38%); ylang-ylang essential oil contained trans-caryophyllene (30.03%), E,E-α farnesene (10.63%), and benzyl benzoate (4.89%); while frangipani essential oil contained dihydro methyl jasmonate (19.05%) and linalool (4.17%). Physicochemical evaluation showed that all three formulations were organoleptically stable and homogeneous, with pH ranging from 6.45 to 6.89, viscosity 1,636–2,233 cPs, spreadability 6.3–7.8 cm, adhesion 8.65–13.55 seconds, and absorption time 12.33–28.03 seconds. After six cycles of the cycling test, all formulations remained stable without changes in color, odor, or homogeneity. The frangipani formulation (F3) exhibited the most stable pH and the fastest absorption time, while antibacterial testing demonstrated that only the ylang-ylang formulation (F2) was active against S. epidermidis with an inhibition zone of 0.49 mm. These findings indicate that ylang-ylang essential oil has the best antibacterial potential, whereas frangipani excels in physicochemical stability and user comfort.

Keywords: *antibacterial; frangipani; lavender; roll-on deodoran; ylang-ylang.*