

**FORMULASI SABUN CAIR KOMBINASI ECO-ENZYME KULIT NANAS
MADU (*Ananas comosus* L.merr) DAN LARUTAN BUAH LERAK
(*Sapindus Rarak* DC)**

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ABSTRAK

Penggunaan sabun cair berbahan kimia dapat berdampak negatif pada kesehatan dan lingkungan. Penelitian ini bertujuan mengembangkan sabun cair alami berbasis eco-enzyme dari kulit nanas madu (*Ananas comosus* L. merr) yang difermentasi 3 bulan, dikombinasikan dengan buah lerak (*Sapindus rarak* DC) sebagai surfaktan alami. Eco-enzyme mengandung asam asetat, asam laktat, flavonoid, dan alkaloid, sedangkan buah lerak kaya saponin yang menghasilkan busa dan bersifat antibakteri. Penelitian eksperimental kuantitatif ini memformulasikan empat sabun cair (F0–F3) dengan variasi konsentrasi eco-enzyme (0%, 10%, 20%, 30%) dan 30% biang lerak. Evaluasi meliputi uji organoleptik, pH, bobot jenis, viskositas, tinggi busa, serta uji antibakteri terhadap *Staphylococcus aureus* menggunakan metode difusi cakram. Hasil menunjukkan sabun berbentuk kental, berwarna coklat, dan beraroma alami. Formula F1–F3 memiliki pH ideal (4,4–5,4), sedangkan F0 bersifat basa (pH 11,5). Formula F3 menghasilkan zona hambat terbesar, menandakan aktivitas antibakteri paling efektif. Analisis ANOVA menunjukkan perbedaan signifikan antar formula. Disimpulkan bahwa kombinasi eco-enzyme kulit nanas dan buah lerak menghasilkan sabun cair yang ramah lingkungan, aman, dan efektif sebagai antibakteri alami.

Kata kunci: sabun cair alami, eco-enzyme, kulit nanas, buah lerak, antibakteri.

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ABSTRACT

The use of chemical-based liquid soap can have negative impacts on health and the environment. This study aims to develop a natural liquid soap based on eco-enzymes from fermented honey pineapple peel (*Ananas comosus* L. merr) for three months, combined with soapberry (*Sapindus rarak* DC) as a natural surfactant. Eco-enzymes contain acetic acid, lactic acid, flavonoids, and alkaloids, while soapnuts are rich in saponins, which produce foam and have antibacterial properties. This quantitative experimental study formulated four liquid soaps (F0–F3) with varying concentrations of eco-enzyme (0%, 10%, 20%, 30%) and 30% lerak extract. Evaluations included organoleptic tests, pH, specific gravity, viscosity, foam height, and antibacterial tests against *Staphylococcus aureus* using the disk diffusion method. The results showed that the soap was thick, brown in color, and had a natural aroma. Formulas F1–F3 had an ideal pH (4.4–5.4), while F0 was alkaline (pH 11.5). Formula F3 produced the largest inhibition zone, indicating the most effective antibacterial activity. ANOVA analysis revealed significant differences between the formulas. It was concluded that the combination of pineapple peel and lerak fruit eco-enzymes produces an environmentally friendly, safe, and effective natural antibacterial liquid soap.

Keywords: natural liquid soap, eco-enzyme, pineapple peel, lerak fruit, antibacterial.