

RINGKASAN

Pemanfaatan buah *Bruguiera gymnorhiza* di masyarakat masih belum optimal dan umumnya hanya diolah menjadi produk sederhana, sehingga diperlukan diversifikasi produk yang memiliki nilai tambah serta berpotensi dikembangkan sebagai produk ramah lingkungan. Salah satu bentuk diversifikasi yang dapat dilakukan yaitu pengolahan buah *B. gymnorhiza* menjadi *eco-enzyme* dan pemanfaatannya sebagai sabun cair. Buah *B. gymnorhiza* diketahui mengandung berbagai senyawa bioaktif yang berpotensi sebagai antioksidan.

Penelitian ini bertujuan untuk mengetahui aktivitas antioksidan *eco-enzyme* buah *B. gymnorhiza*, karakteristik fisikokimia *eco-enzyme* (pH dan suhu), serta pengaruh penambahan *eco-enzyme* terhadap mutu sabun cair fungsional yang meliputi pH, viskositas, dan daya busa. Penelitian dilakukan menggunakan metode Rancangan Acak Lengkap (RAL) dimulai dari tahapan pembuatan *eco-enzyme*, pengujian aktivitas antioksidan menggunakan metode DPPH, formulasi sabun cair dengan variasi konsentrasi *eco-enzyme*, serta pengujian pH, viskositas, dan daya busa.

Hasil penelitian menunjukkan bahwa *eco-enzyme* buah *B. gymnorhiza* memiliki aktivitas antioksidan lebih tinggi dibandingkan ekstrak murni. Selama fermentasi tiga bulan, pH *eco-enzyme* mengalami penurunan sedangkan suhu mengalami peningkatan. Hasil analisis data menunjukkan bahwa penambahan *eco-enzyme* pada sabun cair berpengaruh nyata terhadap nilai pH dan viskositas, namun tidak memberikan pengaruh signifikan terhadap daya busa. Dengan demikian, perlakuan P1 dengan penambahan 40 mL *eco-enzyme* buah *B. gymnorhiza* merupakan formulasi yang paling optimal. Perlakuan ini menghasilkan nilai pH 4,2, viskositas 3967 cPs, dan daya busa 84,17%, yang seluruhnya memenuhi persyaratan mutu sabun cair berdasarkan SNI, sehingga memberikan karakteristik produk terbaik dibandingkan perlakuan lainnya.

Kata kunci: antioksidan, *Bruguiera gymnorhiza*, *eco-enzyme*, sabun cair

SUMMARY

The utilization of Bruguiera gymnorhiza fruit in the community is still not optimal and is generally only processed into simple products. Therefore, product diversification with added value and the potential to be developed as environmentally friendly products is necessary. One form of diversification that can be done is processing B. gymnorhiza fruit into eco-enzymes and using them as liquid soap. B. gymnorhiza fruit is known to contain various bioactive compounds with potential antioxidant properties.

This study aimed to determine the antioxidant activity of B. gymnorhiza fruit eco-enzymes, their physicochemical characteristics (pH and temperature), and the effect of eco-enzyme addition on the quality of functional liquid soap, including pH, viscosity, and foaming power. The study was conducted using a Completely Randomized Design (CRD) method, starting with the eco-enzyme production stage, antioxidant activity testing using the DPPH method, liquid soap formulations with varying eco-enzyme concentrations, and pH, viscosity, and foaming power testing.

The results showed that B. gymnorhiza fruit eco-enzymes had higher antioxidant activity than the pure extract. During the three-month fermentation, the pH of the eco-enzyme decreased while the temperature increased. The results of data analysis showed that the addition of eco-enzyme to liquid soap significantly affected the pH and viscosity values, but did not significantly affect the foaming power. Thus, treatment P1 with the addition of 40 mL of B. gymnorhiza fruit eco-enzyme was the most optimal formulation. This treatment produced a pH value of 4.2, a viscosity of 3967 cP, and a foaming power of 84.17%, all of which met the quality requirements of liquid soap based on SNI, thus providing the best product characteristics compared to other treatments.

Keywords: antioxidant, *Bruguiera gymnorhiza*, eco-enzyme, liquid soap