

ABSTRAK

PEMBUATAN *DETERGENT* CAIR DARI EKSTRAK DAUN BELIMBING WULUH (*Averrhoa bilimbi*) (Variasi Komposisi Ekstrak Daun Belimbing Wuluh dan Komposisi Surfaktan *Decyl Glucoside* : *Lauryl Glucoside*)

(Loveninda Cahaya Soni, 2025, 37 Halaman, 5 Tabel, 10 Gambar, 4 Lampiran)

Penggunaan *detergent* berbahan kimia sintetis secara terus-menerus dapat menimbulkan dampak negatif bagi kesehatan kulit dan lingkungan. Oleh karena itu, diperlukan inovasi *detergent* cair berbahan dasar alami yang lebih aman dan ramah lingkungan. Penelitian ini bertujuan untuk memformulasi *detergent* cair menggunakan ekstrak daun belimbing wuluh (*Averrhoa bilimbi*) sebagai sumber surfaktan alami. Tujuan utama dari penelitian ini adalah untuk mengetahui kadar senyawa saponin dalam ekstrak daun belimbing wuluh, menentukan kombinasi formulasi yang optimal, serta mengevaluasi karakteristik fisikokimia produk *detergent* berdasarkan standar SNI 4075-1:2017. Ekstrak daun belimbing wuluh diperoleh melalui metode maserasi menggunakan etanol 96%. *Detergent* cair yang dihasilkan diuji meliputi pH, total kadar surfaktan, bahan tidak larut dalam air, specific gravity, stabilitas busa, serta uji organoleptik. Penelitian ini menggunakan variasi berat ekstrak (5 ml, 10 ml, 15 ml, 20 ml, dan 25 ml) dan variasi rasio surfaktan *Decyl Glucoside* : *Lauryl Glucoside* (1:2, dan 2:1). Hasil penelitian menunjukkan bahwa ekstrak daun belimbing wuluh mengandung saponin sebesar 6,754% dan memiliki stabilitas busa sebesar 75%, yang membuktikan potensinya sebagai surfaktan alami. Formulasi terbaik diperoleh pada kombinasi ekstrak 25 ml dan rasio surfaktan 2:1, dengan hasil pH sebesar 8,31, kadar surfaktan 21,596%, bahan tidak larut 0,065%, *specific gravity* 1,0078, serta stabilitas busa 94,94%. Seluruh parameter tersebut memenuhi standar mutu SNI 4075-1:2017. Dengan demikian, *detergent* cair berbahan dasar ekstrak daun belimbing wuluh berpotensi dikembangkan sebagai alternatif pembersih yang lebih aman dan ramah lingkungan.

Kata kunci: belimbing wuluh, *detergent* cair, saponin, surfaktan alami

ABSTRACT

FORMULATION OF LIQUID DETERGENT FROM STARFRUIT LEAF EXTRACT (*Averrhoa bilimbi*) (Variation of Starfruit Leaf Extract Composition and Decyl Glucoside : Lauryl Glucoside Surfactant Ratio)

(Loveninda Cahaya Soni, 2025, 37 Pages, 5 Tables, 10 Pictures, 4 Attachments)

*The continuous use of synthetic chemical-based detergents can have negative effects on skin health and the environment. Therefore, innovation in liquid detergents using natural ingredients that are safer and more environmentally friendly is needed. This study aims to formulate a liquid detergent using starfruit leaf extract (*Averrhoa bilimbi*) as a natural surfactant source. The main objectives of this research are to determine the saponin content in the leaf extract, to identify the optimal formulation combination, and to evaluate the physicochemical characteristics of the liquid detergent product based on the Indonesian National Standard (SNI) 4075-1:2017. The extract was obtained using the maceration method with 96% ethanol. The formulated liquid detergent was tested for pH, total surfactant content, water-insoluble matter, specific gravity, foam stability, and organoleptic properties. This study used variations in extract volume (5 ml, 10 ml, 15 ml, 20 ml, and 25 ml) and variations in the surfactant ratio of Decyl Glucoside : Lauryl Glucoside (1:2 and 2:1). The results showed that the starfruit leaf extract contained 6.754% saponins and had a foam stability of 75%, indicating its potential as a natural surfactant. The best formulation was obtained with 25 ml extract and a 2:1 surfactant ratio, producing a detergent with a pH of 8.31, surfactant content of 21.596%, water-insoluble matter of 0.065%, specific gravity of 1.0078, and foam stability of 94.94%. All parameters met the quality standards of SNI 4075-1:2017. Therefore, liquid detergent based on starfruit leaf extract has the potential to be developed as a safer and more environmentally friendly cleaning alternative.*

*Keywords: Liquid detergent, starfruit (*Averrhoa bilimbi*), saponin, natural surfactant*