

ABSTRACT

FORMULATION OF COFFEE EXTRACT (*Coffea canephora*) AND CINNAMON EXTRACT (*Cinnamomum* sp.) IN LIQUID SOAP PRODUCTION

By

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Soap is a chemical compound of alkali carboxylate salts resulting from a saponification reaction involving an interaction between alkali, such as potassium or sodium, and fatty acids derived from vegetable oils. This study aims to determine the effect of the formulation of coffee extract and cinnamon extract on sensory properties, physicochemical characteristics, and antibacterial activity of liquid soap, as well as to determine the best formulation. This research was arranged in a non-factorial design using six treatment levels and four replications in a Completely Randomized Block Design. The treatment formulations were prepared by comparing coffee extract and cinnamon extract as follows: A1 (10:0), A2 (8:2), A3 (6:4), A4 (4:6), A5 (2:8), and A6 (0:10) grams. The data obtained were analyzed for variance homogeneity using Bartlett's test and data additivity was tested using Tukey's test. Analysis of variance (ANOVA) was conducted to determine whether there was a significant effect among treatments. Significant differences between treatments were further analyzed using the Honestly Significant Difference (HSD) test at 5% and 1% significance levels. The formulation of coffee extract and cinnamon extract had a highly significant effect on the sensory attributes (color, aroma, and overall acceptance), physical properties (viscosity and foam stability), and chemical properties (pH) of the liquid soap. The best treatment was found in formulation A6 (0 ml:10 ml), which showed superior sensory, physical, and chemical characteristics. The antibacterial activity test indicated a very strong inhibitory effect against *Staphylococcus aureus* with an inhibition zone of 27.25–27.83 mm, however, no inhibitory activity was observed against *Escherichia coli*.

Keywords: Cinnamon extract, coffee extract, liquid soap

ABSTRAK

FORMULASI EKSTRAK KOPI (*Coffea canephora*) DAN EKSTRAK KAYU MANIS (*Cinnamomum*) DALAM PEMBUATAN SABUN CAIR

Oleh

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Sabun adalah senyawa kimia dari garam alkali karboksilat hasil reaksi saponifikasi melibatkan interaksi antara basa/alkali, seperti kalium atau natrium dengan asam lemak yang bersumber dari minyak nabati. Tujuan dari penelitian ini untuk mengetahui pengaruh formulasi ekstrak kopi dan ekstrak kayu manis terhadap sifat sensori, sifat fisikokimia, dan antibakteri sabun cair dan mengetahui formulasi terbaik ekstrak kopi dan ekstrak kayu manis terhadap sifat fisikokimia, dan sifat sensori sabun cair. Penelitian ini disusun secara nonfaktorial menggunakan 6 taraf dan 4 kali ulangan dalam Rancangan Acak Kelompok Lengkap. Formula perlakuan dengan membandingkan ekstrak kopi dan ekstrak kayu manis adalah A1 (10:0); A2 (8:2); A3 (6:4); A4 (4:6); A5 (2:8); dan A6 (0:10) gram. Data yang diperoleh dianalisis kesamaan ragamnya menggunakan uji Bartlett dan kemenambahan data diuji dengan uji Tuckey. Untuk mengetahui pendugaan ragam galat dan untuk mengetahui ada atau tidak pengaruh antar perlakuan dilakukan analisis ragam (ANARA). Untuk mengetahui perbedaan antar perlakuan, data diuji lanjut dengan uji BNJ dengan taraf 5% dan 1%. Formulasi kombinasi ekstrak kopi dan ekstrak kayu manis berpengaruh sangat nyata terhadap sifat sensori (warna, aroma, dan penerimaan keseluruhan), sifat fisik (kekentalan dan stabilitas busa), serta sifat kimia (pH) pada sabun cair. Perlakuan terbaik diperoleh pada formulasi A6 (0 ml:10 ml) dengan hasil unggul pada beberapa parameter sensori, fisik, dan kimia. Uji Aktivitas antibakteri sangat kuat terhadap *Staphylococcus aureus* dengan zona hambat 27,25–27,83 mm, namun tidak menunjukkan aktivitas penghambatan terhadap *Escherichia coli*.

Kata kunci: Ekstrak kayu manis, ekstrak kopi, sabun cair