OPTIMASI PEMBUATAN SABUN PADAT *VIRGIN COCONUT OIL* (VCO) DAN *CRUDE PALM OIL* (CPO) DENGAN METODE RESPON PERMUKAAN

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ABSTRAK

Optimasi pembuatan sabun padat *virgin coconut oil* (VCO) dan *crude palm oil* (CPO) dengan metode respon permukaan telah dilakukan. Tujuan dari penelitian ini adalah penentuan rasio VCO:CPO, massa NaOH dan suhu NaOH optimum dalam pembuatan sabun padat. Penelitian ini juga bertujuan untuk menganalisis kualitas sabun dengan parameter respon pH, kadar air, banyak busa, stabilitas busa, kekerasan, asam lemak bebas, dan lemak tak tersabunkan menggunakan metode respon permukaan. Pembuatan sabun padat dilakukan dengan metode respon permukaan tiga variabel yaitu (x_1) rasio VCO:CPO (%), (x_2) massa NaOH (g), dan (x_3) suhu (°C) dengan masing-masing memiliki tiga variasi memberikan jumlah sampel sebanyak 20. Penentuan formulasi optimum dilakukan dengan menganalisis pengaruh variabel *x* terhadap parameter respon.

Hasil penelitian menunjukan bahwa formulasi optimum yang didapatkan adalah rasio VCO:CPO sebesar 69,96%, massa NaOH yaitu 7,319 g dan suhu larutan NaOH sebesar 21,24 °C. Kualitas sabun yang didapatkan dari formulasi optimum hasil desain eksperimen sabun padat yaitu pH 9,99; kadar air 12,60%; banyak busa 92,99%; stabilitas busa 51,98%; kekerasan 2,991 N; asam lemak bebas 1,91%; dan lemak tak tersabunkan 2,11%.

Kata kunci: *crude palm oil*, respon permukaan, sabun, *virgin coconut oil*

MANUFACTURE OPTIMIZATION OF VIRGIN COCONUT OIL (VCO) AND CRUDE PALM OIL (CPO) BAR SOAP USING RESPONSE SURFACE METHOD

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ABSTRACT

Manufacture optimization of virgin coconut oil (VCO) and crude palm oil (CPO) bar soap using response surface method was carried out. The purpose of this study were to determine the optimum conditions of ratio of VCO:CPO, mass of NaOH and temperature of NaOH in the production of bar soap. This study also aims to analyze the quality of soap with response pH parameters, content water, content foam, foam stability, soap hardness, free fatty acids, and unsaponified fat using the response surface method. The production of bar soap was carried out by the response surface method of three variabels, namely (x_1) VCO:CPO ratio (%), (x_2) mass of NaOH (g), and (x_3) temperature (°C) with each having three variations giving the number samples of 20. Determination of optimum formulation was done by analyzing the effect of variabel x on response parameters.

The research results shows that the optimum formulation obtained that the VCO:CPO ratio were 69.96%, the mass of NaOH was 7.319 g and the temperature of NaOH solution were 21.24 °C. The quality of soap obtained from the optimum formulation from the experimental design of bar soap was pH 9.99; water content was 12.60%; content foam was 92.99%; foam stability was 51.98%; soap hardness wes 2.991 N; the amount of free fatty acids was 1.91%; and the amount of unsaponified fat was 2.11%.

Key words: crude palm oil, response surface, soap, virgin coconut oil