ABSTRAK

Penelitian ini bertujuan untuk mengoptimalkan formula krim anti bakteri jerawat yang mengandung ekstrak daun pepaya (Carica papaya Linn.) menggunakan metode *Simplex Lattice Design*. Ekstrak daun pepaya telah lama dikenal memiliki sifat anti-inflamasi dan anti-bakteri yang dapat mendukung perawatan kulit, khususnya untuk mengatasi masalah jerawat. Penelitian ini melibatkan desain eksperimen dengan variasi komposisi bahan yang disusun dalam *Simplex Lattice Design* untuk mencapai formulasi terbaik dari krim anti bakteri jerawat. Parameter yang dievaluasi meliputi efektivitas antibakteri, stabilitas formula, dan karakteristik fisikokimia krim. Penelitian ini menggunakan metode *Simplex Lattice Design* dengan perbandingan setil alkohol dan TEA dalam 5 formula yang berbeda yaitu 3,25:7,75, 10:1, 1:10, 5,5:5,5 dan 7,75:3.25. Hasil respon uji pH, daya sebar, daya lekat, dan viskositas digunakan untuk menentukan formula optimal menggunakan *Software Design Expert Version 13 Trial*. Hasil optimasi di verifikasi menggunakan uji statistik one sampel t-test. Dan dilanjutkan uji antibakteri formula krim antijerawat ekstrak daun pepaya (*Carica papaya L*).

Hasil dari sediaan formula krim Ekstrak daun pepaya *(Carica papaya L)* yang optimal yaitu dengan perbandingan setil alkohol dan TEA yaitu 5.51669:5.48331. Hasil dari uji fisik sediaan formula krim dengan perbedaan konsentrasi setil alcohol dan TEA yaitu semakin tinggi konsentrasi setil alkohol dan semakin rendah konsentrasi TEA maka daya lekat dan pH sediaan akan semakin meningkat sedangkan uji daya sebar dan viskositas akan semakin menurun, begitupun sebaliknya. Hasil dari aktivitas uji antibakteri Formula krim Ekstrak Daun pepaya di peroleh zona hambat 1,45cm termasuk ke dalam kategori kuat.

Kata Kunci :Krim anti bakteri, Ekstrak daun pepaya, Jerawat,Optimasi formula,Metode Simplex Lattice,Aktivitas anti bakteri.

ABSTRACT

This research aims to optimize the anti-bacterial acne cream formula containing papaya leaf extract (Carica papaya Linn.) using the Simplex Lattice Design method. Papaya leaf extract has long been known to have anti-inflammatory and anti-bacterial properties which can support skin care, especially to treat acne problems. This research involves an experimental design with variations in the composition of ingredients arranged in a Simplex Lattice Design to achieve the best formulation of anti-bacterial acne cream. Parameters evaluated included antibacterial effectiveness, formula stability, and physicochemical characteristics of the cream. This research uses the Simplex Lattice Design method with a ratio of cetyl alcohol and TEA in 5 different formulas, namely 3.25:7.75, 10:1, 1:10, 5.5:5.5 and 7.75:3.25. The results of the pH test response, spreadability, stickiness and viscosity are used to determine the optimal formula using Design Expert Software Version 13 Trial. The optimization results were verified using the one sample t-test statistical test. And continued with the antibacterial test of the anti-acne cream formula of papaya leaf extract (Carica papaya L).

The results of the optimal preparation of the papaya leaf extract (Carica papaya L) cream formula are with a ratio of cetyl alcohol and TEA, namely 5.51669:5.48331. The results of the physical test of cream formula preparations with different concentrations of cetyl alcohol and TEA are that the higher the concentration of cetyl alcohol and the lower the concentration of TEA, the stickiness and pH of the preparation will increase while the spreadability and viscosity tests will decrease, and vice versa. The results of the antibacterial activity test for the papaya leaf extract cream formula showed that the inhibition zone was 1.45 cm, which was included in the strong category.

Keywords: Anti-bacterial cream, papaya leaf extract, acne, formula optimization, Simplex Lattice method, anti-bacterial activity