OPTIMASI DEASETILASI KITIN MENJADI KITOSAN DARI SELONGSONG MAGGOT DENGAN GELOMBANG MIKRO MENGGUNAKAN METODE PERMUKAAN RESPON

ANISA KHOIRUL MALA
21/480282/PA/20858

INTISARI

Penelitian tentang penggunaan metode permukaan respon (*Response Surfave Methodology*) dalam pengoptimasian deasetilasi kitin dari bahan baku selongsong maggot telah dilakukan menggunakan katalis NaOH dan gelombang mikro. Tujuan dilakukannya penelitian ini adalah isolasi kitosan dari selongsong maggot dengan katalis NaOH dan radiasi gelombang mikro yang dioptimasi menggunakan RSM serta untuk mengetahui pengaruh konsentrasi NaOH (%b/v), daya radiasi (Watt), dan waktu reaksi (menit) terhadap derajat deasetilasi (%). Tahap deasetilasi dilakukan menggunakan metode CCD (*Central Composite Design*) dengan tiga variabel bebas yang terdiri dari konsentrasi NaOH (X_1), daya radiasi (X_2), dan waktu reaksi (X_3) serta variabel respon berupa derajat deasetilasi. Derajat deasetilasi ditentukan menggunakan metode *baseline* dari spektrum FTIR.

Berdasarkan penelitian yang dilakukan, konsentrasi NaOH, daya radiasi, dan waktu reaksi memiliki pengaruh signifikan terhadap derajat deasetilasi. Analisis RSM secara CCD menunjukkan bahwa nilai optimum dari derajat deasetilasi mencapai 50,88% pada kondisi konsentrasi NaOH 60%, daya radiasi 200 Watt, dan waktu reaksi 3 menit.

Kata kunci: *Central Composite Design*, derajat deasetilasi, gelombang mikro, kitin, kitosan

OPTIMIZATION OF CHITIN DEACETYLATION INTO CHITOSAN FROM MAGGOT SLEEVES WITH MICROWAVE USING RESPONSE SURFACE METHODOLOGY

ANISA KHOIRUL MALA
21/480282/PA/20858

ABSTRACT

The research about the use of Response Surface Methodology (RSM) in optimizing the deacetylation of chitin from maggot casings as raw material has been conducted using NaOH catalyst and microwave irradiation. The aim of this study was to isolate chitosan from maggot casings using NaOH as a catalyst and microwave radiation, optimized through RSM, and to examine the effect of NaOH concentration (% w/v), radiation power (Watts), and reaction time (minutes) on the degree of deacetylation (%). The deacetylation stage was carried out using the Central Composite Design (CCD) method with three independent variables: NaOH concentration (X_1), radiation power (X_2), and reaction time (X_3), and the response variable being the degree of deacetylation. The degree of deacetylation was determined using the baseline method from the FTIR spectrum.

Based on the conducted research, NaOH concentration, radiation power, and reaction time significantly influenced the degree of deacetylation. The RSM analysis through CCD showed that the optimum value for the degree of deacetylation reached 58.88% under conditions of 60% NaOH concentration, 200 Watts radiation power, and 3 minutes of reaction time.

Keywords: Central Composite Design, chitin, chitosan, degree of deacetylation, microwave