INTISARI

Kulit biji kakao berpotensi digunakan sebagai sumber selulosa. Pada industri pangan, selulosa perlu diubah menjadi turunannya. Salah satu turunan selulosa yaitu MC (*methylcellulose*). Tujuan dari penelitian ini adalah (1) mengetahui pengaruh variasi konsentrasi NaOH, konsentrasi dimetil sulfat, dan suhu eterifikasi pada sintesis MC terhadap derajat subtitusi MC, (2) memperoleh kondisi optimum sintesis MC yang diklasifikasikan *food grade* dan (3) mengidentifikasi karakteristik MC.

Sintesis MC dilakukan dengan mereaksikan 5 g selulosa dengan 20 ml NaOH pada variasi konsentrasi 11,6; 15; 20; 25 and 28,4% (w/v) dan dimetil sulfat 1,32; 2; 3; 4 and 4,68 ml pada 100 ml isopropanol dengan variasi suhu 41,6; 45; 50; 55 and 58,4 ºC selama 180 minutes. Optimasi kondisi sintesis MC diperoleh dengan *Respone Surface Methodology* (RSM) *central composite design* berdasarkan nilai derajat subtitusi. MC yang diperoleh dikaraterisasi derajat subtitusi, kadar air, *oil holding capacity* (OHC), *water holding capacity* (WHC), tingkat kecerahan, kelarutan, viskositas, gugus fungsional, dan kristalinitas.

Berdasarkan hasil penelitian, derajat subtitusi MC dipengaruhi oleh konsentrasi natrium hidroksida, dimetil sulfat, dan suhu. Peningkatan konsentrasi NaOH, derajat subtitusi, dan suhu proses dapat meningkatkan derajat subtitusi. Kondisi optimum sintesis MC yaitu pada NaOH 21,29% (w/v), dimetil sulfat 3,62 ml dan suhu metilasi 51,09ºC. Karakterisasi MC yang diperoleh yaitu, derajat subtitusi 1,93±0,04; OHC 2,53±0,05 g/g; WHC 3,04±0,10 g/g; lightness 84,32±0,67 g/g; kelarutan 11,94 ±1,04% (db); dan viskositas 5,07±0,15 cps, dan kristalinitas indeks 40,21%.

Kata kunci : kulit biji kakao, selulosa, metil selulosa

ABSTRACT

Cocoa shell is a potent source for cellulose. In food industry, cellulose would be modified to its derivatives. One of cellulose derivatives is methylcellulose (MC). The aims of this research were: 1) to study the effect of NaOH concentration, dimethyl sulphate concentration, and temperature on degree of substitution; 2) to determine optimum condition of synthesis MC which is classified as food grade; and 3) to identify characterization of MC.

MC was synthesized by reacted 5 g cellulose with 20 ml NaOH at various concentration 11,6; 15; 20; 25 and 28,4% (w/v) and dimethyl sulphate 1,32; 2; 3; 4 and 4,68 ml in 100 ml isopropanol at various temperature 41,6; 45; 50; 55 and 58,4 ^{o}C for 180 minutes. The condition of synthesis MC was optimized by Respone Surface Methodology (RSM) central composite design based on degree of substitution. The MC were characterized by degree of substitution (DS), oil holding capacity (OHC), water holding capacity (WHC), lightness, solubility, viscosity, and crystallinity.

The result showed that degree of subtitution of MC was affected by concentration of NaOH, dimethyl sulfate and temperature. Degree of subtitution increased with the increasing concentration of NaOH, DMS, and temperature. Optimum condition for synthesis MC was obtained at NaOH 21,29% (w/v), dimethyl sulfate 3,62 ml and temperature 51,09^{o}C for 180 minutes. The characterictics of the MC product were DS 1,93±0,04; OHC 2,53±0,05 g/g; WHC 3,04±0,10 g/g; lightness 84,32±0,67 g/g; solubility 11,94 ±1,04% (db); and viscosity 5,07±0,15 cps and crystallinity index 40,21%.

Keywords: cacao shell, cellulose, methylcellulose