

## Abstract

“Salak Pondoh Super” which cultivated in Yogyakarta province was the most promising tropical fruit. Percentage of “Salak Pondoh Super” kernel’s is 25-30% from whole snake fruit. Salak Pondoh Super kernel can used as cellulose resource according to cellulose content. Cellulose useful for food industry in the form of cellulose derivatives such as hydroxyl propyl cellulose (HPC). This research was give information about optimum conditions of synthesis and characterization of HPC cellulose “Salak Pondoh Super” kernel.

Synthesis of HPC was optimized using Response Surface Methodology (RSM), then the result from RSM was characterized by several parameters including moisture content, ash content, viscosity, Water Holding Capacity (WHC), Oil Holding Capacity (OHC), lightness, crystallinity, and FT-IR spectra. Molar substitution (MS), WHC, OHC and lightness was used as quality parameter for HPC on *central composite design* RSM.

Optimum condition of synthesis HPC was achieved by the use of 15,2 % NaOH solution, 3,3 ml propylene oxide per 5 gram cellulose and reaction temperature of 51,2°C. The characteristics of the optimized HPC were MS 0,3, moisture content 8,83% (db), ash content of 4,21 % (db), viscosity 22,4 cps, yield 107,8 (% db), WHC 4,9 (g/g), OHC 2,74 (g/g), lightness 79,81, and cristanillity 14%. The FT-IR spectra HPC was show *symmetric C-H stretching* for grup hydroxypropyl group at wave length 2924,09  $\text{cm}^{-1}$ .

**Keywords:** Cellulose, HPC, “Salak Pondoh Super”, kernel

## INTISARI

Salak Pondoh Super merupakan salah satu varietas salak superior di Daerah Istimewa Yogyakarta. Persentase selulosa pada biji salak 31-35% yang dapat dimanfaatkan pada aplikasi industri pangan dalam bentuk turunannya yaitu hydroxy propyl cellulose (HPC). Tujuan penelitian ini adalah melakukan optimasi sintesis dan karakterisasi HPC dari selulosa yang merupakan hasil ekstraksi pada biji salak pondoh super.

Optimasi sintesis HPC dari biji salak pondoh super menggunakan variasi konsentrasi NaOH 6,59; 10; 15; 20 dan 23,41% pada proses alkalisasi, variasi propilen oksida 2,3; 3; 4; 5 dan 5,68 ml dan variasi suhu 46,59; 50, 55, 60 dan 63,41<sup>0</sup>C pada proses hidrosipropilasi. Karakteristik HPC biji salak meliputi kadar air, kadar abu, molar substitusi (MS), *water holding capacity* (WHC), *oil holding capacity* (OHC), viskositas, *lightness* (kecerahan), rendemen, kristalinitas dan spektra FTIR untuk mengetahui gugus fungsi HPC.

Hasil sintesis HPC dari selulosa biji salak dengan kondisi optimum pada konsentrasi NaOH 15,2%, propilen oksida 3.3 ml dan suhu 51,28<sup>0</sup>C. HPC yang dihasilkan memiliki kadar air 8,83 % (db), kadar abu 4,21% (db), MS 0,3, WHC 4,9 g/g, OHC 2,74 g/g, viskositas 22,4 cps, rendemen 107,8% dan kristalinitas 14%. Spektra FT-IR HPC biji salak memiliki pola yang hampir sama dengan spektra HPC komersial dengan *symmetric C-H stretching* sebagai penanda adanya gugus hidrosipropil pada panjang gelombang 2924,09 cm<sup>-1</sup>.

Kata kunci : Hydroxy propyl cellulose (HPC), biji salak pondoh super, sintesis, karakteristik