OPTIMASI PRODUKSI *CARBOXYL METHYL CELLULOSE* (CMC) MENGGUNAKAN SELULOSA TANDAN KOSONG KELAPA SAWIT (*Elaeis guineensis jacq.*) YANG POTENSIAL SEBAGAI BAHAN PENGENTAL INDUSTRI

INTISARI

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Tandan Kosong Kelapa Sawit (TKKS) memiliki kandungan selulosa sekitar 40-43%. Selulosa memiliki beberapa produk turunan salah satunya adalah *Carboxyl methyl cellulose* (CMC). CMC memiliki banyak fungsi yaitu sebagai bahan tambahan pada industri pangan, industri tekstil, pembuatan pasta gigi, sabun cair, dan cat. Tujuan penelitian ini adalah melakukan optimasi formula produksi CMC yang menggunakan selulosa TKKS, natrium hidroksida, isopropanol, dan natrium monokloroasetat serta mendapatkan prioritas kesesuaian pemanfaatan CMC terhadap produk hilir pangan atau non-pangan. Pada penelitian sintesis CMC dari TKKS ini menggunakan variasi proporsi penambahan natrium hidroksida 30% 1:2; 1:3; 1:4, isopropanol 1:20; 1:30; 1:40, monokloroasetat 1:1,1; 1:1,2; 1:1,3. Pengumpulan data dilakukan dengan mengukur respon kadar air, derajat substitusi, kandungan karboksil metil, dan kandungan natrium klorida. Untuk mendapatkan kondisi optimum sintesis CMC dari TKKS digunakan *Response Surface Method* (RSM). Kondisi optimum sintesis CMC dari TKKS yang diperoleh dari RSM, dengan perbandingan selulosa dengan proporsi penambahan natrium hidroksida 30% sebesar 3,296; isopropanol sebesar 30,720; dan monokloroasetat sebesar 1,199. Dengan hasil kadar air sebesar 7,092%; derajat substitusi sebesar 0,907; kandungan karboksil metil sebesar 24,984%; dan kandungan natrium klorida sebesar 1,275%, CMC yang dihasilkan dapat dikategorikan dalam CMC teknis.

Kata kunci: CMC, RSM, Selulosa, TKKS

PRODUCTION OPTIMIZATION OF CARBOXYL METHYL CELLULOSE (CMC) USING CELLULOSE FROM OIL PALM EMPTY FRUIT BUNCH (*Elaeis guineensis jacq*.) AS A POTENTIAL INDUSTRIAL THICKENER

ABSTRACT

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Oil Palm Empty Fruit Bunches (EFB) has a cellulose content of 40-43%. It has several derivative products, one of which is Carboxyl Methyl Cellulose (CMC). CMC has many functions, namely as an additive in the food industry, textile industry, manufacture of toothpaste, liquid soap and paint. The purpose of this study was to optimize the CMC production formula using OPEFB cellulose, sodium hydroxide, isopropanol, and sodium monochloroacetate, and setting priority on the utilization of CMC for its downstream products. In this study of CMC synthesis from OPEFB using variations in the proportion of the addition of Sodium Hydroxide 30% 1:2; 1:3; 1:4, variations in the proportion of the addition of Isopropanol 1:20; 1:30; 1:40, variations in the proportion of the addition of Monochloroacetate 1:1.1; 1:1.2; 1:1.3. Data collection was carried out by measuring the response of water content, degree of substitution, carboxyl methyl content, and sodium chloride content. To obtain the optimum conditions for CMC synthesis from OPEFB, the Response Surface Method (RSM) was used. The optimum synthesis conditions for CMC from OPEFB obtained from RSM, the proportion of adding sodium hydroxide 30% was 3.296; isopropanol was 30.720; and monochloroacetate was 1.199. Based on water content 7.092%; degree of substitution 0.907; carboxyl methyl content 24.984%; and sodium chloride content 1.275%, the produced CMC could be categorized into the range of technical CMC.

Keywords: Cellulose, CMC, OPEFB, RSM