

**PENGARUH WAKTU PROSES
KARBOKSIMETILASI TERHADAP
KARAKTERISTIK *CarboxyMethyl Cellulose* (CMC)
DARI BATANG TANAMAN TIBARAU
(*Saccharum spontaneum* L)**

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**Pengaruh Waktu Proses Karboksimetilasi Terhadap
Karakteristik *CarboxyMethyl cellulose* (CMC)
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ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh karboksimetilasi terhadap karakteristik *CarboxyMethyl cellulose* (CMC) dari batang tanaman tibarau (*Saccharum spontaneum* L) dan untuk mengetahui perlakuan waktu karboksimetilasi terbaik dalam sintesis *CarboxyMethyl cellulose* (CMC) dari batang tanaman tibarau (*Saccharum spontaneum* L). Rancangan peneltian yang digunakan adalah Rancangan Acak Lengkap (RAL) dengan lima perlakuan dan masing-masing tiga kali ulangan. Perlakuan pada penelitian ini adalah variasi waktu karboksimetilasi, dimana A (2 jam), B (3 jam), C (4 jam) , D (5 jam), E (6 jam). Data dianalisis secara statistik menggunakan Analisis Of Varians (ANOVA) dan dilanjutkan dengan analisis Duncan's New Multiple Range Test (DMRT) pada taraf 5%. Hasil penelitian menunjukkan bahwa variasi waktu karboksimetilasi berpengaruh signifikan terhadap kadar air, derajat substitusi, kemurnian, kadar NaCl, pH, dan viskositas terhadap CMC batang tibarau. Karakteristik CMC batang tibarau terbaik dihasilkan pada waktu karboksimetilasi 5 jam (perlakuan D) yang memiliki kadar air sebesar 9,17%, derajat substitusi sebesar 0,86, kadar NaCl sebesar 22,21, kemurnian sebesar 77,79, viskositas sebesar 7,66 mPa.S, dan nilai pH sebesar 7,22. Pada analisis kelarutan dapat larut dalam pelarut air, tetapi tidak larut dalam pelarut etanol, n-heksan, etil asetat.

Kata kunci : alkalisasi, atang tibarau, CMC, karboksimetilasi, waktu

The Effect of Carboxymethylation Processing Time on the Characteristics of *CarboxyMethyl cellulose* (CMC) from Tibarau Plant Stems (*Saccharum spontaneum* L)

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ABSTRACT

This study aims to determine the effect of carboxymethylation on the characteristics of *CarboxyMethyl cellulose* (CMC) from tibarau plant stems (*Saccharum spontaneum* L) and to determine the optimal carboxymethylation time treatment in the synthesis of *CarboxyMethyl cellulose* (CMC) from tibarau plant stems (*Saccharum spontaneum* L). The experimental design used was a completely randomized design (CRD) with five treatments, each replicated three times. The treatments in this study were variations in carboxymethylation time, namely A (2 hours), B (3 hours), C (4 hours), D (5 hours), and E (6 hours). The data were statistically analyzed using Analysis of Variance (ANOVA) and followed by Duncan's New Multiple Range Test (DMRT) at the 5% level. The results showed that variations in carboxymethylation time significantly affected the moisture content, degree of substitution, purity, NaCl content, pH, and viscosity of CMC from tibarau stems. The best characteristics of tibarau stem CMC were obtained at a carboxymethylation time of 5 hours (treatment D), which had a moisture content of 9.17%, a degree of substitution of 0.86, an NaCl content of 22.21, a purity of 77.79, a viscosity of 7.66 mPa.S, and a pH value of 7.22. In solubility analysis, it is soluble in water but insoluble in ethanol, n-hexane, and ethyl acetate.

Keywords: alkalization, carboxymethylation, CMC, tibarau stem, time