

ABSTRAK

KARAKTERISASI NATRIUM KARBOKSIMETIL SELULOSA (Na-CMC) DARI SELULOSA DAUN NANAS (*ANANAS COMOSUS*) DENGAN VARIASI NATRIUM HIDROKSIDA (NaOH) DAN NATRIUM MONOKLOROASETAT (Na-MCA)

(Nabila Amanda Riani, 2026, 63 Halaman, 6 Tabel, 11 Gambar, 4 Lampiran)

Daun nanas (*Ananas comosus*) merupakan limbah pertanian dengan kandungan selulosa mencapai 69%–71% yang sangat potensial sebagai bahan baku pembuatan *Sodium Carboxymethyl Cellulose* (Na-CMC). Penelitian ini bertujuan untuk mengetahui pengaruh variasi konsentrasi NaOH (30% dan 35%) serta massa *Natrium Monokloroasetat* (NaMCA: 6, 7, 8, 9, dan 10 gram) terhadap karakteristik Na-CMC dari selulosa daun nanas, sekaligus menguji kinerjanya sebagai pengental tinta berbasis air. Sintesis dilakukan melalui tahap isolasi selulosa (delignifikasi dan *bleaching*), alkalisasi, dan karboksimetilasi.

Hasil analisis menunjukkan bahwa peningkatan konsentrasi reaktan berpengaruh nyata terhadap kenaikan pH dan viskositas produk. Kondisi optimum untuk menghasilkan Na-CMC terbaik diperoleh pada kombinasi perlakuan NaOH 35% dan NaMCA 9 gram dengan nilai viskositas tertinggi sebesar 30,04 cP, memenuhi standar SNI 06-3726-1995 (Mutu I). Sementara itu, nilai pH yang paling mendekati netral diperoleh pada perlakuan NaOH 30% dan NaMCA 10 gram yaitu sebesar 7,99. Pada uji aplikasi, Na-CMC daun nanas berhasil memperlambat waktu kering tinta hingga 5,3 menit dan mengontrol daya sebar hingga 0,7 cm, membuktikan potensinya yang efektif sebagai agen pengental (*thickening agent*).

Kata kunci: daun Nanas, selulosa, Na-CMC, viskositas.

ABSTRACT

CHARACTERISATION OF SODIUM CARBOXYMETHYL CELLULOSE (Na-CMC) PREPARED FROM PINEAPPLE LEAF (ANANAS COMOSUS) CELLULOSE USING VARIOUS SODIUM HYDROXIDE (NaOH) AND SODIUM MONOCHLOROACETATE (Na-MCA)

(Nabila Amanda Riani, 2026, 63 Pages, 6 Tabel, 11 Figures, 4 Attachment)

Pineapple leaves (Ananas comosus) are agricultural waste with a high cellulose content of 69%–71%, making them highly potential as a raw material for Sodium Carboxymethyl Cellulose (Na-CMC) synthesis. This study aims to determine the effect of varying NaOH concentrations (30% and 35%) and sodium monochloroacetate mass (NaMCA: 6, 7, 8, 9, and 10 grams) on the characteristics of pineapple leaf-derived Na-CMC and its performance as a water-based ink thickener. The synthesis involved cellulose isolation (delignification and bleaching), alkalization, and carboxymethylation phases.

The results indicated that increasing reactant concentrations significantly increased the pH and viscosity of the product. The optimum condition for producing the best Na-CMC was achieved using 35% NaOH and 9 grams of NaMCA, yielding the highest viscosity of 30.04 cP, which complies with the SNI 06-3726-1995 standard (Grade I). Meanwhile, the pH value closest to neutral was obtained at 30% NaOH and 10 grams of NaMCA at 7.99. In the application test, the synthesized Na-CMC successfully extended the ink drying time up to 5.3 minutes and controlled the spreading capacity to 0.7 cm, demonstrating its effective potential as a thickening agent.

Keywords: pineapple leaves, cellulose, Na-CMC, viscosity