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The Optimization of Sodium Carboxymethyl Cellulose (NA-CMC) Synthesized from Water Hyacinth (*Eichhornia crassipes* (Mart.) Solm) Cellulose

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ABSTRACT

One plant that has a high cellulose content that is equal to 64.51% is water hyacinth (*Eichhornia crassipes* (Mart.) Solm.). Water hyacinth has great potential to be used as a raw material for various products, such as sodium carboxymethyl cellulose (Na-CMC). Na-CMC is usually used in pharmaceutical industry as an excipient for pharmaceutical formulation. This study aims to isolate the alpha cellulose from water hyacinth and to optimize the synthesis of Na-CMC so that it can meet the standards of pharmaceutical excipients. The method of this research consists of the isolation of alpha cellulose with NaOH 25% and 12% NaOCl, the assay of cellulose, the synthesis of Na-CMC as pharmaceutical excipients using 40% NaOH, sodium monochloroacetate of 1:20:5 ratio, and the characterization. The results show the yield of 15.27% water hyacinth, and contain a high level of 61.176% alpha cellulose which is used for the synthesis of NaCMC with 95.33% yield. Characterization done by using Infrared Spectrophotometry, Scanning Electron Microscope (SEM) and Energy dispersive X-Ray Spectrometry (EDS) shows that the synthesized product gives the same spectrum as Na-CMC.

Keywords: *sodium carboxymethyl cellulose*, α-cellulose, water hyacinth

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