

Isolation of Nanocellulose from Aquatic Wetland Plant- *Eleocharis dulcis*

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Abstract

Eleocharis dulcis (*E. dulcis*) is a sustainable wetland material available in enormous quantities in Kalimantan, Indonesia. Therefore, this study aimed to evaluate the suitability of the acid hydrolysis method for the isolation of nanocellulose of *E. dulcis*. The isolation process started with delignification, followed by the removal of hemicellulose to produce cellulose. The hydrolysis was performed at 45 °C for 60 and 120 minutes, respectively, using sulphuric acid. Furthermore the nanocellulose was characterized using Particle Size Analyzer, Fourier transform infrared spectroscopy and X-ray diffractions. The particle size analysis showed that the diameter of the obtained nanocellulose was affected by hydrolysis time. In addition, the X-ray diffractions results showed that the crystallinity index of the nanocellulose was 71.99% and 71.61% for the acid hydrolysis time of 60 minutes and 120 minutes, respectively. This study also demonstrated that the aquatic wetland plant, *E. dulcis* has a good potential for nanocellulose production in Indonesia.

Keywords: *Eleocharis dulcis*, nanocellulose, wetland-plant, acid hydrolysis