

Khoirunnisa. NPM 220331100033. Isolasi dan Karakterisasi Selulosa dari Rumput Laut *Sargassum* sp. dengan Variasi Waktu Delignifikasi NaOH sebagai Hidrogel. Di bawah Bimbingan **Nurmalisa Lisdayana, S.TP., M.Si dan Dr. Enung Siti Nurhidayah**

ABSTRAK

Rumput laut *Sargassum* sp. melimpah di perairan Indonesia namun pemanfaatannya masih terbatas, padahal mengandung selulosa yang berpotensi sebagai bahan baku hidrogel karena bersifat hidrofilik dan biodegradable. Penelitian ini bertujuan mengetahui karakteristik selulosa hasil isolasi dari *Sargassum* sp. menggunakan metode delignifikasi NaOH tanpa pemanasan dengan variasi waktu 12, 24, dan 36 jam (RAL non faktorial, 3 ulangan), serta mengevaluasi potensinya sebagai bahan dasar hidrogel. Hasil menunjukkan waktu delignifikasi berpengaruh nyata terhadap *lightness* dan kadar α -selulosa ($p < 0,05$), namun tidak berpengaruh nyata terhadap rendemen dan *swelling* ratio ($p > 0,05$). Perlakuan 24 jam menghasilkan karakteristik terbaik dengan rendemen 50,86%, *lightness* 28,16%, *swelling* ratio 1333,33%, dan kadar α -selulosa 89,99%. Hidrogel yang dihasilkan memiliki *swelling* ratio 126,1% dan kadar α -selulosa 33,10%, sehingga berpotensi diaplikasikan dalam bidang pertanian dan kesehatan.

Kata kunci: *Sargassum* sp., selulosa, delignifikasi, NaOH, hidrogel

Khoirunnisa. NPM 220331100033. *Isolation and Characterization of Cellulose from Sargassum sp. Seaweed with Variations in NaOH Delignification Time as a Hydrogel.* Di bawah Bimbingan **Nurmalisa Lisdayana, S.TP., M.Si dan Dr. Enung Siti Nurhidayah**

ABSTRACT

Sargassum sp. seaweed is abundant in Indonesian waters but remains underutilized, despite containing cellulose with potential as a hydrogel raw material due to its hydrophilic, biodegradable properties. This study aimed to determine the characteristics of cellulose isolated from Sargassum sp. using an unheated NaOH delignification method with time variations of 12, 24, and 36 hours (non-factorial CRD, 3 replications), and to evaluate its potential as a hydrogel base material. Results showed delignification time significantly affected lightness and α -cellulose content ($p < 0.05$), but not yield or swelling ratio ($p > 0.05$). XRD analysis showed crystallinity increased from 30.63% to 52.56% after delignification. The 24-hour treatment produced the best results, with a yield of 50.86%, lightness of 28.16%, swelling ratio of 1333.33%, and α -cellulose content of 89.99%. The resulting hydrogel had a swelling ratio of 126.1% and α -cellulose content of 33.10%, indicating potential application in agriculture and healthcare.

Keywords: *Sargassum sp.*, cellulose, delignification, NaOH, hydrogel