

**OPTIMIZATION OF AVAILABLE AGAR
PROCESSING METHODOLOGIES OF
Gracilaria verrucosa IN KINNIYA**

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ABSTRACT

The methods for extraction of agar from seaweeds differed either in the type of extraction solution, its concentration, the heating temperature or heating time used. Alkali pre-treatment of the seaweeds has also been performed in order to improve the agar gel strength. Sodium hydroxide has been used and the conditions varied in terms of sodium hydroxide concentration, soaking temperature and time. In this study the optimum conditions for extraction of agar from *Gracilaria verrucosa* was determined. The characteristics of the extracted agar were then compared with that different concentration of solution and the behavior of the agar was also determined. The 3 samples of *Gracilaria verrucosa* used in this study were 2 days dried sample A, 3 days dried sample B and 4 days dried sample C.

Agar was extracted from the seaweeds using different extraction solutions. They were distilled water, sulphuric acid and sodium hydroxide. The concentration of sulphuric acid was in the range of 1% – 1.5% and sodium hydroxide concentration range 4.5% – 5%. The extraction temperature was 85 °C. After the optimum extraction conditions were established, the seaweeds were pre-treated with sodium hydroxide heating time of 1½ h – 2 h, and soaking temperature of 80 to 100 °C.

The utilization of sulphuric acid and sodium hydroxide increase the agar strength and yield from A, B and C but have negative effect on the agar gel strength. Accordingly sodium hydroxide increase gel strength and seaweed become soften and prepare it for extraction. An extraction method employed 5% sodium hydroxide, 1% sulphuric acid, 85 °C for 1½ h resulted in a high strength of agar with high yield of agar. Agar with a gel strength 108.55g/cm² could be obtained from sample C, 105.47 g/cm² could be obtained from sample B and 104.59 g/cm² could be obtained from sample A. Gel yield also high in sample C is 3.94 (19.8%), 3.84 (19.2%) yield from sample B and 3.8 (19%) yield from A. pH range 5.3 – 5.8.