

**INFLUENCE OF VARIOUS PHOTBLEACHING CONDITIONS
ON AGAR QUALITY FROM *Gracilariopsis heteroclada***

LEONILO FERNANDEZ ENDOMA JR.

**A Master's Thesis Presented
to the Graduate Faculty of the
Institute of Fish Processing Technology
College of Fisheries and Ocean Sciences,
University of the Philippines Visayas**

**In Partial Fulfilment of the Requirements
for the Degree of
Master of Science in Fisheries
Major in Fish Processing Technology**

JUNE 2016

ABSTRACT

Endoma, L.J.F. 2016. University of the Philippines Visayas, 5023 Miagao, Iloilo, Philippines. June 2016. Influence of Various Photobleaching Conditions on Agar Quality from *Gracilariopsis heteroclada*.

Adviser: Ms. Loda M. Nacional

The photobleaching agar extraction technology stems from public health, environmental, economic, and issues concerning agar stability. With the hypothesis that photobleaching reduces the total inorganic sulfate content in the alkaline-treated seaweed prior to agar extraction, the influence of various photobleaching processes on agar quality was tested.

The 5-hour photobleaching agar extraction process using solar irradiation (SIA) effectively increased agar gel strength ($1,038.61 \text{ g cm}^{-2}$) and 3,6-anhydrogalactose content (41.44%), and decreased total inorganic sulfate content (1.87%) without compromising agar yield (19.37%). The agar extracts of SIA was found superior compared to samples from other bleaching methods tested (i.e., CBA: conventional chemical-bleaching agar extraction process using using NaOCl; UVA: ultraviolet agar photobleaching extraction process; and VLA: visible light agar photobleaching extraction process) in terms of carbohydrate content (90.50%), neutral gel pH (6.93), gel rigidity (815.31 g cm^{-1}), gel cohesion (10.95 mm), breaking strength (7.99 N), apparent viscosity (19.67 cPs), melting temperature (92.67°C), thermal hysteresis (50°C) and has the lowest syneresis index (73.00 mm). The results also show that SIA produced agars with properties at par with the commercial bacteriological agar sample. With the recommendation to further improve gel clarity, the application of solar photobleaching agar extraction process for *Gracilariopsis heteroclada* is very promising.

Keywords: *Gacilariopsis heteroclada*; low-cost environment-friendly agar extraction; photobleaching; agar