



ISOLATION OF A LECTIN FROM *Gracilaria firma* Chang & Xia AND DETERMINATION OF SOME OF ITS BIOLOGICAL ACTIVITIES

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ABSTRACT - A lectin was obtained from the red marine alga *Gracilaria firma* Chang & Xia by extraction with 0.02 M phosphate buffered saline (pH 7.2 with 0.15 M NaCl) followed by ammonium sulfate precipitation at 50 % saturation and isoelectric precipitation at pH 5.2. The lectin yield was 0.087 % (fresh weight basis). The lectin agglutinated rabbit erythrocytes with a specific activity of 133.33 HU mg⁻¹ (hemagglutination units per mg protein). This ability was inhibited by D-(+)-glucosamine at a sugar concentration of 250 mM. The lectin was found to contain 0.17 % total carbohydrates using the phenol-sulfuric acid assay. Highest activity of the lectin was observed at 30 and 40 °C, and at pH 5.0 and 6.0. Assessment of its biological activities showed its ability to inhibit mungbean seed germination at 600 µg mL⁻¹, its toxicity against brine shrimp naupilii at 220 µg mL⁻¹, its inhibition of the cell division of onion root tip cells at 220 µg mL⁻¹, and its activity against mosquito larvae at 700 µg mL⁻¹. However, it did not exhibit antimicrobial activity against *Escherichia coli* and *Staphylococcus aureus* even at 1000 µg mL⁻¹.

Keywords: hemagglutination, inhibition of cell division, larvicidal activity



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