



Thesis Abstract

Isolation, Purification and Characterization of a Lectin from *Synapta* sp by Ma. Theresa P. Loreto, University of the Philippines Los Baños

A survey was conducted on 32 species of marine invertebrates collected in three Philippine provinces, namely: Leyte, Samar, and Batangas, as source of lectin. Among the non-food invertebrates, *Synapta* sp., class Holothuriodea, family Synaptidae, gave the highest agglutination titer, hence it was chosen for further purification.

Purification was done by gel chromatography using Sephadex G-200 and affinity chromatography using fetuin-agarose column. The molecular weight (MW) of gel chromatography purified lectin (GCPL) was ~51 kDa while that of the affinity chromatography purified lectin (ACPL) was ~37 kDa. SDS-PAGE, under reducing and non-reducing conditions, gave a single sharp band with a MW of ~28 kDa and ~40 kDa, respectively. Both lectins are human blood type non-specific, and also agglutinated sheep, goat and chicken erythrocytes. The glycosylated nature of both lectins was verified by PAS staining, total carbohydrate content, and gas chromatography. Addition of divalent metal cations, calcium, and magnesium increased the activity. The lectins are temperature-dependent, with optimum activity at 10-20°C, and exhibited maximum stability at pH 5-10. Both lectins also possess antibacterial and larvicidal properties but had no seed germination inhibitory property. Analysis of the N-terminal amino acid sequence of the affinity chromatography purified lectin revealed distantly related homologies to several organisms.