

Thesis Title	Lectin from Mulberry Leaves
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Abstract

A new sialic acid-specific lectin was found in three parts of mulberry trees (leaves, stem and petiole). Purification of this lectin from mulberry leaves was performed by ammonium sulfate precipitation, affinity chromatography on a N-acetylgalactosamine agarose column, a Sephacryl S-200 column and fast protein liquid chromatography using a Mono Q column. Its native molecular weight was 39,000 and its subunit molecular weight was 14,500. By hapten inhibition, the mulberry leaf lectin (MLL) was shown to be specific to N-glycolylneuraminic acid more than N-acetylgalactosamine and D-galactose at 0.0325, 0.065 and 0.065 mM respectively. The lectin was found to be a heat-labile glycoprotein containing 3.5% neutral sugars. By polyacrylamide gel isoelectrofocusing, the lectin was found to exist in multiple forms with pI values in basic range (between 7.35-8.45). The lectin showed high contents of

glutamic acid, glycine, lysine and alanine. Two possible roles of the lectin were investigated. First, the lectin may be a defense molecule for the plant since it specifically induced agglutination of a specific mulberry pathogen, *Pseudomonas syringae* pv *mori*. Secondly, the lectin may play a role in enhancing food uptake by the silkworm since it was found to stimulate strongly alkaline protease but mildly α -amylase, trehalase, alkaline phosphatase in the digestive system of the silkworms (*Bombyx mori* Linn).