CHAPTER 7

SUMMARY
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In an effort to purify lectin from *Butea monosperma* seeds, affinity chromatography on activated guar gum was found to be efficient and simple. N-acetyl D-galactosamine BML is a hetero dimer (Mw 67,000; monomers being 34,000 and 33,000) and binds all the types of human erythrocytes. But BML does not bind other animal erythrocytes. BML is a glycoprotein and does not require metallic ions for the binding specificity though it contains Mg$^{2+}$. The protein is stable up to 90°C, there onwards its activity gets decreased on raising the temperature and finally destroyed at 100°C. The results obtained from the antibacterial activity assay of lectin illustrated the specificity of its action. At the same time, it showed microbial agglutinating ability. All the strains studied were clinical isolates. The disc diffusion method was employed for this purpose. Most of the strains were inhibited by the lectin to a good extent. The sensitivity of the tested organisms to BML was in the decreasing order as *Aeomonas, Citrobacter freundii, Proteus mirabilis, Salmonella paratyphi, Serratia marcescens, Escherichia coli, Salmonella typhi and Shigella dysentriae*. A notable observation was its antibacterial activity against drug resistant organisms to a moderate extent. Heat was found to reduce the antibacterial property of lectin. Moderate heating did not affect antibacterial property while boiling temperature totally destroys its antibacterial property.
The mitogenic activity of BML was investigated. The lectin did not show any mitogenic or anti-mitogenic effect. It is amitogenic. The experiments were conducted with various lectin concentrations from 0.01 to 100 μg/ml. Any of these concentrations did not enhance cell stimulation of lymphocytes.

By fluorescence spectra analysis, at GuHCl 2M and Urea 3M remarkable difference in fluorescence is observed which could be due to exposing of buried tryptophan groups. Such a systematic step in denaturation with two denaturants shows the pathway of denaturation suggesting denaturation of association of domains, exposing buried tryptophan groups. The Stern-Volmer plot of acrylamide quenching was found to be linear for an excitation of 280 nm, which suggests a single class of fluorophores, equally accessible to the quencher. Iodide quenching of tryptophan fluorescence is generally characterized by downward curving Stern-Volmer plots.

The BML showed in vitro cytotoxicity. The BML administration into induced cancerous tumors gave the following results. Body weight was found increased in tumour induced mice (p<0.001), and it was found decreased in lectin treated mice (p<0.005). The life span of tumor-induced mice treated with BML was found increased up to about two times of the untreated animals. Also the tumour size was found to decrease from 6.13cm to 4.18 cm in treated mice. Survival of all the lectin administered normal mice without showing any abnormalities indicated that the lectin might be nontoxic in normal conditions. The present study suggests a highly promising candidate,
Butea monosperma lectin, for thorough investigation into its suitability as a better anticancer agent since it doubles the life span of mice with induced tumor by DLA cells co-administered with lectin.