

# Purification, characterization and toxicity of a mannose-binding lectin from the seeds of *Treculia africana* plant

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## Abstract

In this study, a mannose-specific, homodimeric lectin from the seeds of *Treculia africana* was purified, characterized and its adverse effects were investigated in mice. The purification protocol involved anionic exchange chromatography on DEAE-Cellulose followed by gel filtration on Sephadex G-100. The hemagglutinating activity of lectin towards human erythrocytes was sensitive to inhibition by D-mannose. Treatment of the protein with EDTA exerted no inhibitory effect; however, analysis of metal content by atomic absorption spectroscopy revealed the presence of  $\text{Cu}^{2+}$ ,  $\text{Fe}^{3+}$ , and  $\text{Mg}^{2+}$ . The results obtained showed that the lectin possesses maximum hemagglutinating activity towards human erythrocytes activity over the pH range 3–7.2 and is relatively thermostable up to 50°C. Periodic acid Schiff's (PAS) reagent staining showed that the protein was non-glycosylated while its amino acid composition analysis revealed that the protein contained 155 residues per subunit. The subunit had a minimal molecular weight of 22,139 Daltons, while the native molecular weight was estimated to be 41,000 Daltons. The lectin was found to be moderately toxic to mice with an  $\text{LD}_{50}$  of 47.21  $\mu\text{g g}^{-1}$  body weight while, histopathological analysis showed no treatment related effects in any of the organs examined.

**Keywords:** [Lectin](#), [Seeds](#), [Toxicity](#), [Histopathology](#), [Treculia Africana](#)

DOI: <https://doi.org/10.1080/02772240902732357>

Journal of Toxicological & Environmental Chemistry

Published by: Taylor & Francis Group, on 2009/10/1