

Banana Lectin, a β -prism I Fold Lectin with Two Carbohydrate-binding Sites

Mamannamana Vijayan^a, K. Saikrishnan^a, Prashant Kumar^a, Z. Dauter^b, K. Sekar^c, A. Surolia^a, D. D. Singh^a, ^a*Molecular Biophysics Unit, ^bBioinformatics Centre and Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore 560102, India. ^bSynchrotron Radiation Research Section, Brookhaven National Laboratory, Upton, NY 11973, USA. E-mail: mv@mbu.iisc.ernet.in*

The β -prism I as a lectin fold was first characterised in this laboratory in jacalin from jackfruit seeds. This lectin fold was then thought to be characteristic of the *Moraceae* family. Subsequently, the fold was found in lectins from other families as well. We have now determined the structure of banana lectin, which adopts this fold, complexed with methyl- α -D-mannose. The X-ray analysis has been carried out on a trigonal crystal form at two temperatures. As in the case of other lectins with the same fold, the structure consists of three Greek keys, which form the faces of a pseudo-threelfold symmetric prism. In other lectins, the primary carbohydrate-binding site is made up of the loop in one of the Greek keys. In banana lectin, however, two nearly identical binding sites are generated using the loops in two Greek keys. Interestingly, it turns out that while there is no noticeable reflection of threelfold symmetry in the sequences of other lectins, some vestiges of this symmetry is seen in the sequence of banana lectin. This may have some evolutionary implications as well.

A comparison of the structures of banana lectin with those of other similar lectins provides insights into the variability in the oligomerization of lectins with β -prism I fold. The plasticity of the subunits in such proteins appears to be related to this variability.

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