LECTIN NATURE OF VICIA FABA α-GALACTOSIDASE 1

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α - galactosidase is the enzyme responsible for the hydrolysis of non-reducing terminal α-D-galactosyl residues of galactose containing oligo and poly-saccharides, α-galactosidase I from Vicia faba (Broad Bean) seeds in addition to displaying catalytic activity for the above reaction, also displays lectin activity by agglutinating erythrocytes from different sources.[1] Amongst erythrocytes from various species tested, highest titre for agglutination was shown with rabbit erythrocytes. This agglutination could however be inhibited by glucose/mannose type sugars.

In the above seeds, in addition to this enzyme-lectin (α-galactosidase I) that displays lectin activity, is the classical lectin favin that shows specificity for the same set of sugars (i.e. glucose/mannose) as α-galacto-sidase I in the inhibition of agglutination. Studies were carried out on this enzyme-lectin to find whether the agglutination observed here was due to the contamination by favin on the former. Immunological and separation techniques revealed that this behaviour of Vicia faba α-galactosidase I (Enzyme-lectin) was not due to any contamination, but due to a structural similarity in the amino acid sequence between these two proteins.

References:

Dey., P.M., Naik, S. and Pridham, J.B. (1982) Febs Lett. 150: 233-237