

Galactomannans Discover

Description

Galactomannans

These plant polysaccharides contain a mannan backbone and (1 \rightarrow 6) linked β -D-galactose residues as random side chains. Depending on its source and origin, the galactose/mannose ratio can vary from 0.3 in carob, 0.6 guaran to 0.9 in fenugreek galactomannan. These polysaccharides are all water soluble and they produce extremely viscous solutions. They are used extensively as thickening agents in food products. A combination with xanthan yield gel formation. X-ray fiber diffraction patterns from any of these galactomannans resemble that of mannan reference-in-status-bar implying the occurrence of a two symmetry for the chain, with a fiber repeat of 10.3 Å. Due to the conformational flexibility imparted by the (1 \rightarrow 6) linkage, the galactose side chain is likely to display several low energy orientations. They might not preferentially adopt the same conformation in neighboring residues with the fiber. The exact details of the molecular structure and packing arrangement in the orthorhombic unit cell, compatible with the observed X-ray data have not been reported. Only three-dimensional structures derived from molecular modeling computation are available.

Fig.1 The galactomannan repeat unit

Category

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