High Field NMR Spectroscopy Analysis of Beta-limit Dextrins From Starch-like Polysaccharides: an Approach to the Understanding of Amylopectine Crystallinity

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Introduction: Amongst all branched alpha-1,4 glucans, amylopectine is outstanding. Its specific, well-ordered alpha-1,6 branching pattern, originating from a complex enzymatic control, permits a very efficient packing of short linear chains within the currently accepted cluster model and allows amylopectine to grow into exceptionally large macromolecules. These characteristics lead to unique physicochemical properties such as gelling properties, reversible swelling, crystallinity of high water content, complexes with linear and apolar molecules as well as several others. It is essential to uncover this intimate branching organisation in order to understand the unique architecture of amylopectine and its relations to some of starch's macroscopic properties.