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1 Inulin, a flexible oligosaccharide I: 2 Review of its physicochemical characteristics

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12

13 Abstract

14 Inulin, a fructan-type polysaccharide, consists of (2→1) linked β-D-fructosyl residues (n=2-60), usually
15 with an (1↔2) α-D-glucose end group. The applications of inulin and its hydrolyzed form oligofructose
16 (n=2-10) are diverse. It is widely used in food industry to modify texture, replace fat or as low-calorie
17 sweetener. Additionally, it has several applications in other fields like the pharmaceutical arena. Most
18 notably it is used as a diagnostic agent for kidney function and as a protein stabilizer. This work reviews
19 the physicochemical characteristics of inulin that make it such a versatile substance. Topics that are
20 addressed include morphology (crystal morphology, crystal structure, structure in solution); solubility;
21 rheology (viscosity, hydrodynamic shape, gelling); thermal characteristics and physical stability (glass
22 transition temperature, vapor sorption, melting temperature) and chemical stability. When using inulin,
23 the degree of polymerization and processing history should be taken into account, as they have a large
24 impact on physicochemical behavior of inulin.
25

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