

Degree of Polymerization of Inulin Molecules during the Plant Development by GC/MS Analysis

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Abstract

Stevia rebaudiana Bertoni, an perennial shrub of South America, that produces diterpene glycosides used as sweeteners. Recently was isolated from its roots the inulin molecule, polysaccharide of great interest in the food industry, and for technological applications. For commercial purposes it is necessary to know the accumulation profile of inulin during plant development. *S. rebaudiana* was cultivated in pots at greenhouse conditions. The plant development was evaluated by four months. *S. rebaudiana* roots were dried and milled, extracted with water under reflux. The aqueous extract was filtered, concentrated in a rotary evaporator and precipitated with ethanol 1:3 (v/v). After centrifugation (6000 x g / 20 min) the precipitate fraction was lyophilized. Determination of the degree of polymerization (DP) for six inulins extracts, one for each cut, was calculated using the quantitative data of the fructose and glucose obtained by GC/MS after hydrolyze and derivatization (oxime-silylate). Quantitative analyzes were carried out by internal standard method (myo-inositol) for each monosaccharide (glucose and fructose). The average yield of the extracts in the first three cuts (6.25% dry weight) was less than that observed in the final cut after flowering plant (27.60%). The extracts obtained during the vegetative phase of the plant (two first months), showed fructans molecules with low DP ~ 5, nominated fructooligosaccharides (FOS). Inulin molecules with DP > 20 were observed after flowering stage. The data showed that inulin molecules are produced with higher yield and DP after flowering of *S. rebaudiana*.

Biography

José Eduardo Gonçalves has completed his PhD in Inorganic Chemistry at the age of 31 years from State University of Campinas. He has experience in Chemistry with emphasis on

Analytical Chemistry and Biotechnology, acting on the following topics: microorganisms immobilization, identification of bioactive substances and gas chromatography and mass spectrometry.