

Rheological Characterization of Exopolysaccharides Produced by *Rhizobium* Bacteria.

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Exopolysaccharides (EPS) are polymers produced by a great variety of microorganisms and can possess different physical and chemical properties, and structural features. Considering the growing interest in commercial applications of polysaccharides that show rheological compatible behavior within the application, as in the food sectors, research have been developed in attempts to discover new promising biomolecules. The objective of the work presented was to determine the rheological characteristics of the exopolysaccharides R₁, R₂, R₃ and R₄ produced by diferent *Rhizobium* strains. The analysis of monosaccharide composition, after acid hydrolysis, showed glucose as the majoritary component and the gel permeation chromatography indicated that the R₂ and R₃ have an excellent purity grade and less polydispersivity than R₁ and R₄. The uronic acid component found in R₃ (8,4%) was higher than R₁ (2,4%), R₂ (1,7%) and R₄ (0,8%). All exopolysaccharides showed non-Newtonian behavior, with pseudoplastic characteristics and R₁, R₂ and R₄ showed a slight increase in viscosity in presence of NaCl. The four biopolymer gels showed viscoelastic behavior, being R₁ with characteristics of strong gelling. The polysaccharide solutions kept the strong gel characteristics possessing thermo-stable and thermo-resistant properties when evaluating the influence of temperature over the viscoelastic behavior of solutions. The findings give support that the exopolysaccharides produced by *Rhizobium* bacteria strains studied have physicochemical properties suitable for use in commercial applications.

Keywords: Rheological analyses; *Rhizobium*; Pseudoplastic solution; Viscoelastic behaviour

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