



**Secretaria da Pós-Graduação em Ciência e Tecnologia de Alimentos**

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**PROTEIN-POLYSACCHARIDE COMPLEXES: PERSPECTIVES OF INDUSTRIAL APPLICATIONS**

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Plant proteins, as well as polysaccharides, are macromolecules that arouse interest for the development of vegetarian and vegan products, which are increasingly gaining consumer preference, whether for religion, economic, ethical, social, healthiness or sustainability reasons. However, although they are available and affordable raw materials, the use of plant proteins or polysaccharides in their native form is often challenging due to molecular structural aspects, which restrict intra and intermolecular interactions and, therefore, limit bio- and techno-functional properties, such as solubility and digestibility. In this context, a promising alternative to overcome this challenge and expand the techno-functionality of both polymers is the formation of protein-polysaccharide complexes, which can be established through hydrogen bonds, as well as hydrophobic and electrostatic interactions between the two molecules, resulting in complex structures with improved characteristics, such as conformational stability in a wider range of pH and temperatures, solubility, as well as emulsifying and gelling properties. Regarding the prospects for industrial use, protein-polysaccharide complexes can be used to improve the texture, stability and sensory attributes of food products. Several recent studies available in the literature have focused on exploring them to control the instability of emulsions or as carrying systems for controlled release of bioactive compounds such as carotenoids, flavonoids and vitamins. Furthermore, physicochemical and techno-functional characterization data from literature demonstrate that protein-polysaccharide complexes also present characteristics suitable for other industrial purposes, such as the production of biomaterials, purification of macromolecules, and adsorption of pollutants, which highlights the existence of a great technological potential to be explored in R&D.

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