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Interfacial properties of plant proteins in emulsions and foams

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Plant proteins have gained prominence in the food industry due to the growing demand for sustainable alternatives to animal-derived proteins without compromising technological functionality. In this context, multiphase systems such as foams and emulsions are widely used in food products and depend on the action of interfacial agents for their formation and physical stability, which justifies the interest in studying the behavior of these proteins. Foams and emulsions are thermodynamically unstable systems characterized by the dispersion of immiscible phases, whose stability depends on the reduction of interfacial tension and the formation of a barrier against phenomena such as coalescence, flocculation, and drainage. Plant proteins, due to their amphiphilic nature, adsorb at the interface and undergo structural rearrangements, forming viscoelastic interfacial films that contribute to the kinetic stability of the system. The interfacial performance of these proteins is related to properties such as size, solubility, hydrophobicity, electrical charge, and structural flexibility, and is also influenced by environmental factors such as pH, ionic strength, temperature, and protein concentration. The evaluation of this behavior involves macroscopic tests and interfacial techniques, allowing the establishment of relationships between structure, interfacial properties, and functionality. Therefore, understanding these mechanisms is essential to optimize the use of plant proteins and expand their application in multiphase food systems.

Orientador (a) **Orientado(a)**

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