

TAL 797 – Seminário

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## **APPLICATION OF EMERGING TECHNOLOGIES TO IMPROVE THE TECHNO-FUNCTIONAL PROPERTIES OF PLANT PROTEINS**

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Proteins have various functional properties such as water retention capacity, foaming and emulsification, in addition to providing nutritional benefits. As a result, they are widely applied in the food industry, particularly in bakery products, dairy, and beverages. Currently, there is a growing consumer demand for plant proteins due to health, sustainability, or ethical concerns. However, when compared to animal proteins, plant proteins generally exhibit inferior techno-functional characteristics. Therefore, one approach to expanding the use of plant proteins in food products is to modify their structure, and consequently, their physicochemical properties. Protein modification methods can be classified as physical, chemical, or enzymatic. Physical modification methods typically do not alter the primary structure of proteins, and they are characterized by low cost, non-toxicity, short processing time, and minimal impact on nutritional composition. Emerging technologies such as high-pressure homogenization, ultrasound, pulsed electric fields and ohmic heating are examples of physical modifications and have been widely applied to different plant protein sources, demonstrating efficiency in improving their techno-functional properties. The use of high-pressure homogenization has enhanced solubility, foaming, emulsification, and emulsion stabilization of chickpea proteins. Moreover, the combined use of technologies has proven to be a promising alternative for increasing extraction efficiency of protein isolates and improving their techno-functional properties. The combined use of pulsed electric fields and ultrasound resulted in significantly higher extraction efficiency and better solubility, emulsification, and foaming properties of chickpea protein compared to the results obtained with conventional plant protein extraction techniques (alkaline extraction-isoelectric precipitation) and the individual use of these two technologies. Therefore, the use of emerging technologies to modify plant proteins is a promising alternative to expand their application as additives and ingredients in the food industry.

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