

TAL 797 – Seminário

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APPLICATION OF EMERGING TECHNOLOGIES IN THE EXTRACTION AND MODIFICATION OF PLANT PROTEINS

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The world population has an estimated growth of 10.4 billion in the 2080s and at the same time, an increase in the food supply estimated at up to 70% is required. Meeting this demand for food is challenging, mainly because conventional methods of agricultural intensification are not considered ecologically correct. In line with this demand for food, the growth of the vegetable protein market is part of a scenario in which the food and food ingredients industries are looking for innovative ways to meet these needs. Protein is a macronutrient that plays an important role in biological systems and confers nutritional and health benefits. In addition, its techno functional properties are related to sensory attributes in foods, such as color, texture, flavor and appearance, which directly impact the quality of the final product. The functional properties of proteins are affected by several factors, including interactions with water, proteins, lipids, carbohydrates and other compounds, as well as environmental conditions such as temperature, pH and ionic strength, and the type of extraction method employed. Conventional methods of extracting proteins from different food materials have many disadvantages, including accelerated denaturation of proteins, production of large volumes of waste causing environmental problems, high consumption of chemicals, high production cost, and low extraction yield. For the food industry, these factors create obstacles in the productive sector, mainly in the use of vegetable proteins, which may lose their techno-functional properties due to their extraction methods. Alternative methods have been developed and refined for the extraction and improvement of plant proteins technological properties, such as enzyme-assisted extraction, ultrasound-assisted extraction, microwave-assisted extraction, ohmic heating, and cold plasma. These technologies are considered accessible, safe, and ecological, and aim to avoid/minimize the use of organic solvents, reduce process time and energy consumption, and increase extraction yields while preserving protein quality with improved technological

properties. Thus, recognizing the impact of extraction methods and the techno functional properties of proteins is crucial to meet the expected demand shortly.

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