



TAL 797 – Seminário

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GERMINATED PLANT-BASED FLOUR: ULTRASOUND-ENHANCED FUNCTIONAL INGREDIENT FOR FOOD INDUSTRY APPLICATIONS

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Flour-based products have gained prominence in the food industry due to their nutritional value and growing consumer acceptance, as they are sources of proteins, fibers, unsaturated lipids, vitamins, and bioactive compounds. Germination is an efficient bioprocessing technique to improve the nutritional and functional properties of seeds, since it promotes the activation of hydrolytic enzymes and the conversion of complex macronutrients (starch, proteins, and lipids) into simpler and more bioavailable forms, such as reducing sugars, amino acids, and free fatty acids. This process also contributes to the reduction of antinutritional factors and the increase in the concentration of bioactive compounds, such as gamma-aminobutyric acid (GABA) and phenolics. The initial germination stage, hydration, is essential to reactivate the seed metabolism and initiate embryo growth. Still, it is a slow and expensive process, which can take up to 48 hours. In this context, emerging technologies such as ultrasound have been explored as an alternative to accelerate hydration, reduce processing time, and preserve or even improve the nutritional quality of germinated seeds. The application of ultrasound in the hydration stage has shown positive effects, such as increased water diffusivity, intensification of biochemical reactions, and improvement of the functional properties of the flours obtained, including greater antioxidant capacity, water retention, solubility, and foam formation. These characteristics make these flours promising functional ingredients for application in various food products, such as breads, cakes, cookies, snacks, beverages, and nutritional formulations, adding value to the production chain and meeting the demands for healthier and clean-label foods.

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