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Mini Review

Chemistry of ingredients in food to improve the quality and stability of the food

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Abstract

Adding value to seaweed by extracting their different bioactive compounds and incorporating them into foods represent an interesting and strategic approach to diversify the functional foods offer. However, once harvested, fresh seaweed must overcome a sequence of crucial steps to confer their biological activity. Pre-processing operations and extraction processes, as well as long-term storage, play important roles in improving or decreasing the phlorotannins content.

Keywords: Phlorotannins, Encapsulation, Biological activity

INTRODUCTION

The encapsulation in the food industry has gained relevant importance, mainly due to its contribution to solve food problems by reducing the loss of nutrients, prolong the shelf-life, and improve food quality and safety. The lipid-based delivery systems as microemulsions, liposomes, solid lipid nanoparticles and nanostructured lipid carriers are widely used to deliver food ingredients due to their ability to protect and deliver it, enhancing its functionality and bioavailability (Lucia et al., 2020). Despite the benefits on delivering food ingredients the toxicity profile of such carriers is usually neglected. The valorization of brewers' spent grain (BSG) as an ingredient has been reported to increase the nutritional value of various food items. However, it diminishes its mechanical properties, technological processing properties, and the acceptability of the final food products (Claudia et al., 2021). This study aims to modify the dietary fiber composition of BSG by autoclave treatment (AT) in order to improve its functional properties. Different temperatures and time exposures were evaluated along with the involvement of pressure. Incorporation of bioactive ingredients to food product is the most active research area in the field of food processing, mainly because of their health-promoting benefits (Joncer et al., 2021). Direct incorporation of these ingredients to the food system results in their instability to the environment which limits their industrial application. Encapsulation protects the bioactive food ingredients against adverse environmental conditions such as food processing, handling, storage and physiological digestion until delivered in the proper human organ where the function is needed by packaging in its structure which also ensures its controlled release at the right site. This study was designed to develop and optimize the process of spray-drying method and evaluate the potential of beef tongue powder as a value-added, multi-purpose food ingredient. To develop and optimize the process of spray-drying, beef tongue was skinned, chopped, micronized, filtered to generate a homogeneous meat slurry (Santosh et al., 2020). After spray drying, the meat powder properties were characterized for proximate composition, lipid composition, and proteomic profile were evaluated. Our findings indicate that beef tongue powder can be developed by spray-drying and that the beef tongue powder retains both protein and fat content from the raw tongue.

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