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Recent trends developed to modify plant proteins, their effects and applications

Elif Meltem İŞÇİMEN[1]

[1]Erciyes University, Engineering Faculty, Food Engineering Department, 38039-Kayseri, Türkiye

Abstract

Plant protein sources are gaining awareness because of their nutritional enrichment, imminent scarcity of animal proteins, high sustainability, and essential role in the manufacture of functional meals and bioactive peptides. However, negative consequences include the presence of anti-nutritional substances and low digestion may make plant protein sources problematic. Additionally, as compared to animal proteins, plant proteins usually have worse functional qualities and palatability.Many methods are available and are currently being investigated to modify the negative effects of plant proteins. One of these methods is the use of Maillard reactions.In the early phases of the Maillard process, glycosylation is the structural alteration of proteins caused by the addition of polysaccharides, which results in the formation of protein-polysaccharide conjugates. It has been demonstrated that the green and effective process of glycosylation produces changed proteins with improved solubility, emulsifying, and forming capabilities. Another method that can be used is fermentation. The production of bioactive peptides derived from fermentation and their application in commercial products is of significant value. The potential effects of new technologies in plant protein sources such as co-fermentation are being widely investigated. Moreover, many non-thermal approaches have been researched to enhance plant proteins' functional properties without compromising their nutritional value or sensory appeal. The technologies involved include dynamic high-pressure microjets, pulsed electric fields, cold plasma, ultrasound, and high hydrostatic pressure. There is a need to explain in detail the effects of these technique on the functional and structural behavior of proteins and to provide new perspectives.

Key Words: *Plant protein, , Glycosylation, Fermentation, Non-thermal treatments*