ABSTRACT

Functionalization of Sweet Potato Leaf Polyphenols by Nanostructured Composite B-Lactoglobulin Particles from Molecular Level Complexations: A Review

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Sweet potato leaf polyphenols (SPLPs) have shown potential health benefits in the food and pharmaceutical industries. Nowadays, consumption of SPLPs from animal feeds to foodstuff is becoming a trend worldwide. However, the application of SPLPs is limited by their low bioavailability and stability. β-lactoglobulin (βlg), a highly regarded whey protein, can interact with SPLPs at the molecular level to form reversible or irreversible nanocomplexes (NCs). Consequently, the functional properties and final quality of SPLPs are directly modified. In this review, the composition and structure of SPLPs and βlg, as well as methods of molecular complexation and mechanisms of formation of SPLPsβlgNCs, are revisited. The modified functionalities of SPLPsβlgNCs, especially protein conformational structures, antioxidant activity, solubility, thermal stability, emulsifying, and gelling properties including allergenic potential, digestibility, and practical applications are discussed for SPLPs future development.

Keywords: sweet potato functionalization, leaf polyphenols, molecular level complexations, B-lactoglobulin particles.