

Abstract

Structural Characteristics and Functionality of Whey Protein Concentrate via Wet-Heating Conjugation with Galacto- Oligosaccharide [†]

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Abstract: Whey protein concentrate (WPC) was glycosylated with galacto-oligosaccharide (GOS) via the Maillard reaction using wet-heating treatment. The objective of our research was to study the effects of different ratios of WPC conjugated with GOS (2:1, 1:1, and 1:2) and various time (0, 2, 4, and 6 hours) on the characteristics. The assays carried out included color development, SDS-PAGE, FTIR, microstructure analysis, and evaluation of the functionality of the resulting products. After the conjugation, the Maillard reaction led to a glycation degree of up to 30–35%. WPC-GOS ratios of 1:1 and 1:2 at 4–6 h showed improvements in emulsification, foaming stability and resulted in a significant 2-fold enhancement in antioxidative properties. This conjugation can be further advantageous in developing food ingredients and novel materials for prebiotic and bioactive compounds.

Keywords: whey protein; galacto-oligosaccharide; Maillard reaction; conjugation; antioxidant

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