

Accepted Manuscript

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PII: S0308-8146(18)30404-7

DOI: <https://doi.org/10.1016/j.foodchem.2018.02.155>

Reference: FOCH 22539

To appear in: *Food Chemistry*

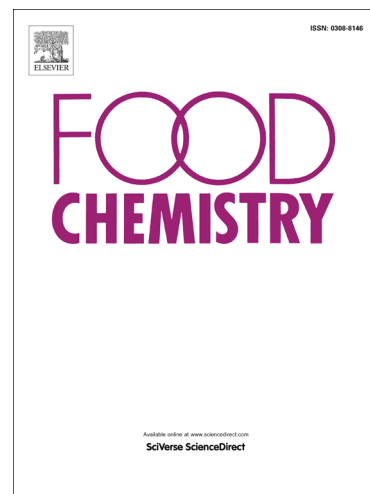
Received Date: 8 September 2017

Revised Date: 28 February 2018

Accepted Date: 28 February 2018

Please cite this article as: Zhang, X., Gao, H., Wang, C., Qayum, A., Mu, Z., Gao, Z., Jiang, Z., Characterization and comparison of the structure and antioxidant activity of glycosylated whey peptides from two pathways, *Food Chemistry* (2018), doi: <https://doi.org/10.1016/j.foodchem.2018.02.155>

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Characterization and comparison of the structure and antioxidant activity of glycosylated whey peptides from two pathways

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Abstract

Glycosylated whey peptides (WPP-Gal A and WPP-Gal B) were formed from two pathways. WPP-Gal A showed higher browning intensity and fluorescence intensity than WPP-Gal B. Loss of amino groups and reducing sugar was heavier for WPP-Gal A than WPP-Gal B. Size exclusion chromatography revealed that WPP-Gal A and B had similar curves, but the molecular weight distribution of WPP-Gal B was more extensive than that of WPP-Gal A. Particle size was larger for WPP-Gal B than WPP-Gal A. Furthermore, WPP-Gal A showed greater antioxidant activity than WPP-Gal B. FT-IR analysis indicated that vibrations of several chemical bonds in amide I, II and III bands of WPP-Gal A were more obvious than those of WPP-Gal B. WPP-Gal A showed greater Caco-2 cell proliferation than WPP-Gal B. Therefore, WPP-Gal A showed more significant structural and characteristic changes, higher antioxidant activity and better proliferative activity than WPP-Gal B.

Keywords: Glycosylated whey peptide, Structure, Antioxidant activity, Physiochemical property, Cell proliferation

1. Introduction

Whey is obtained as a by-product during cheese manufacture (Chawla, Chander, & Sharma, 2009). It is rich in proteins with high nutritional value and physiological health-promoting effects (Mohanty, Mohapatra, Misra, & Sahu, 2016). Whey proteins have a wide range of applications, not only in the food industry but also in the fields of pharmacology and biomedicine (Marcelo & Rizvi, 2008). With continuous research on improving functional properties of whey protein, biological peptides derived from whey proteins have drawn widespread attention. It has been found that enzymatic hydrolysis of whey protein could release biological peptides with certain physiological functions (Gauthier & Pouliot,

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