

Accepted Manuscript

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PII: S0308-8146(17)30049-3

DOI: <http://dx.doi.org/10.1016/j.foodchem.2017.01.049>

Reference: FOCH 20441

To appear in: *Food Chemistry*

Received Date: 24 August 2016

Revised Date: 9 December 2016

Accepted Date: 10 January 2017

Please cite this article as: Zhang, Y., Zhang, Y., Liu, X., Huang, L., Chen, Z., Cheng, J., Influence of hydrolysis behaviour and microfluidisation on the functionality and structural properties of collagen hydrolysates, *Food Chemistry* (2017), doi: <http://dx.doi.org/10.1016/j.foodchem.2017.01.049>

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Influence of hydrolysis behaviour and microfluidisation on the functionality and structural properties of collagen hydrolysates

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ABSTRACT

The functionality and structural properties of pig skin hydrolysates with different degrees of hydrolysis (DH, 10% and 20%) and microfluidisation (120 MPa), prepared by pepsin and Alcalase® have been investigated in this study. Extensive hydrolysis can significantly improve the absolute value of the zeta potential and surface hydrophobicity. The particle distribution of hydrolysates decreased with increasing DH. The numbers of free sulfhydryl (SH) and disulfide bonds (SS) were significantly increased with increasing DH ($p < 0.05$). Hydrolysates with a lower DH showed a better emulsifying property than those with a higher DH. Microfluidisation led to the transformation of structural and interfacial properties of the hydrolysates and increased the value of the zeta potential, S_0 , and gel strength. Microfluidisation results in limited breakage of chemical bonds, the number of SS and SH bonds unchanged in the treatment. These results reflect the functionality and structural properties of collagen-rich pig skin hydrolysates.

Keywords: pig skin, collagen hydrolysate, degree of hydrolysis, microfluidisation, functionality, structural properties

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