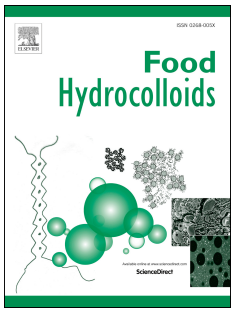
Accepted Manuscript



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PII: S0268-005X(17)31388-7

DOI: 10.1016/j.foodhyd.2017.12.032

Reference: FOOHYD 4208

To appear in: *Food Hydrocolloids*

Please cite this article as: Marlies A. Lambrecht, Lomme J. Deleu, Ine Rombouts, Jan A. Delcour, Heat-induced network formation between proteins of different sources in model systems, wheat-based noodles and pound cakes, *Food Hydrocolloids* (2017), doi: 10.1016/j.foodhyd.2017.12.032

Heat-induced network formation between proteins of different sources in model systems, wheat-based noodles and pound cakes

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Abstract

Proteins impact the structure and quality of various food products. Disulfide based heat-induced covalent networks are often linked to food product quality. Each single protein source has a unique ability to react and interact under specific processing conditions. In mixed protein systems, proteins from different sources can influence each other's polymerization. Such co-protein effects are *inter alia* relevant for a variety of wheat-based food products in which gluten proteins coexist with globular proteins from egg, soy or milk, especially since recipe changes can be desired from economical and/or ecological perspectives. In this paper, heat-induced network formation of wheat, egg, soy, or whey proteins and mixtures thereof is reviewed. Furthermore, the impact of proteins from different sources on protein network formation in and properties of noodles and pound cake are reviewed. It is outlined that globular proteins impact the rate and extent of protein network formation in a similar way both in model and in noodle systems. The level of accessible sulfhydryl groups and the surface hydrophobicity of unfolded proteins are the main protein characteristics determining co-protein effects between globular proteins and gluten during heating. Also in pound cake, these factors impact network formation between wheat and egg proteins. In both egg noodles and pound cake, egg proteins