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MICROENCAPSULATION OF FISH OIL INTO CROSS-LINKED WHEY PROTEIN MATRIX

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ABSTRACT The aim of this study was to investigate the effect of phenolic compounds (gallic and tannic acids) on the release and oxidative stability of whey protein encapsulated fish oil during long term storage. The oxidation products of tannic and gallic acids were used to induce covalent bindings amongst whey protein molecules adsorbed at the oil-water interface. The results showed that the reaction was greatly influenced by the type and concentration of phenols in the aqueous phase. The mean diameter of oil droplets and the flow behaviour of emulsions changed with increasing the proportion of pheolic compounds. The particle size and water solubility of spray dried powders were also found to be affected. Microcapsules with cross-linked membranes were shown to have lower release rate constants and more stability against oxidation and environmental conditions. The results of this study suggest crossed-linked microcapsules as appropriate vehicles for protection of labile functional foods in the gastric system and their controlled release in the intestinal track.

Keywords: Microencapsulation; fish oil; whey protein; phenol