

Extraneous Proteins for Oxidative and Physical Stability of Oil Body Emulsions

C.V. Nikiforidis,^{1,2} O.A. Karkani,¹ N. Nenadis,¹ V. Kiosseoglou¹

¹Laboratory of Food Chemistry, Department of Chemistry, Aristotle University, Thessaloniki, Greece

²Food Physics Group, AFSG, Wageningen University, Wageningen, The Netherlands

Three natural oil body emulsions of a similar fat content (5%) but differing in their protein composition were obtained from an aqueous maize germ extract. The first emulsion was prepared by concentrating the aqueous oil body extract with ultrafiltration to a fat content of 5%. The other two were prepared by initially recovering the oil bodies from the extract by centrifugation, either in the presence of sucrose or by applying isoelectric precipitation at pH 5.0 and then diluting the resulting oil body creams with deionized water. The oxidative and physical stability of the three emulsions, either as they were or after submission to thermal treatment (100 °C for 15 min), were studied following storage at 45 °C. The emulsions differed both in their oxidative and physical stability, depending on the method applied for their recovery that in turn influenced their continuous phase and/or interfacial membrane protein and/or polyphenols composition. Mixtures of the natural oil body emulsions with green tea extracts were then prepared and studied for their creaming behavior. The polyphenols of the green tea extract appear to interact with the oil bodies leading to intensive dispersion destabilization which, however, was halted following carrageenan addition at a relatively very low level.