Effect of α-lactalbumin and β-lactoglobulin on the oxidative stability of 10% fish oil-in-water emulsions depends on pH - DTU Orbit (11/02/2019)

The objective of this study was to investigate the influence of pH on lipid oxidation and protein partitioning in 10% fish oil-in-water emulsions prepared with different whey protein isolates with varying ratios of α-lactalbumin and β-lactoglobulin. Results showed that an increase in pH increased lipid oxidation irrespective of the emulsifier used. At pH 4, lipid oxidation was not affected by the type of whey protein emulsifier used or the partitioning of proteins between the interface and the water phase. However, at pH 7 the emulsifier with the highest concentration of β-lactoglobulin protected more effectively against oxidation during emulsion production, whereas the emulsions with the highest concentration of α-lactalbumin were most stable to oxidation during storage. These differences were explained by differences in the pressure and adsorption induced unfolding of the individual protein components.

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