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Physico-chemical properties, oxidative stability and non-enzymatic browning reactions in marine phospholipids emulsions and their applications for food enrichment

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Marine phospholipids (PL) are more advantageous than fish oil. They seem to have better bioavailability, better resistance and higher content of eicosapentaenoic acids and docosahexaenoic acids than fish oil. The main objective of this study was to explore the possibilities of using marine PL for food enrichment. The secondary objective was to investigate the different aspects of marine PL emulsions including: physico-chemical properties, oxidative stability and non-enzymatic browning reactions while identifying the important factors affecting their stability. The physical and oxidative stability of marine PL emulsions was significantly influenced by the chemical composition of marine PL used. Emulsions with a high oxidative stability could be obtained when using marine PL of high purity with a high content of PL, cholesterol and α -tocopherol. Non-enzymatic browning reactions (Strecker degradation and pyrrolization) seemed to influence the oxidative stability of marine PL emulsions. Similar to marine PL emulsions, the oxidative stability and sensory acceptability of marine PL enriched products varied depending on the quality and chemical composition of marine PL used. Overall, this study provided new insights into the oxidative stability of marine PL and preliminary knowledge on the quality of marine PL fortified foods.