

Fatty acid composition in double and multilayered microcapsules of ω -3 as affected by storage conditions and type of emulsions

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Abstract

Spray-dried microcapsules from double (DM) and multilayered (MM) fish oil emulsions were produced to evaluate the effect of type of emulsion on the fatty acid composition during the microencapsulation process and after one month of storage at refrigeration (4 °C) and room (20 °C) temperature. Encapsulation efficiency, loading and loading efficiency were significantly higher in MM than in DM. C20:5 n-3 (EPA) and C22:6 n-3 (DHA) showed higher proportions in MM than in DM. Some differences in microstructural features were detected, with DM showing cracks and pores. The influence of the storage was significant, decreasing the content of polyunsaturated fatty acids in both MM and DM, above all at 20 °C. This decrease was more notable in DM. Multilayered emulsions are more suitable to encapsulate fish oil in terms of quantity of encapsulated oil, microstructure of the microcapsules and protection of fatty acids, especially EPA and DHA, during storage.