Novel nanoliposomal encapsulated omega-3 fatty acids and their applications in food

Abstract

The aim of the present research was to evaluate the application, stability and suitability of ?3 polyunsaturated fatty acids (PUFAs) incorporated nanoliposomes in food enrichment. Nanoliposomal ?3 PUFAs was prepared by Mozafari method, and their application in bread and milk was compared with unencapsulated (fish oil) and microencapsulated ?3 PUFAs. Sensory evaluation was conducted to determine the perceptible sensory difference/similarity between control, unencapsulated, microencapsulated, and nanoliposomal ?3 PUFAs enriched foods. Results showed no significant ($p = 0.11$) detectable difference between control and nanoliposomal ?3 PUFAs enriched samples while, samples enriched with unencapsulated or microencapsulated ?3 PUFAs showed significant ($p = 0.02$) fishy flavor. Moreover, significantly ($p < 0.01$) higher ?3 PUFAs % recovery and lower peroxide and anisidine values were observed in nanoliposomal ?3 PUFAs enriched samples in comparison with other samples. In conclusion, an effective and reproducible method for application of ?3 PUFAs in the food system was developed.