

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