عنوان مقاله:

Investigating the effects of varying wall materials and oil loading levels on stability and nutritional values of spray dried fish oil

محل انتشار:

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خلاصه مقاله:

High oxidative capacity of polyunsaturated fatty acid rich oils is the main problem with their dietary application. The main objectives of this study were to determine the effects of different encapsulants and oil loading levels on nutritive value, fatty acid profile, and oxidative stability of microencapsulated fish oil powders. Four types of wall materials [glucose syrup and maltodextrin based Maillard reaction products (MRP) or equivalent non-reacted physical blends (Non-MRP)] were used along with the three levels of oil loadings (oil to wall ratio of ۱:۲; ۱:۱; ۲:۱ as low, medium and high oil loadings). Emulsions and resulting microencapsules were tested for fatty acid content and stability if fatty acids over time. Additionally, different oxidative parameters were used to assess the oxidative stability of the microencapsules. Results showed that high oil loading significantly increased the mean particle size of emulsions and resultant powders and concomitantly reduced microencapsulation efficiency (ME) and yield of capsules in all of the tested wall materials. However, MRP exhibited better performance. Maillard reaction products showed better protection efficiency against oil oxidation relative to non-MRP. Nevertheless, two types of MRP encapsulants showed different proficiency and glucose syrup-MRP, provided more protection than Maltodextrin-MRP. Maillard reaction had a positive correlation with the stability properties of emulsions and resulting microcapsules. Our results showed that microencapsulation with Maillard reaction products could be used as an efficient way to protect fish oil from oxidation.

کلمات کلیدی:

Fatty acid profile, Microencapsulation Oxidation, spray drying