



رقم البحث: (الثاني)

عنوانه الانجليزي: The Effect of Wall Material Type on the Encapsulation Efficiency and Oxidative Stability of Fish Oils.

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ملخص البحث (الثاني) باللغة الانجليزية

Fish oil is the primary source of long-chain omega-3 fatty acids, which are important nutrients that assist in the prevention and treatment of heart disease and have many health benefits. It also contains vitamins that are lipid-soluble, such as vitamins A and D. This work aimed to determine how the wall material composition influenced the encapsulation efficiency and oxidative stability of omega fish oils in spray-dried microcapsules. In this study, mackerel, sardine waste oil, and sand smelt fish oil were encapsulated in three different wall materials (whey protein, gum Arabic (AG), and maltodextrin) by conventional spray-drying. The effect of the different wall materials on the encapsulation efficiency (EE), flowability, and oxidative stability of encapsulated oils during storage at 4 °C was investigated. All three encapsulating agents provided a highly protective effect against the oxidative deterioration of the encapsulated oils. Whey protein was found to be the most effective encapsulated agent comparing to gum Arabic and maltodextrin. The results indicated that whey protein recorded the highest encapsulation efficiency compared to the gum Arabic and maltodextrin in all encapsulated samples with EE of 71.71%, 68.61%, and 64.71% for sand smelt, mackerel, and sardine oil, respectively. Unencapsulated fish oil samples (control) recorded peroxide values (PV) of 33.19, 40.64, and 47.76 meq/kg oil for sand smelt, mackerel, and sardine oils after 35 days of storage, while all the encapsulated samples showed PV less than 10 in the same storage period. It could be concluded that all the encapsulating agents provided a protective effect to the encapsulated fish oil and elongated the shelf life of it comparing to the untreated oil sample (control). The results suggest that encapsulation of fish oil is beneficial for its oxidative stability and its uses in the production of functional foods.