

عنوان مقاله:

Research Article: Physicochemical and antioxidant properties of chitosan-coated nanoliposome loaded with bioactive peptides produced from shrimp wastes hydrolysis

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خلاصه مقاله:

The aim of the present study in the first stage was encapsulation of peptides produced from hydrolysis of shrimp wastes (by neutrase enzyme) with combined coating of nanoliposome and chitosan in the form of four treatments (NP or peptide-carrying nanoliposomes, NP-CH-0.05, NP-CH-0.1 and NP-CH-0.5 or peptide-carrying nanoliposomes with coating of 0.05, 0.1 and 0.5% chitosan). In the next step, physicochemical and antioxidant properties of the treatments were investigated. The results showed that average particle size and particle dispersity index in different treatments varied from 228.9 ± 4.85 to 436.7 ± 1.08 nm and 0.389 ± 0.01 to 0.453 ± 0.01 , respectively. Zeta potential in nanoliposomes shifted to positive values with increasing chitosan concentration and from -62.59 ± 4.36 mV in NP reached to $+56.94 \pm 3.71$ mV in NP-CH-0.5. Encapsulation efficiency improved by adding chitosan to the surface of nanoliposomes and the highest amount was found in NP-CH-0.5 treatment ($94.12 \pm 3.73\%$). Evaluation of release profiles of treatments in Simulated Gastric Fluid (SGF) and Simulated Intestinal Fluid (SIF) showed that coating of peptides using nanoliposome and chitosan helped in protecting the structure of peptides and reduce their release rate significantly ($p < 0.05$). Chitosan-coated nanoliposomes showed more antioxidant activity than NP treatment. Also in chitosan-coated treatments, with increasing chitosan concentration, antioxidant activity of the treatments increased significantly ($p < 0.05$). According to the results, coating bioactive peptides with combined coating of nanoliposomes and chitosan is a suitable technique to protect and increase the efficiency of peptides

کلمات کلیدی:

Bioactive peptides, Nanoliposomes, Chitosan, Physicochemical properties, Antioxidant activity

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