

عنوان مقاله:

Research Article: Comparison of free and nano-encapsulated Safran (*Crocus sativus* L.) petal extract effects on some quality indexes of rainbow trout (*Oncorhynchus mykiss*) fillets

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خلاصه مقاله:

Fish as a main source of omega-3 and protein is widely consumed across the world. However, fish muscle is susceptible to putrefaction during storage. The aims of this study were to compare the effect of free and nano capsulated saffron petal extract on (bio) chemical, microbial and sensory properties of rainbow-trout fillet. Free saffron-petal extract (FSPE) and its nano capsule (NSPE) were prepared by enzymatic-hydrolysis and coating with the core (FSPE), wall (50:50 maltodextrin/whey-protein concentrates MD/WPC) ratio of 1:4 respectively. The fillets were soaked into three solutions of FSPE and NSPE at 10% w/v as well as ionized water (control), dried with ambient-air, packed in aerobic condition and polyethylene bags and kept in refrigerator (15-day at $\pm 4^{\circ}\text{C}$). Scanning-electron microscopy and Fourier-transform infra-red spectroscopy of NSPE confirmed the successful coating of particles and interactions between the FSPE and MD/WPC. The total-viable and psychrophilic bacteria-count of samples treated with saffron-petal extract was significantly lower than those of control samples. The difference between NSPE and FSPE samples was not significant ($p > 0.05$). The lowest thiobarbituric-acid reactive substances (TBARS) and total-volatile basic nitrogen (TVB-N) value obtained in NSPE samples was 1.44 mg MDA/kg and 16.44 mgN/100g after 9 days at 4°C storage ($p < 0.05$). The best sensory score was obtained for NSPE samples. The shelf-life of control fish was 5-8 days, while this time for NSPE and FSPE samples were 9-13 and 8-13 respectively. Overall, encapsulation of free saffron petal extract with maltodextrin/whey protein concentrate is recommended for its higher protection against chemical and microbial degradation.

کلمات کلیدی:

Rainbow trout fillet, Enzymatic saffron-petal extract, Maltodextrin, Whey protein concentrate, Nano-capsulation, TBA and TVB-N

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