

The Effects of Nanoemulsions Based on Commercial Oils for the Quality of Vacuum-Packed Sea Bass at $2\pm 2^{\circ}\text{C}$

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Abstract : Food scientists and researchers have paid attention to develop new ways for improving the nutritional value of foods. The application of nanotechnology techniques to the food industry may allow the modification of food texture, taste, sensory attributes, coloring strength, processability, and stability during shelf life of products. In this research, the effects of nanoemulsions based on commercial oils for vacuum-packed sea bass fillets stored at $2\pm 2^{\circ}\text{C}$ were investigated in terms of the sensory, chemical (total volatile basic nitrogen (TVB-N), thiobarbituric acid (TBA), peroxide value (PV) and free fatty acids (FFA), pH, water holding capacity (WHC)) and microbiological qualities (total anaerobic bacteria and total lactic acid bacteria). Physical properties of emulsions (viscosity, the particle size of droplet, thermodynamic stability, refractive index, and surface tension) were determined. Nanoemulsion preparation method was based on high energy principle, with ultrasonic homogenizer. Sensory analyses of raw fish showed that the demerit points of the control group were found higher than those of treated groups. The sensory score (odour, taste and texture) of the cooked fillets decreased with storage time, especially in the control. Results obtained from chemical and microbiological analyses also showed that nanoemulsions significantly ($p<0.05$) decreased the values of biochemical parameters and growth of bacteria during storage period, thus improving quality of vacuum-packed sea bass.

Keywords : quality parameters, nanoemulsion, sea bass, shelf life, vacuum packing

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