

EFFECT OF IRRADIATION ON THE MICROBIAL QUALITY SOUS-VIDE MACKEREL AT 2±1 °C

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Retarding microorganism growth in sous-vide fish, cooked at low temperatures (60-80°C), is an important issue and there is a need for additional techniques delaying or inhibiting microbial growth. Irradiation inactivates microorganisms by damaging their DNA, and this effect generally increases with the irradiation dose. Therefore, it might be used to improve microbial quality of sous-vide fish. Mackerel fillets were sous-vide packaged (at 70°C for 10 min.) and separated into three groups. Group A was irradiated with 2.5 kGy, B group irradiated with 5 kGy and C was the control. Samples were stored at +2 ± 1°C. Sensory, pH, TVB-N, TMA-N, TBA, mesophilic and psychophilic aerobic bacteria, anaerobic bacteria counts were analyzed once a week. Statistical analyses were carried out using SPSS 16.0, ANOVA was performed ($p < 0.05$) and Duncan's multiple range test was used. Sensory quality of C and A samples were acceptable until the 6th week; and B samples until the 7th week. Mesophilic and psychophilic aerobic bacteria counts and TVB-N values of A and B groups never exceeded the limits, but C group was above the limits at the 6th week. Anaerobic bacteria populations of A and B were lower ($p < 0.05$) than C group during the storage. Combining sous-vide with irradiation enhanced microbiological quality. This combination provided a safer food for consumer and increased shelf life of the product. Results may also be helpful for further studies to reduce or eliminate the risks, linked to the possibility of inadequate pasteurization of sous-vide.

Keywords: Sous vide, irradiation, combination, fish, shelf life

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