



University of Zabol
Faculty of Natural Resources
Department of Fisheries

**The Thesis Submitted for the Degree of M.Sc
Of Fish products processing**

Title:

**Effect of absorbent pad containing rosemary essential oil
on the shelf life of *Cyprinus carpio* fillet inoculated with
Staphylococcus aureus during refrigerated storage**

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Abstract

The use of absorbent pads in packaged products preserves quality and increases the shelf life of products. In the present study, the effect of absorbent pads containing rosemary essential oils on the shelf life of common carp fillets inoculated with *Staphylococcus aureus* during refrigeration (4°C) was evaluated. Rosemary essential oils were extracted using a water distillation method with a Clevenger apparatus. After determining the maximum concentration of rosemary essential oils that had no undesirable effects on the sensory characteristics of the fish fillets, fillets inoculated with *Staphylococcus aureus* (10^3 CFU/g) were placed on absorbent pads containing 0.5% (Treatment 1), 1% (Treatment 2), and 1.5% (Treatment 3) rosemary essential oils, and after packaging, they were stored in the refrigerator (4°C). Chemical (pH, PV, TBA, TVB-N) and microbial (*Staphylococcus aureus*, TVC, PTC) parameters were measured at 24, 72, 120, 168, and 216 hours. The results showed that at the end of the experiment, the highest number of *Staphylococcus aureus* bacteria, total mesophilic bacteria, and psychrophilic bacteria were counted in the control group, and the lowest number was in the fillets placed on absorbent pads containing 1.5% rosemary essential oils. A significant difference ($p < 0.05$) was observed between Treatments 2 and 3 compared to the control treatment. Additionally, the results indicated that placing the fillets on absorbent pads containing rosemary essential oils resulted in a slower increase in pH, PV, TBA, and TVB-N levels and a significant difference ($p < 0.05$) was observed between Treatments 2 and 3 compared to the control treatment at the end of the experiment. The results of this study showed that absorbent pads containing rosemary essential oils have antioxidant and antibacterial properties and can be used to increase the shelf life of common carp fillets during refrigeration.

Key words: Common carp, Rosemary, essential oil, Absorbent pad, *Staphylococcus aureus*.