

Summary of the MSc thesis No 98-170 , Faculty of Veterinary Medicine, Urmia University

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Title of thesis:

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Abstract:

The aims of the present study were to evaluate the effects of *Ziziphora clinopodioides* essential oil (ZEO; 0, 0.25 and 0.5%) and cellulose nanoparticles (0 and 0.5%), separately and in combination, using two techniques including coating and film based on Balangu seed mucilage on microbial (total viable count, psychrotrophic bacteria, *Pseudomonas spp.*, *P. fluorescens*, H₂S producing bacteria and *Enterobacteriaceae* family), chemical (peroxide value (PV) and total volatile base nitrogen (TVB-N) content) and sensory (odor, color and overall acceptability) properties of rainbow trout fillets during refrigerated storage over a period of 11 days. Population of indigenous bacteria of all designated groups were increased over time, but at a slower significant rate in comparison with the controls ($P < 0.05$). The following sequence effect on bacterial population was observed in the used methods: coating > film. Moreover, in both used methods, ZEO 0.5% + cellulose nanoparticles 0.5% and ZEO 0.25% + cellulose nanoparticles 0.5% showed the highest antibacterial activity. All treated samples tended to retard the increases in TVB-N and PV compared to the control. It can be concluded that the coating or film enriched with ZEO 0.5% + cellulose nanoparticles 0.5% can be used as appropriate active packaging materials to increase shelf-life of trout fillets.

Keywords: Balangu seed, *Ziziphora clinopodioides* essential oil, Cellulose nanoparticles, Trout fillet.