

Abstract

Fish and fishery products have been recognized as nutrition source due to their high protein content. However, the preservation of seafood is limited by biochemical and microbial changes. In recent years, essential oils (EOs) has been used to extend the shelf life of fish products. The objective of this study was investigated the effect of *Foeniculum vulgare* seed essential oils on *Staphylococcus aureus* (10^3 CFU/g) inoculated in surimi and minced of *Cyprinus carpio* during storage at 4 °C for 12 days. Seeds were subjected to steam distillation using Clevenger-type apparatus. The EOs yield of seeds was analyzed by gas chromatography mass spectrometry (GC-MS). Microbial (enumeration of *Staphylococcus aureus*, TVC, PTC) and chemical (pH, TVB-N and TBA) parameters were determined. The trans-anethol (87%) was the predominant component by GC-MS analysis of the EOs. The highest overall acceptance was observed in treated fillets with 6 µl/g of EOs. All EOs concentrations had antibacterial activity against *Staphylococcus aureus* in surimi and minced of *Cyprinus carpio* during storage. Bacterial growth was completely inhibited by 6 and 8 µl/g of EOs in the surimi after 12 days. Moreover, the essential oils caused reduction in TVC and PTC of surimi and minced of *Cyprinus carpio*. The pH, TVB-N and TBA values increased gradually with the storage time and the lowest changes were measured in treatments containing 8 µl/g of EOs. As a results, it is concluded that the essential oil of *Foeniculum vulgare* seeds has anti-microbial properties and can be used as a natural preservative.

Key words: *Foeniculum vulgare*, *Staphylococcus aureus*, Antimicrobial Activities, Mince, Surimi.



University of Zabol
Graduate school
Faculty of Natural resources
Department of fisheries
**The Thesis Submitted for the Degree of M.Sc
Of Fish products processing**

Title:

Effect of *Foeniculum vulgare mill* seed essential oil on the
Staphylococcus aureus in minced and surimi of *Cyprinus*
carpio

Supervisors:

Dr. E. Alizadeh doughi kollae

Dr. M. Shahriari moghadam

By:

Safoura Bahrami

January 2017