

Abstract

Diseases caused by consumption of contaminated food with *Escherichia coli* are the most important related to general health. The aim of this study was to inhibition of *Escherichia coli* growth inoculated in *Hypophthalmichthys molitrix* surimi with using rosemary leaves essential oil. Plants essential oil extraction was carried with using Steam distilled water in Klevenger. Then, the essential oils of medicinal plants (Rosemary, *Heracleum persicum*, Pennyroyal, Chamomile and *Teucrium polium*) were evaluated by disk diffusion and microdilution. The essential oil of rosemary leaves has highest antibacterial properties. Then Surimi inoculated with *E. coli* (10^3 Log CFU/g) and treated with concentrations of 1, 2 and 3 $\mu\text{L/g}$ essential oil of rosemary leaves and stored at 4 ° C. Chemical (PV, TBA and TVB-N) and microbial parameters (TVC, PTC and *E. coli* count) of surimi were measured at 0, 24, 72, 144, 216 and 288 hours. The results showed that chemical parameters increased during storage but this increase was less in treatments containing rosemary leaves essential oil. The count of *E. coli* showed that the treatment containing 3 $\mu\text{L/g}$ had the greatest effect on inhibiting of bacterial growth. The TVC and PTC amount of essential oil treatments were lower than the other treatments. Therefore, Rosemary leaves essential oil can be used as an antibacterial natural additive in fish products.

Key words: Essential oil, Medicinal plants, *Escherichia coli*, Surimi, Sensory evaluation



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:

**Antibacterial effect of the essential oils from several
medicinal plants on the growth of *Escherichia coli* in surimi
of *Hypophthalmichthys molitrix***

Supervisors:

Dr. E. Alizadeh Doughikollae

Dr. M. Shahriari Moghadam

Advisor:

Dr. M. Yousef Elahi

By:

Mahdieh Vahedi Sarrigani

September 2017