



FAYOUM UNIVERSIT



FACULTY OF AFRICULTURE

Control Of Histamine Production By Some Microorganisms

By

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B.Sc. Agric. Sc. (Food Sciences Technology), Fac.
Agric., Fayoum Univ., 2013

THESIS

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ABSTRACT

Biogenic amines are naturally present in many foods and can be occurs in relatively high amounts either in fish products or fermented foods. The aim of this study was to inhibit or kill the growth of histamine producing bacteria (HPB), reducing biogenic amines accumulation during fermentation manufacturing processes or storage by selective bacteria including lactic acid bacteria (LAB), medicinal and aromatic plant extracts.

The crude supernatants of *Lactococcus lactis* ss. *lactis* ATCC 11454 and *Lactobacillus plantarum* ss. *plantarum* ATCC 14917 inhibited the growth of histamine producing bacteria *Escherichia coli* and *Pseudomonas otitidis*. In particularl, *Lactococcus lactis* ss. *lactis* ATCC 11454 showed antibacterial activity at concentrations 8 and 16 µg/ml as minimum inhibition concentration (MIC) and minimum lethal concentration (MLC), orderly, against both histamine producing strains. As well, the antibacterial compound produced by *Lactobacillus plantarum* ss. *plantarum* ATCC 14917 showed slight activity against the same histamine producing strains. Ethanolic extracts of rosemary and thyme proved to be the strongest antibacterial principles against histamine producing bacteria strains, in comparison with the other plant extracts. Also, results indicated that during experiment applied on sardine fish fillet, histamine content and counts of histamine producing bacteria in sardine increased as storage period extended reached highest level at the end of the storage period (21 days) when compared to zero time.

These results were true for the control group.

On the other side, treated sardine fillets with crude supernatant of lactic acid bacteria *Lactococcus lactis* and *lactobacillus plantarum*, as well as

rosemary and thyme extract reduced histamine concentration and bacterial counts as compared to the control group. The most reduction in histamine concentration and histamine bacterial counts in sardine fillets were at 3 to 10 days of storage.

Keywords: Biogenic amines, Histamine, Histamine forming bacteria, Scombroid poisoning, Histamine mitigation, Bacterial degradation of histamine.