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Microbial Contamination of Raw Milk and its Products of Dakahlia Governorate, Egypt

A Thesis Submitted By

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Summary

The present study was performed to estimate the actual antibacterial effect of some cyanobacteria extracts against bacterial growth of pathogenic bacteria with special reference to *S. aureus* and *E. coli* that were isolated from raw milk and dairy products sold in Dakahlia Governorate, Egypt.

This study included examination of 150 samples (25 of raw market milk, 25 kariesh cheese, 25 yoghurt, 25 Talaga cheese, 25 Ras cheese , 25 ice cream) samples were randomly collected from different shops and supermarkets in Dakahlia, Egypt.

The samples examined bacteriologically by using selective media (mannitol salt and eosin methylene blue). Recovered isolates were identified by using an array of biochemical and serological tests and by PCR detection.

The current result revealed that *E. coli* was observed in 88%, 56%, 80%, 68%, 52% and 68% kariesh cheese, Talaga cheese, yoghurt, market raw milk, ice cream and Ras cheese samples, respectively, with mean counts $8.2\times10^6 \pm 2.5\times10^6$, $1.8\times10^7 \pm 4.5\times10^6$, $1.4\times10^6 \pm 3.9\times10^5$, $8.1\times10^6 \pm 2.3\times10^6$, $1.5\times10^5 \pm 0.6\times10^5$and $4.1\times10^6 \pm 1.2\times10^6$colony-forming units (cfu)/g or ml.

S. aureus was observed in 80%, 88%, 13%, 13%, 7% and 76% kariesh cheese, Talaga cheese, yoghurt, market raw milk, ice cream and Ras cheese samples, respectively, with mean counts$1.1\times10^6 \pm 2.3\times10^5$, $1.0\times10^7 \pm 2.2\times10^6$, $5.2\times10^5 \pm 2.8\times10^5$, $6.7\times10^6 \pm 2.5\times10^6$, $0.3\times10^5 \pm 0.2\times10^5$and $1.1\times10^6 \pm 2.3\times10^5$colony-forming units (cfu)/g or ml.

In this study the isolated fungi, *Aspergillus flavus, Aspergillus niger, Aspergillus ochraceus, Aspergillus oryzae, Mucor* sp., *Penicillium*

spp., *Rhizopus* sp., *Trichoderma* spp. and yeast from milk and dairy products at different percentages were observed be increased by storage of samples.

The present study was performed to estimate the antifungal effect of some antioxidants against fungi isolated from milk and dairy products. Founded that all concentrations of additives appeared a significant antagonism towered all isolated fungi. Ascorbic acid had the greatest effect on tested fungi followed by salicylic acid then citric acid.

The results showed that the aqueous extracts of the cyanobacteria such as *Sprirulina plantensis* and *Arthrospira fusiformis* were evaluated for their antibacterial activity by inhibiting the growth of *E. coli* and *S. aureus*. The soft cheese treated with cyanobacteria extract showed a potentially reduction of bacterial contamination. The results proved that the using these species of cyanobacteria could be used as a good source for the production of promising antibacterial agents.

Using natural material to wrap the manufactured cheese such as banana leaves instead of plastic sheets led to reduction of *E. coli*, *S. aureus* and fungi count to undetectable levels.