

**MICROBIAL LOAD OF LUNCHEON MEAT AND BIOLOGICAL ACTIVITY OF
 SOME SELECTED BACTERIA AS AFFECTED BY NATURAL PRESERVATIVES
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ABSTRACT

Different luncheon meat products (beef) and (chicken) were commercially collected and tested for microbiological load during storage at 4 or 25 ± 1°C for 8 weeks. *Salmonella sp.*, *Shigella sp.*, total and faecal coliform group were not found in any tested samples. The microbiological load (counts of total bacteria, spore forming bacteria, thermophilic bacteria, psychrophilic bacteria, *Staphylococcus aureus*, *Bacillus cereus* and total fungi) of tested samples were differed according to the kind of samples and the conditions of storage. Storage temperature 4 ± 1°C was more effective in inhibiting growth of spore forming bacteria and thermophilic bacteria.

Chitosan 1% proved that it is necessary for inhibiting all pathogenic bacteria tested especially *Staph. aureus* giving zone of inhibition 47 mm. Chitosan showed bactericidal effect with *Staph. aureus*, *S. typhimurium*, *E. coli* and *Pseudomonas fluorescens*, and bacteriostatic effect on *B. cereus*. Sage and rosemary oils had no or slight antibacterial activity against the tested bacterial strains. By contrast clove and thyme oils had a very antibacterial activity for the same tested bacteria, with MIC 20 and 40 µL, respectively. The antibacterial activity of clove and thyme oils was bactericidal for all tested bacterial stains.

Key words: Luncheon, Microbiological load, Chitosan, Essential oils, Antimicrobial.

INTRODUCTION

Luncheon meats are one of the cooked meat products which are commonly vacuum-packaged and sold sliced. They are recontaminated during slicing and packing and as a result may have a starting count as high as 10⁴-10⁵ bacteria per g. Since the surface-to-volume ratio is comparatively high, bacterial spoilage may occur after only 2-3 weeks at 5°C. (Pamela *et al.*, 1987). The initial counts of mesophilic aerobes, *Staphylococcus* and *Salmonella* of luncheon meat were found in the ranges of 10⁶-10⁷, 10⁴-10⁵ and 10-100 cfu / g, respectively (Alur *et al.*, 1998). Most important fungi and yeasts contaminated the luncheon meat produced

in Egypt were, *Aspergillus niger*, *A. flavus*, *Penicillium chrysogenum*, *Rhizopus stolonifer*, *Mucor circinelloides*. On the other hand, less common were *Cladosporium sphaerospermum*, *Alternaria alternate*, *Mycosphaerella tassiana*, *P. aurantio-griseum* and *P. oxalicum*. (Ismail and Zaky, 1999). Two major food-borne bacterial pathogens included *E. coli* O157: H7 and *Salmonella*, have been associated with the contamination of meat and meat products. Recently, *Listeria monocytogenes* has also been identified as a serious food-borne pathogen and has been demonstrated to be a contaminant of beef carcasses, (Bell, 2002).