

**STUDIES ON THE EFFECT OF SOME MEDICINAL
PLANTS ON GROWTH AND ACTIVITY OF
BACTERIA USED IN FOOD PROCESSING**

By

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ABSTRACT

YASMIN RAWHY ABOU EL-AZAB “Studies on the Effect of some Medicinal Plants on Growth and Activity of Bacteria Used in Food Processing”. Unpublished M.Sc. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2019

The present study was conducted to evaluate and to compare the antimicrobial activity of clove (*Syzygium aromaticum*) and thyme (*Thymus vulgaris*) ethanolic extracts. Different concentrations of ethanolic extracts were prepared and antimicrobial activity was determined against some bacterial, yeast and mold strains. The antimicrobial activity of examined extracts at different concentrations was determined against different cell population of tested strains and expressed as diameter of inhibition zone. Results showed that all clove and thyme ethanolic extracts were markedly inhibited the growth of all tested strains, however, the inhibition effect was differed with regard to the concentration of ethanolic extract as well as the type of tested microorganism. Generally, clove ethanolic extract had stronger antimicrobial activity rather than that of thyme ethanolic extract. Subsequently, clove and thyme are an extremely strong antimicrobial agent with use full potential applications in food processing as a natural safe instead of synthetic antimicrobial agents.

The prepared fermented beef sausage samples were containing different concentrations of dry clove and thyme (2.0 and 4.0%) and compared with control samples prepared without medicinal plant mixture; also fermented beef sausage samples were prepared with different starter cultures as follows: a starter (A) component of *Str. thermophilus*, *L.bulgaricus* and *P. pentosaceus*; a starter (B) component of *L. lactis*, *L.cremoris* and *P. pentosaceus* and their different control samples were prepared without medicinal plant mixture and cold stored at ($4^{\circ}\text{C}\pm 2$ for 15 day). Chemical, physical, microbiological analysis and sensory evaluation were discussed, initially and periodically during storage of this products. The results showed that, clove and thyme can be practical to protect food and consumers from the risk of contamination by pathogenic

and food spoilage microorganisms, to extend food shelf-life, to reduce food waste and to use in hurdle technologies at low temperature.

Key words: Clove, Thyme, Extraction, Antimicrobial activity, fermented sausage, Lactic acid bacterial Strains

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