

EFFECT OF ADDING DIFFERENT CONCENTRATIONS OF THYME OIL ON REDUCING THE TOTAL MICROBIAL COUNT IN THE SOFT CHEESE TO INCREASE THE SHELF LIFE

Laith Fared Hasan Al-Obaidi and Hussein Ali Hussein

Department of Food Science, College of Agriculture, University of Kufa, Iraq.

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ABSTRACT : The thyme oil was added to the milk that processed into soft cheese in a concentration of (1 ml thyme oil /1000 ml milk (T2), 2 ml thyme oil/ 1000 ml milk (T3), 3ml thyme oil / 1000 ml milk (T4) in addition to the control treatment no thyme oil added (T1). All the treatments were stored at a temperature of 7C for four weeks. A total count numbers of the microorganisms and coli form bacteria were determined in addition to the sensory evaluation of the soft cheese samples that added to them different concentrations of thyme oil. The results indicated that there was a significant difference between treatments where the total count numbers of microorganisms significantly decreased as the addition of thyme oil increased also the results represented that there was a significant increase in the total count numbers of the microorganisms as the storage period increased for the control treatment while this increased in the number was decreased in the samples with thyme oil where this development of microorganisms decreased by increasing the addition of thyme oil. For the sensory evaluation for both the color and flavor, the results indicated that there was no significant differences between the control treatment (T1) and treatments (T2) and (T3) and also there were no significant differences between (T3) and (T4) but there was a significant difference between treatments (T1, T2 and T3) and treatment (T4). While for texture and cohesion, there were no significant differences between treatments. In terms of general acceptance, there were significant differences between the control treatment (T1) and (T4) while there was no significant differences between the control treatment (T1) and treatments (T2) and (T3) and also there were no significant differences between treatments (T2, T3 and T4).

Key words : Soft cheese, thyme oil, coliform bacteria, total count bacteria.

INTRODUCTION

Spices and herbs have been added to the food for thousands of centuries by many cultures to enhance the flavor and aroma and also to preserve foods and for their medicinal value. Many scientific researchers' studies the antimicrobial properties of some spices and herbs and their component since the late 19th century (Shelef, 1983 and Zaika, 1988). Thyme is an aromatic herb with culinary, medicinal and cosmetic purposes (Thymus, 2001). Thyme is a phytochemical feed additive belonging to the Labiatae family known as a source of essential oils. Thymol is the main component and has earned much attention for its potential antioxidative and antimicrobial activities (Windisch, 2008). The essential oils recovered from plants such as basil, cinnamon, rosemary and thyme have been considered because of organoleptic and functional attributes. They possess inhibitory activity against food-borne pathogen (Bakkali *et al*, 2008; Bakkali, 2004).

Soft cheese is one of the most appreciated cheeses in Middle Eastern nations. The cheese is a pickled cheese

(salt 2–15%), although it may be sold fresh. This type of cheese is made either by enzymatic or acidic coagulation of fresh milk (buffalos' or cows' milk) or reconstituted skim milk powder with oils (Abou-Donia, 1986).

Many researchers studied the effect of thyme oil against some pathogenic bacteria in food.

Selim (2011) evaluated the antibacterial properties of thyme oil against Vancomycin-Resistant.

Enterococci (VRE) and *E. coli* O157:H7 in feta soft cheese and minced beef meat. In addition, Dostálová *et al* (2013) examined the antimicrobial activity of essential oils and aqueous extracts on microorganisms contained in goat whey. Essential oils and two types of aqueous extracts (seven-day extract and hour extract) from three herbs were applied for analyses – thyme (*Thymus vulgaris* L.), peppermint (*Mentha Piperita* L.) and fennel (*Foeniculum vulgare*, Mill).

Smith-Palmer *et al* (2001) tested the essential oils of clove, cinnamon, bay and thyme against *L. monocytogenes* and *S. enteritidis* in soft cheese diluted 1:10 in buffer.