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Antimicrobial Properties of some Bioactive Compounds and their uses in some Dairy Products

A Thesis Presented by

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Abstract

This study investigated the antibacterial effect of probiotic strains (*bifidobacterium bifidium* and *lactis*) and essential oils (dill and moringa) on some pathogenic bacteria including *Staphylococcus aureus, E. coli* and *Salmonella typhimurium* in yoghurt and soft cheese during the storage period at 4±1^{o}C.Traditional yoghurt, Bifidobifidium yoghurt, Bifidolactis yoghurt and Mixed yoghurt samples were manufactured and inoculated with 10^{4} cfu/g *Staphylococcus aureus, E. coli* and *Salmonella typhimurium* and preserved for 14 days at 4±1^{o}C. The inoculated bacterial count and the titratable acidity were determined in the prepared yoghurt samples at zero, 3rd, 5th, 7th and 14th day of cold storage. The obtained results revealed elevation in the titratable acidity and noticeable inhibition in the count of the inoculated bacteria during the storage period of prepared yoghurt samples at 4±1^{o}C.

Plain cheese and cheese with *bifidobacterium bifidium*, dill oil and moringa oil were prepared and inoculated with10^{3} cfu/ml pathogenic bacteria and stored for 10 days at 4^{o}C. Samples were taken at zero time, 2nd, 4th, 6th, 8th and 10th days of storage for sensory evaluation and bacterial count. The probiotic cheese had the highest score in the sensory evaluation. The microbiological results showed inhibition in the *Staphylococcus aureus* count at the 6th and 8th days of storage in cheese fortified with dill and moringa E.Os and with probiotic, respectively. At the 10th day of storage *E. coli* was not detected in probiotic cheese and *Salmonella typhimurium* was not detected in dill and probiotic cheese samples.

Contents

List of Tables

List of Figures

List of Abbreviations

Abb.	Referring to
ANOVA	Analysis of variance
APHA	American public health association
BHI	Brain heart infusion
LAB	Lactic Acid Bacteria
L.bulgaricus	Lactobacillus delbrueckii subspp. bulgaricus
S.thermophilus	Streptococcus Salivarius subspp. thermophilus
B.bifidium	Bifidobacterium bifidum
B.lactis	Bifidobacterium lactis
E.coli	Escherichia coli
E.Os	Essential oils
FDA	Food and drug administration
gm	Gram
UHT milk	Ultra- Heat Temperature full fat milk
HACCP	Hazard Analysis and Critical Control Point
hrs	Hours
AOAC	Association of Official Analytical Chemist
CFU	Colony forming unit
ISO	International Organization for Standardization
ml	Milliliter
MRS	De Man Rogosa Sharpe media
TA	Titratable Acidity
S. aureus	Staphylococcus aureus
S.E.	Standard error
Spp.	Species
TY	Traditional yoghurt
BY	Bifidus yoghurt (starter: B.bifidium)
LY	Bifidus yoghurt (starter: B.lactis)
MY	Bifidus yoghurt (starter: B.bifidium + B.lactis)
SPSS	Statistical Package for the Social Science
TSI	Triple sugar iron agar
WHO	World Health Organization