

STUDIES ON FORTIFIED DAIRY PRODUCTS

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Abstract

This study was implemented for the production of “yoghurt and white soft cheese fortified with various zinc salts (zinc sulfate , zinc gluconate and zinc acetate) with different levels for each (10, 20 and 30 mg zinc / L milk), also the prepared fortified yoghurt was used in vivo trails using male albino rats.

All yoghurt samples were analyzed for chemical and sensory properties when fresh, 3, 7 and 10 days of refrigerated storage temperature at ($6\pm 1^{\circ}\text{C}$). Fortified yoghurt with various zinc salts were increased in its acidity compared to the control. No differences were detected in the prepared zinc fortified yoghurt treatments for its total solids and total protein content. Yoghurt fortified with zinc gluconate induced more reduction in its lactose content compared to the other treatments. Fortified yoghurt with zinc acetate recorded the highest content of acetaldehyde.

Samples of yoghurt fortified with zinc gluconate had the highest scores in sensory evaluation.

Results showed no differences in moisture and fat content between cheeses fortified with zinc salts and their control treatments. Zinc acetate recorded the highest acidity content compared to other treatments. White soft cheese fortified with zinc gluconate was almost similar to the control in pH. The level of Thioburbituic and total volatile fatty acid content increased in cheese fortified with various zinc salts compared to the control. A sensory evolution of fortified white soft cheese with zinc gluconate was almost similar to the control.

Male albino rats were used for evaluating the biological and histopathological parameters of feeding yoghurt fortified with zinc salts. Results showed that feeding rats for 8 weeks with yoghurt fortified by zinc gluconate induced the best effect on the most biological parameters (liver function, plasma proteins) compared to the other treatments.

Key words: zinc salts (sulphate – gluconate – acetate), yoghurt, - soft cheese – acidity – lactose TBA – TVFA - Biochemical and Histopathological parameters.

DEDICATION

I dedicate this work to whom my heart felt thanks; to my wife and my daughter Salma for their patience and help, as well as to my parents and brother for all the support they lovely offered along the period of my post graduation.

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INTRODUCTION

Consuming dairy products generally provides health benefits especially improving bone health. Foods in the Dairy Group supply nutrients that are vital for health and maintenance of human body. These nutrients include calcium, potassium, vitamin D, and protein.

Milk and dairy products are frequently consumed by people and are considered as an ideal carrier in food fortification programs. However, these products are more likely low in zinc. Therefore, it is well considered that fortification of these dairy products with appropriate zinc salt is an effective and of most economic strategy to prevent zinc deficiencies.

Yoghurt is an ancient wonder food, strongly antibacterial and anti-cancer. Scientists reported that a cup or two of yoghurt per day boosts immune functioning by stimulating production of gamma interferon. In addition to its super activity of natural killer cells that attack viruses and tumors. Moreover, eating daily cup of yoghurt reduced colds and other upper respiratory infections in human, and preventing diarrhea. Fortification with zinc was done by applying little amounts of zinc sulfate or zinc acetate containing 10 -20 mg zinc element /L to the prepared yoghurt.

It is well known, that Cheese is a rich source of essential nutrients particularly proteins, bioactive peptides, amino acids, fat, fatty acids, vitamins and minerals. However, there is lack of information in zinc fortification for cheeses. In this context, research of fortified