

**PRODUCTION OF SOME FUNCTIONAL DAIRY
PRODUCTS FORTIFIED WITH SOME
BIO-ACTIVE COMPOUNDS**

By

MOHAMED AL SOUDY SHAABAN AHMED
B.Sc.Agric. Sc. (Dairy Sc.), Fac. Agric. Al-Azhar University, 2013

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ABSTRACT

Mohamed AL-Soudy Shaaban: Production of Some Functional Dairy Products Fortified With Some Bioactive Compounds. Unpublished M.Sc. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2020.

Functional foods have recently emerged as a novel sector of health enhancing products. Functional foods are diverse groups, including conventional foods, such as drinking yoghurt, or they can be specifically enhanced, such as fortified yoghurt drink with herbal extract as source of antioxidant. This research aims to produce and evaluate functional yoghurt drink fortified with different types of herbal extracts (Ginger, Amla and Curcuma) as source of antioxidants and detect the probable anti-hepatitis effect in Albino rats against carbon tetrachloride (CCL₄) induced liver injury. The study was done in tow parts:

The first one was planned to produce functional flavoured yoghurt drink fortified with Ginger, Amla and Curcuma extract as sources of antioxidant. Some chemical, antioxidant, microbiological, rheological and sensory properties of different functional flavoured yoghurt samples were examined. No significant differences were observed in total solids, fat, protein, ash, and lactose content among control and treated samples. On the other hand, Significant differences were observed in, pH, TA, antioxidant activity, total phenolic content, serum separation and viscosity values of all treated samples and control (without herbal extract). Yoghurt drink fortified with Curcuma exhibited highest content of antioxidant activity and total phenolic among all treatments. Addition of herbal extract had significant effect on the viability of the lactic acid bacteria strains. All the functional flavoured yoghurt drink samples, contained more or less the recommended levels of (10^6 – 10^7 cfu /g) lactic acid bacteria at the end of the refrigerated storage. Yeasts and moulds count was higher in functional flavoured yoghurt drink fortified with herbal extract compared to the control sample (without herbal extract). Coliform

bacteria was not detected in all functional flavoured yoghurt drink samples either when fresh or during the refrigerated storage. The functional flavoured yoghurt drink fortified with ginger extract ranked higher flavor scores than that with amla and curcuma extracts.

The second part of this study was planned to evaluate the hepatoprotective effect of functional flavoured yoghurt drink fortified with herbal extracts. The animals were housed individually in stainless steel cages and fed with their respective diet and water for 4 weeks at 20-22 °C \pm 1 °C, 60 % relative humidity and 12 hours light and 12 hours dark conditions. Thirty-six rats were divided into six main groups of six animals each. The first group control (-) rats fed a commercial diet, second group control (+) rats fed a commercial diet, group (I) rats fed a commercial diet + 5g yoghurt drink, group (II) rats fed a commercial diet + 5g functional flavoured yoghurt drink fortified with 30% ginger extract, group (III) rats fed a commercial diet + 5g functional flavoured yoghurt drink fortified with 30% amla extract, group (IV) rats fed a commercial diet + 5g functional flavoured yoghurt drink fortified with 30% curcuma extract. Biological experiment were done after 28 days of feeding. Feeding on functional flavoured yoghurt drink caused a significant effect in increasing body weight and decreasing liver and kidney weights of rats which approached to the normal weight of negative group. Feeding hepatic fibrosis rats on functional flavoured yoghurt drink for 28 days, lead to gradual decrease in ALT, AST, creatinine, and urea values. Total protein, values was gradually increased with advancing feeding period till reached their higher values after 28 days. The histopathological changes in pretreated groups with functional yoghurt drink fortified with Ginger, Amla and Curcuma extract compared to that induced with CCl₄ alone indicated marked protective effects of these substances. On the other hand the biochemical parameters improved the histological alteration of the liver. This improvement was pronounced in the group received yoghurt drink fortified with Ginger and Amla herbal extract. While, the group received yoghurt drink fortified with Curcuma extract were totally

improved. It could be concluded that yoghurt drink fortified with different herbal extract especially Curcuma herbal extract can be used as ingredients in functional foods for people suffering from liver diseases.

KEY WORDS: Functional Dairy, Yoghurt Drink, Extract, hepatitis, CCl₄, herbs, inflammatory cells.

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