QUALITY AND SAFETY OF SOME DAIRY PRODUCT WITH NATURAL FRUIT PREPARATIONS

By

AHMED HASSAN ALI WAHDAN

B.Sc.Agric. Sc. (Dairy Sc. & Tech.), Ain Shams University, 1998

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ABSTRACT

Ahmed Hassan Ali Wahdan, Studies on Quality and Safety of some Dairy Product with Natural Fruit Preparations. Unpublished M.Sc. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2018.

Due to the technological development in the field of food industry, in addition to the interest of health aspects in the recent period, and put strict condition on the export and import of food, there has been an attention to the role played of fruit preparations and their effects on the quality and safety of dairy food produced. Fruit preparations used in dairy food industry are considered to be rich in nutritional value due to the protein content of high biological value, mineral and vitamins.

This research aims to study the role played by fruit pulp and fruit preparations which may be added in the manufacturing of some dairy products (yoghurt and ice cream) and their effects on quality and safety of these food products. A full concept for applying Hazard analysis and critical control points (HACCP) during manufacturing stages of these products was also carried out. The study was done in three parts:

The first one was carried out to evaluate the effect of fruit preparations in quality and safety of strawberry fruit preparations. All ingredients and the other materials were tested for its microbiological and chemical quality.

Swabs of tools, devices and hands of workers were taken and showed positive results which many affect the safety and quality of produced ice cream.

The microbiological results showed also presence of small number of Total count in most samples of retrieval fruit pulp and fruit preparations.

Hazard analysis and critical control points (HACCP) during manufacturing stages of fruit pulp and fruit preparations products to identify the most important sources of pollution cleared three and tow

critical control point (CCPs) in fruit pulp and fruit preparations respectively, which were (i) refining (ii) sterilization (iii) filling and (i) pasteurization **(**ii) detection of metal particles for fruit pulp and fruit preparations respectively.

The second part of this study was carried out to evaluate the fruit stirred yoghurt fortified with strawberry pulp and different type of strawberry fruit preparations, different strawberry pulp preparations were added a rate of 12% (w/w) to different treatments (T2 to T7). Some chemical, microbiological properties and sensory quality of stirred yoghurt samples were evaluated. Significant differences were observed in, protein content and pH values of all treated samples and control. Addition of strawberry pulp or preparation had significant effect on the viability of the lactic acid bacteria strains. The effect was more obvious with using fruits preparation than strawberry pulp. All the yoghurt samples, however, 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 molds count was higher in fruit stirred yoghurt containing fruit pulp compared with the control and fruit samples fortified with different fruit preparations and increased significantly during storage at 5 ± 1^{o}C. The yoghurt containing different strawberry preparations ranked higher flavor scores than using strawberry pulp.

The third part of this study was carried out to investigate the effects of adding fruit pulp and preparations in the base formula of ice cream on the acceptability and functional properties of resultant product. Different strawberry pulp preparations were added a rate of 15% (w/w) to different ice cream treatments (D1 to D3). All mixes and resultant ice cream samples were evaluated for their chemical, physical and rheological properties as well as the sensory quality attributes. Addition of strawberry pulp and preparations into ice cream formula significantly affected the protein and ash contents. Specific gravity values and overrun percent were significantly decreased with adding strawberry pulp and preparations in mixes of ice cream. Adding strawberry pulp and

preparations in ice cream recipes led to lower pH values of ice cream mix. Also, addition of strawberry pulp and preparations juice led to lower freezing point and the product showed higher ability to meltdown with adding the strawberry pulp and preparations. Ice cream treatment containing 15% D2 strawberry preparations (27% sugar and 53% strawberry) showed the best sensory attributes compared to the other treatment. From such study, it could be reported that, strawberry fruit preparations as fruit for stirred yoghurt and ice cream preferred rather than strawberry pulp, and it could be recommended that, fruit preparations could be used in stirred fruit yoghurt and fruit ice cream formulations for enhancing the quality and properties of the product compared with using fruit pulp especially nutritive value.

Key words: fruit ice cream, fruit yoghurt, fruit pulp, fruit preparations, HACCP

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