Fayoum University

Faculty of Agriculture

IMPROVING THE PROPERTIES OF SOME DAIRY PRODUCTS USING SOME NATURAL FOOD ADDITIVES

By

MOHAMED GAMAL AHMED HASSAAN

B.Sc. Agric. Sci. (Dairy Sci.), Fac. Agric., Fayoum Univ. (2011)

Thesis

Submitted in Partial Fulfillment of
the Requirements for the Degree of

Master of Science

In

Agricultural Science (Dairy Science)

Dairy Department
Faculty of Agriculture - Fayoum University
Egypt

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APPROVAL SHEET

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ABSTRACT

White soft cheese is the most popular cheese and wide spread in Egypt; it is consumed largely with high amount by Egyptian consumers. It has many varieties depending on the technique of the manufacture, type, percentage of fat and salt, etc. From these; ultra – filtrated (UF) white soft cheese is the most known type made basically from buffalo's and cow's milk. Therefore, the aim of the current study was to improve the properties of some milk products using some different natural food additives such as herbs and essential herbal oils that were added to the white soft cheese, which made with the technique of ultra- filtration. Also studying the effect of adding some stabilizers on the chemical, rheological and sensory properties of low fat stirred yogurt flavoured with strawberry juice. To achieve these objectives, the study included the three main parts:

Part I: Making Ultra – Filtrated (UF) white soft cheese from buffalo's milk without adding (as control), or by adding some natural food herbs (powder) such as Ginger (T1), Cinnamon (T2), Rosemary (T3) and Cardamom (T4) to Ultra-filtrated buffalo's milk at concentration of (% o.3). The effect of these treatments on chemical, microbiological, rheological

and sensory properties of resulting white soft cheese during the storage period for 14 days at a temperature of 6±1 Cº were studied. The results showed that the rheological properties of cheese samples with herbs were improved in all treatments at the first time, when fresh, but all these characteristics increased in all treatments at the end of the cold storage period compared to control. In the opposite direction the hardness decreased in the treatments of cheese with ginger or rosemary (T1 ، T3) when comparing with other treatments and control. The addition of herbs has also led to a decrease in the number of both (TVC, M&Y) and bacteria spore forming compared to control. The sensory evaluation also showed that the best treatments are that contained cinnamon (T2) comparing to other treatments.

Part II: Making white soft cheese from buffalo's milk using ultra-filtration technology without adding (as control), or with the addition of some essential herbal oils, Marjoram oil (T1), Thyme oil (T2), Rosemary oil (T3), Moringa oil (T4), and Cardamom oil (T5), to ultra-filtered buffalo's milk at concentration of 20ppm with added (0.3ml) of tween 80 to all treatments as an emulsifier. The effect of these additives on chemical, microbiological, rheological and sensory properties of resulted white soft cheese during the

storage period for 14 days at a temperature of 6±1°C was studied. The results were as follows: The results of the rhetological analysis showed that the cheese samples added to each of the thyme oil (T2), rosemary oil (T3), and moringa oil (T4) had the highest in the values of both hardness, gumminess and chewiness properties, while the cheese added with moringa oil (T4) had the lowest values of all rhetological properties. The results of the sensory evaluation have shown that the best treatments are added to both Marjoram oil (T1) and moringa oil (T4) compared to other treatments. On the other hand, there was a decrease in both of moisture content and pH value, while the acidity, protein, dissolved nitrogen, fat and ash increased during the storage period. The results also showed that the antibacterial activity of thyme oil is more effective than, rosemary, moringa, cardamom and marjoram oils.

Part III: Manufacture of low fat stirred yogurt flavored with Strawberry juice from standardized buffalo's milk (2 %fat) with the addition of some stabilizers at concentration of (0.5%) Carboxymethylcellulose CMC (T1), (0.5%) Starch (T2), (0.5%) Gelatin (T3), (1%) gum Arabic (T4) and (0.3%) gum tragacanth (T5). The effect of adding these stabilizers on both viscosity, physical and sensory chemical properties of the

resulting flavored yogurt samples during 10 days of storage period at 5 ±1°C has been studied.

The addition of stabilizers has increased protein content in all yoghurt samples during storage period. Samples of yoghurt treated with Arabic gum recorded the highest percentage of total carbohydrates. Decrease of pH values in all yoghurt samples was observed until the end of storage period. Observed decrease in both viscosity and storage capacity was noticed, while the corresponding an increase in the whey separation during the cold storage. Samples of yoghurt containing starch were recorded high value for both flavor and total scores, while yoghurt with gum tragacanth is less valuable for both flavor and total scores.

Key words: *UF-White soft cheese, Natural herbs, Essential herbal oils, Rosemary, Marjoram, Thyme, Cardamom, Moringa, Rheological properties, Stabilizers, whey separation,* storage *water* capacity *and Sensory properties*.