Fayoum University

Faculty of Agriculture

SOME ASPECTS FOR DEVELOPING THE UTILIZATION OF SOME DAIRY BY-PRODUCTS

By

Walaa Mohamed Saad Bahnas

B.Sc. Agric. Sci. (Dairy Sci.), Fac. Agric., Fayoum Univ. (2012)

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

Increasing biological value of dairy by-products to be used as functional foods and achieved healthy properties is the aim of this thesis. However, natural sweetener free calorie such as stevia was used to reduce obesity and diabetes, beside of using probiotic bacteria, there are other additives working as prebiotic such as papaya and quinoa cereal, containing much nutrients, especially vitamin B_9 which has a great importance in the therapeutic field as anti-anemic properties. The overall objectives of this thesis were to produce functional beverages by using different dairy by-products.

One of the objectives was to produce whey or permeate probiotic beverages using 1.0 % of *Lactobacillus acidophilus* or *Lactobacillus paracasei* with 1.0% stevia (as natural sweetener) and 10% papaya as prebiotic. All fermented beverages were evaluated microbiological, physiochemical and organoleptic properties during 10 days. Results indicated that the changes in lactose content, pH values and titratable acidity were significant. Also, the microbiological examination indicated that all treatments which contain stevia and papaya significantly affected the viability of probiotic bacteria.

Another objective of this research was to study the microbiological, physiochemical and organoleptic evaluation of quinoa *L. paracasei* buttermilk beverages during of 21 days coold storage period. The microbiological examination indicated that the treatments which contain quinoa significantly affected the viability of probiotic. However, fermented beverages supplemented with quinoa showed better sensory evaluation than the others.

On the other hand, the use of different ratio (2, 4 and 6 %) of quinoa extract in the manufacturing of probiotic skimmed milk beverages was investigated. The obtained fermented beverages were evaluated microbiological, physicochemical and sensorial characteristics during 21 days of cooled storage. Results showed that the high percentage of quinoa increased the viability of probiotic. Sensorialy, the beverages supplemented with quinoa had the highest total scores.

All the beverages which were done in this thesis could be recommended as a functional beverages and considered as healthy beverages.

Keywords: Whey, permeate, buttermilk, skim milk, stevia, papaya, quinoa