



Fayoum University



Faculty of Agriculture

**ASPECTSFORENHANCING CONCENTRATED
FERMENTED MILK**

By

Gehad Sayed Ali Abdrabou

B.Sc. Agric. Sci. (Dairy Sci.), Fac. Agric., Fayoum Univ. (2019)

A ThesisSubmitted in Partial Fulfillment

Of

The Requirements for the Degree of

Master of Science

In

Agricultural Sciences

(Dairy Science)

Dairy Department

Faculty of Agriculture, Fayoum

FAYOUM UNIVERSITY

2024

APPROVAL SHEET

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Thesis for M. Sc. degree (Dairy Sci.) has been approved by:

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Date of Examination: / / 2024

SUPERVISION SHEET

Aspects for enhancing concentrated fermented milk

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Supervision Committee:

1- Prof. Dr. Neimat Ali Hassan Elewa

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ABSTRACT

Nowadays, healthy food has received a lot of attention, therefore, the first target of the present study is to investigate a novel functional dairy product represented in adding Spirulina powder (*Arthrospira platensis*) and *Lactobacillus acidophilus* to UF concentrated milk to produce Spirulina Functional Labneh (SFL) and hence increase its biological value. Enhancing physicochemical characteristics, microbiological, antioxidant activity, and sensory evaluation in addition to nutritional value compared to the control. Adding microalgae to concentrated fermented buffalo's milk by (0, 0.2, 0.4, 0.7, and 1% w/v) Spirulina individually. SFL samples exhibited significantly ($p \leq 0.05$) an increase in the viability of probiotics, a higher level of protein, dietary fiber, and antioxidant activity, while having lower syneresis than the control Labneh. Vitamins B1, B9, and B12, and minerals such as Fe, Zn, K, and Mg, were found to be higher in the SFL samples than in the control. The phytopigments (chlorophylls a and b, carotenoids) increased as the added levels of Spirulina increased when comparing with control. Subsequently, it is recommended to fortify Labneh with Spirulina as a potential source for phenolic and flavonoid compounds, phytopigments, vitamins, fiber, and a high content of minerals.

The second target of this thesis is the utilization of Egyptian jojoba seeds (JS) (*Simmondsia chinensis*) advantages as another additive to functional Labneh because JS are rich in mineral elements, protein, fiber, total phenolic and flavonoid content. Moreover, the various properties of JS, such as comparing the effects of different extractions using various solvents on antibacterial activity besides determining the MIC and MLC, have been studied. The results revealed that there were differences between the different extraction methods. Also, the determination of the HPLC profile of phenolic and flavonoid compounds in JS has been carried out. In addition, detoxification of JS and getting rid of simmondsin according to different treatment methods, including heat treatment and fermentation by using *Lb. acidophilus*, have been performed. Hence, a toxicity test was also conducted to prove that there were no harmful substances that led to a toxic effect. Then, the seeds were added to concentrated fermented milk (0, 0.5, 1, 1.5, and 2%). The study was extended to estimate the effect of the microbiological, physicochemical, and organoleptic evaluation during the storage period at $5 \pm 1^\circ\text{C}$ for 28 days.

Keywords: Functional Labneh, Probiotic, Spirulina (*Arthrospira platensis*), Jojoba (*Simmondsia chinensis*), minerals, vitamins phytopigments, antioxidant, MIC and MLC