

**IMPROVING THE QUALITY PROPERTIES
OF YOGHURT PRODUCED USING
VEGETABLE MILKS**

By

SHYMAA ABDEL-MONEM MOHAMED

B.Sc.Agric. Sc. (Horticulture), Fac. of Agric., South Valley University, 2011

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Under the supervision of:

Dr. Rezk Azab Awad

Professor of Dairy Science and Technology, Department of Food Science,
Faculty of Agriculture, Ain Shams University (Principal supervisor)

Dr. Osama Ibrahim El-Batawy

Associate Professor of Dairy Science and Technology, Department of
Food Science, Faculty of Agriculture, Ain Shams University

Dr. Wafaa Mahmoud Salama

Head Research of Dairy Science and Technology, Department of Dairy
Technology Research, Food Technology Research Institute, Agriculture
Research Center

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ABSTRACT

Shymaa Abdel-Monem Mohammed, Improving the quality properties of yoghurt produced using vegetable milks. Unpublished Master of Science Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2020.

The objective of the present study was to produce vegetable milk from Lupine (*Lupinus angustifolius*), Chickpea (*Cicer arietinum L.*) and Common bean (*Phaseolus vulga L.*) seeds as an alternative to natural milk in the yoghurt like production. The study was conducted in three parts; the first part, production of vegetable Lupine milk and its uses in the manufacture of yoghurt like products. Lupine yoghurt like was made from Lupine extract in permeate milk fortified with different levels of milk protein concentrate (MPC) in comparison with Cow milk yoghurt. The results showed that, the addition of MPC to Lupine milk led to increase and slight decrease of total solids, protein, ash & carbohydrate and fat & crude fiber contents of resultant yoghourts like. Crude fiber content of Lupine yoghurt was found to be steady level in all treatments. T₃ Lupine yoghurt like fortified with 3% MPC showed slightly higher amino acids content and biological value (BV) compared with control of untreated Lupine yoghurt. Values of viscosity were increased with increasing ratios of MPC in Lupine milk. Hardness and springiness values of all Lupine yoghurt treatments were increased during storage period and the increase in these two texture parameters were positively correlated to the MPC level. Bacterial cultures counts were higher in yoghurt made from Cow milk than that of all Lupine milk yoghurt like treatments. All samples were free from any contamination either with yeast or molds counts when fresh or after 7 days of storage at 5±2°C, while they appeared after 14 days. All yoghurts were sensory acceptable especially that fortified with 3% MPC, which helped to beany flavor disappearing and improving the texture of yoghurt like.

In the second part, production of vegetable Chickpea milk and its uses in the manufacture of yoghurt like products. Chickpea yoghurt like was made from Chickpea extract in permeate milk fortified with different levels of MPC in comparison with Cow milk yoghurt. The results showed that, the addition of MPC to Chickpea milk led to increase and slight decrease of total solids, protein & carbohydrate and fat & crude fiber contents of resultant yoghourts like. Crude fiber content of Chickpea yoghurt like was found to be steady level in all treatments. T₃ Chickpea yoghurt like showed slightly higher amino acids and biological value (BV) content compared with other treatments. Values of viscosity were increased more with ascending ratios of MPC in Chickpea milk. Hardness and springiness values of all Chickpea yoghurt like treatments were increased during storage period and the increase in these two texture parameters were positively correlated to the MPC level. *Str. theromphillus* or *Lb. delbrueckii ssp. bulgaricus* were higher counts in yoghurt made from Cow milk than that of all Chickpea yoghurt like treatments including Chickpea control. All samples were free from any contamination either with yeast or molds counts when fresh or after 7 days of storage at 5±2°C, while they appeared after 14 days. All yoghurts were sensory acceptable especially that fortified with 3% MPC, which helped to beany flavor disappearing and improving the texture of yoghurt like.

In the third part, production of vegetable Common bean milk and its uses in the manufacture of yoghurt like products. Common bean yoghurt like was made from Common bean extract in permeate milk fortified with different levels of MPC in comparison with Cow milk yoghurt. The results showed that, the addition of MPC to Common bean milk led to increase and decrease of total solids, protein, carbohydrate, amino acid & BV and fat & crude fiber contents of resultant yoghourts like. Crude fiber content of Common bean yoghurt like was found to be steady level in all treatments. Values of viscosity were increased more with ascending ratios of MPC in Common bean milk. Hardness and

springiness values of all Common bean yoghurt like treatments were increased during storage period and the increase in these two texture parameters were positively correlated to the MPC level. *Str. thermophilus* or *Lb. delbrueckii ssp. bulgaricus* counts were higher counts in yoghurt made from Cow milk than that of Common bean milk yoghurt like treatments including Common bean control. All samples were free from any contamination either with yeast or molds counts when fresh or after 7 days of storage at $5\pm 2^{\circ}\text{C}$, while they appeared after 14 days. All yoghurt were sensory acceptable especially that fortified with 3% MPC powder, which helped to beany flavor disappearing and improving the texture of yoghurt like.

It could be recommended that, different yoghurt like could be produced from some vegetable milk such as Lupine, Chickpea and Common bean. Vegetable milk could be extracted in milk permeate for producing a good yoghurt like.

Key words: Lupine, Chickpea, Common bean, Yoghurt like, Chemical composition, Amino acids, Biological value, Textural properties, Microbiological analysis, Sensory evaluation.