

COMPOSITIONAL QUALITY OF SHEEP MILK IN EGYPT

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APPROVAL SHEET

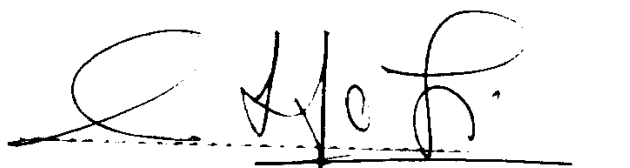
Compositional Quality of Sheep Milk in Egypt

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INTRODUCTION

INTRODUCTION

Although the composition of cow's & buffalo's milk has been studied by many workers, there is relatively little published information on ewe's milk in Egypt and information on its chemical composition and physical properties is sparse and incomplete.

Analyses of some components of Egyptian sheep's milk recorded by several investigators, El-Sokkary et al. (1949), Ghoneim et al. (1956), El-Gindi et al., (1972) and Hayan and Farag (1977), gave useful informations about fat, acidity, density, protein and milk yield. Unfortunately analyses were incomplete for physical properties especially rennin coagulation time and heat stability which necessitate summative analyses of milk.

In Egypt sheep's milk is used by most farmers especially in Giza and Benha provinces, and a well popular soft cheese is made from this milk "The Bari Cheese" - From these facts, the economic importance of sheep and goat's milk in this country is obvious. It was decided to investigate the above composition and physical properties of ewe's milk in Egypt.

The aim of these study to make a survey on the local and foreign sheep in Egypt i.e. Abdel Rahman, Ismail and others. This project composition and physical properties was studied as following :

1. Effect of breed on physical properties (pH , acidity, specific gravity, rennin coagulation time, heat stability, total solids, fat %, S.M.L. %, Protein % ,

lactose % , Ash % , chloride %), Nitrogen distribution (total Nitrogen, Non casein nitrogen, Non protein nitrogen) rennin coagulation time and heat stability.

2. Seasonal variations in physical properties, Gross composition, Nitrogen distribution, rennin coagulation time and heat stability were also investigated.
3. Relations among milk constituents were statistically determined.

It was also intended to find out the suitable equation for computing the total solids in sheep's milk.

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REVIEW OF LITERATURE

REVIEW OF LITERATURE

Physical properties and chemical composition
Barnicoat et al. (1949) analyzed the New Zealand Romney ewe's milk and found that the average values were: fat 5.5%, S.M.F. 10.98%, protein 5.38%, lactose 4.7% and ash 0.9%.

El-Sokkary et al. (1949) studied the composition of Rahmany and ossemi milk and stated the mean values: Sp. gr. 1.0350, acidity 0.226%, fat 8%, S.M.F. 11.35% and T.N. 0.92%. They added that the Nitrogen in milk was distributed between casein 0.702%, Non casein Nitrogen 0.175% and N.F.N. 0.041%.

Ulvesli (1949) studied the composition of milk of Karakul sheep and noticed that the milk fat percentage increased from 7.25% in May to 11% in August. Also he found that total solids increased from 19.6% in May to 24.5% in August. The average protein and lactose contents from 6.25% to 7.65% and 5.18% to 4.4% respectively.

Adam (1951) obtained the following average values from sheep of the Kiviroik: T.S., 17.87%; fat 7.06%, protein 5.53%; lactose 4.38%; ash 0.47% and Sp.gr 1.0338%.

Nonoshvili (1950) collected and analyzed the milk of Tuskinskay and Gruzinskay in the summer months. He found the average values for milk from Tuskinskay sheep in the period from April to August were: Sp.gr. 1.0400-1.0381, fat 4.1-9.38% and T.S. 15.63-21.61%. Casein and lactose contents were 5.63 and 3.25% respectively.

Dluziewski (1955) obtained the following average values from Tatra ewe's milk in Poland during the latter part of July and the whole of August: Sp.gr. 1.0351, fat 7.4%, lactose 4.35%, protein 5.71%, chloride 0.144% and acidity 9.4 °SH. Isioy and Ikono (1956) found that the composition of milk from Tsigai ewe's was as follows: T.S. 18.37%, fat 7.2%, protein 6.07%, Casein 5.04%, non casein nitrogen 1.25, lactose 4.31% and minerals 0.82% .

Ghoneim et al. (1956) analyzed samples of milk from Casari and Rahmany ewe's. They noticed that there was little difference between the two breeds, the range for individual samples being greater than the difference between the breeds. They, Also, obtained ranges for ash 0.81-0.99%, fat 3.3-11.2%, protein 4.25-7.65, and lactose 2.67-6.67 for individual samples, their respective averages being 5.9%, 7.26%, 5.95% and 4.67% .

Nakanishi and Tokita (1957) obtained the following average values: Sp. gr. 1.0358, Crude protein 5.48% , Casein 4.29%, lactose 4.25%, fat 6.03% and ash 0.833% in ewe's milk.

Sugai and Kuramoto (1959) studied the composition of corriedale ewe's milk and stated that milk contained 5.94% fat, 5.73% protein, 4.12% lactose, ash 0.885%, Sp. gr. 1.0367 and the acidity 0.261%. Also, they noticed that fat and lactose decreased during lactation while specific gravity, acidity and protein tended to increase.

Volchenko (1959) studied the chemical composition and physical properties of milk from Karakul sheep and obtained the following average values: T.S, 19.43% , fat 7.74%, total protein 6.56%, lactose 4.18%, ash 1.024, Sp. gr. 1.0358 and acidity 21.8 %.

Lantinga (1961) reported that the fat content of ewe's milk averaged 6.64%, while the protein content averaged 5.87% .

Salerno (1961) analyzed the milk of Apulian and Altamura ewe's and obtained the average values of 23.78%

and 22.79% T.S; 9.77% and 8.79% fat; 6.91% and 7.17% protein, 5.58% and 5.86% lactose, and 1.02% and 1.05% ash, respectively.

Sartore (1961) obtained the following average values from sardinian ewe's milk: fat 5.9%, S.N.P. 11.61% and Sp. gr. 1.0378.

Balatoni (1962) found that the average values of fat, total solids, protein, lactose and ash contents in bulk ewe's milk were: 7.27%, 19.1%, 6.215%, 4.8-5.15%, 0.89% respectively.

The mean acidity of freshly drawn individual samples was 9.4 °SH compared with 8.57 °SH for fresh bulk samples with pH values ranging between 6.35 and 6.6 .

Kazimir and Senjan (1962) found that Moravian ewe's milk composed from 7.66% fat and 5.81% protein for the individual samples, 7.56 and 5.92% respectively for bulk milk.

Kurkdjian and Gabrielian (1962) obtained milk samples from Balbas and Balbas x Rombouillet from May to Sept and noticed that titratable acidity remained

constant until June then decreased, while, p^H was more stable and the buffer capacity increased by the end of lactation. They reported that fat content increased from 3.5 to 11.6%, total protein from 5.7 to 8.1%, T.S from 16.1 to 24.1% and S.N.F. from 11.7 to 12.3% .

Timariu (1962) studied the chemical composition and the physical properties of milk from Merino ewe's and obtained the following average values: 5.6% protein, 4.65% casein 3.68% lactose, 6.5 p^H and 18.4°T acidity. Kubis (1963) studied the composition of valachian and Hampshire ewe's milk and their crosses. He obtained the following average values: Sp. gr. 1.038, fat 8.28%, T.S 19.36%, total protein 5.97%, lactose 4.36%, ash 0.876% and acidity 25.3 °T. He noticed that with advancing lactation the fat and protein contents increased and lactose decreased. Also little difference being noted between the initial and final T.S levels.

Nejim (1963) studied the composition of Awasi sheep milk and obtained the following average values: Sp.gr. 1.0366, titratable acidity 0.22%, p^H 6.65, T.S 19.87%, fat 6.88%, protein 6.184%, lactose 5.75% and ash 0.928% .

Addleman (1964) studied the composition of milk in five breeds of sheep i.e, Border, cheviot, Dorset Horn, columbia and suffolk. He indicated the average values of protein 5.46%, S.N.F. 10.86% and fat 8.43%.

Ashton et al. (1964) found that the average composition of clun forest ewe's milk was as follow :
Sp.gr. 1.035, T.S. 16.9%, S.N.F. 10.7%, fat 6.2%, lactose 4.7%, protein 5.3%, ash 0.87% and chloride 0.07% .

Bakhimov (1964) analyzed black and grey Karakul ewe's milk and the respective mean values were obtained as following: Sp.gr. 1.0358, 1.0341; acidity 23.04 °T, 22.97 °T; fat 8.48%, 7.56%, protein 8.34%, 6.38%; casein 4.22%, 4.25%; T.S 20.91%, 19.81%; lactose 5.22, 4.13% and ash 0.88, 0.83% .

Gorancov (1964) studied the composition and properties of milk of fine woolled sheep and found that the milk contained an average of 17.87%, T.S, 0.11% fat, 5.487% protein, 4.261% casein, 4.456% lactose, 0.883% ash, Sp.gr. 1.0402 and acidity 24.04 °T .