

Protein and Fat Rates of Non-Dairy Sheep Milk vs Human Milk Standards

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ABSTRACT:

The objective of the study was to compare some basic parameters such as total fat and protein in non-dairy sheep milk versus human milk standards. In the study, 20 non-dairy sheep (Akkaraman) milk samples were collected during early lactation period. The milk samples were composites of milk collected at morning and afternoon of day. The protein and fat levels of sheep milk were compared with the references (4.4% fat, 1% protein) for human milk standards using one-sample t test. The obtained total fat value (4.52%) in non-dairy sheep is similar to that for announced fat standards of human milk (4.4%). However, observed milk protein levels (5.41%) are higher than human milk standards (1%). According to the results of study, we can say that Akkaraman sheep milk fat rates are suitable according to human milk standards. High milk fat levels in Akkaraman sheep may not be advantages for young babies. Protein and fat levels of raw milk in announced sheep breed should be adjusted according to baby nutrition. Further researches are needed to improve the interpretations about milk components in different sheep breeds associated with human nutrition.

KEYWORDS: Human, sheep, milk standard, milk components, sheep

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I. INTRODUCTION

There are important differences in milk parameters between breeds, and these influence milk quality. Milk is the basic source of nutrition for offspring before they are able to eat and digest other foods; older offspring may continue to be breastfed. The composition of milk for each animal breeds varies widely and other kinds of milk are often very different from human breast milk. Human milk is sweeter than sheep's milk. Raw sheep milk contains too high energy, total protein, total fat for human babies [1]. In addition, the proteins, fats and calcium in cow and sheep milk are more difficult for an infant to digest and absorb than the ones in breast milk [2]. Milk obtained from non dairy sheep is likely to have higher levels of fat-soluble vitamins and other nutrients. Sheep fed roughage, especially those grazing grass, have been shown to have higher levels of total fat in their milk [3]. Sheep are natural herbivores and are healthiest when they eat grass, rather than the grain they are fed in confinement dairy operations. There is a need for research on the chemical properties of milk from non dairy sheep breeds for sheep milk standards. The objective of this research was to compare some important milk components such as fat and protein in non dairy sheep versus human milk standards.

II. MATERIAL AND METHODS

In the study, 20 non-dairy sheep (Akkaraman) milk samples were collected during early lactation period. The milk samples were composites of milk collected at morning and afternoon of day. The samples were collected into plastic vials preserved with microtabs, stored 4°C until analyzing for determination of all parameters. The milk samples were analyzed by automatic analysis using a Farm Milk Analyser (Milkana). The protein and fat levels of sheep milk were compared with the references (4.4% fat, 1% protein) for human milk standards using one-sample t test [4; 5; 6].

III. RESULTS AND DISCUSSION

The milk parameters of non-dairy sheep (Akkaraman) are showed in Table 1.

Standard values of human milk		Akkaraman sheep
Total Fat	4.4 %	4,52±0,42 N.S
Protein	1 %	5,41±0,20 **

** p<0.01, N.S: Not Significant

Table 1. Milk fat and protein rates of Akkaraman sheep vs human milk

Milk fat and protein rates of Akkaraman breed in this study are compatible with normal values for sheep announced by Koneko and Cornelius (1980) [7].

The data analysis showed significant differences between total protein of non-dairy sheep and the human milk standards. The total fat value in non-dairy sheep is similar to that of standards of human milk as shown in Table 1. Comparing the mean values for milk parameters, it seems obvious the differences (p<0.01) in total protein between standard values and obtained values in non-dairy sheep. However, there were no differences in total fat contents between standard values and obtained means in non-dairy sheep. According to the results of study, we can say that Akkaraman sheep milk fat rates are compatible with human milk standards. However, observed milk protein levels are higher than human milk standards. Rates of milk parameters, point out that Akkaraman sheep have a better genotype for the human nutrition. However, protein (5.41%) and fat levels (4.52%) of raw milk in announced sheep breed should be adjusted according to baby nutrition (protein 1%, fat 4%). High milk fat and protein levels in Akkaraman sheep may not be advantages for infants (baby). However, milk fat and protein rates in above mentioned sheep breed are sufficient for human nutrition according to WHO (least 2.6% fat and 3.5% protein) standards [8].

Further researches are needed to improve the interpretations about milk components in different sheep breeds associated with human nutrition and confirm the findings obtained from Akkaraman sheep in this study.

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