

ULST Timisoara Multidisciplinary Conference on Sustainable Development 15-16 May 2025



# EVALUATING SHEEP'S COLOSTRUM ACCORDING TO THE TIME FROM THE CALVING BY THE REFRACTOMETRIC METHOD

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**Abstract:** The purpose of the study was to determine the effects of breed and time post-partum on the quality of the sheep colostrum. In this study, colostrum samples taken at different times post-partum from two different breeds of sheep (Turcană and Asaf) and were compared using the Brix refractometer and the colour score. The sheep included in the study were placed in paddocks depending on breed. In the first week post-partum, seven colostrum samples (milk) from each sheep were collected, at 4, 12, and 24 h, then twice a day. According to the data obtained from the study, there was a difference in the composition of the colostrum depending on the breed and the duration of milking (p < 0.05). Colostrum Brix values in the first and second milking proved to be greater in Turcană than in Awasi (p < 0.05). In addition, it was determined that the colour score decreased in time post-partum, and this decrease was statistically significant (p < 0.05). In conclusion, as the quality of the sheep colostrum varies depending on breed and time, the quality of the colostrum administered to the lamb should be determined to ensure the health and performance of the lamb. In our study, it was observed that the colour score decrease in intensity. There was a decrease in the colour score depending on the time post-partum and that this decrease was statistically significant. In addition, it was observed that the colour score depending on the time post-partum and that this decrease was statistically significant. In addition, it was observed that the colour score depending on the time post-partum and that this decrease was statistically significant. In addition, it was observed that the colostrum samples taken from the Turcană breed were of a lower quality than those in the Assaf breed, which had the highest colour score.

### Introduction

Animal protein sources are of great importance to human health. A proper, balanced diet is very important for optimum health in both animals and humans. People need to consume animal protein daily to maintain a healthy, balanced diet. A significant part of animal proteins consumed by humans are provided by ruminant animals, and sheep occupy an important place among them in several areas of the world. Sheep attract more attention due to the shorter gestation period, the number of lambs per calving and younger age upon slaughter, as well as having a better use capacity of gross feed than cattle. The survival of each lamb also affects the welfare of the animals, the economy of the farm, and a country's economy.

The first secretion produced by the mammary glands immediately post-partum is called colostrum. Colostrum is a thick substance, rich in nutrients, which is secreted in the first 72 h post-partum. Colostrum is very different from normal milk in terms of colour and composition. The most important of these differences is the very high concentration of immunoglobulins in the colostrum, which strengthen the immune system of lambs. In addition, the level of casein, fats, proteins and, vitamins (A, B12, D, and E) is higher in the colostrum, but it is poorer in terms of lactose. Proteins, growth factors, immunoglobulins (IgG, IgM, and IgE), hormones, cytokines, lactoferrin, interleukins, nucleosides, and nucleotides that are important for lambs are the main bioactive components of the colostrum. The ratio of these colostrum components is higher in the first hours postpartum.

## • Results and discussion

In this study, the Brix values and the colour scores of the colostrum samples taken from the two sheep breeds were examined. The Brix values of the colostrum are presented in Table 1, and the results obtained from the colour score are presented in Table 2.

Table 1 Changing Brix colostrum values (%) according to time post-partum

Breed	Upon	12 h	24 h	36 h	48 h	60 h	7 days
	calving						
Ţurcană	24.8±1.02 <sub>ab</sub>	21.2±1.09 <sub>ab</sub>	16.9±1.05	15.9±0.46	13.9±0.61	14.4±0.52	13.8±0.29 <sub>a</sub>
Awassi	26.8±1.12 <sub>ab</sub>	22.7±1.78 <sub>ab</sub>	18.5±1.34	16.9±1.19	14.4±0.67	12.5±0.56	11.8±0.55 <sub>b</sub>
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Different averages in the same column indicate significant differences (p<0,05).

Breed	Upon	12 h	24 h	36 h	48 h	60 h	7 days
	calving						
Ţurcană	3 (2-3)	2 (2-3) *	2 (1-2) *	1 (1-2) *	1 (1-1)	1 (1-2)	1 (1-1)

## • Material and method

The purpose of this study was to compare Brix colours and values with an optical refractometer in colostrum samples collected at different times post-partum in two sheep breeds, Asaf and Turcană, and to evaluate the effectiveness of Brix refractometers in analysing sheep colostrum.

For this study, 30 sheep were taken from a farm in the Mountainous Banat (Măgura) that were used as experimental animals. The study was conducted in winter, straw was used as bedding in a semi-open shelter. The sheep were selected as clinically healthy, with weight in accordance (two years or older) and with similar bodily condition scores, all the animals were multiparous and calved a single lamb. The sheep were placed in two shelters with 15 sheep per each breed.

Asaf	3 (3-4)	3 (1-3) *	2 (1-3) *	2 (1-3) *	2 (1-2)	2 (1-2)	1(1-1)

a-b: Averages with different superscripts in the same column indicate significant differences (p < 0.05). \*The same line shows the difference in colour score depending on the time within the group, regardless of breed (p < 0.05). The values between brackets indicate the lowest and highest values obtained in the measurements performed on the relevant samples. In this study, the changes in the quality of the colostrum in the two sheep breeds over time have been evaluated according to the Brix values and the colour score: there was a quality of the colostrum affected by the breed and the milking time. Also, the Brix values of colostrul upon milking T0 and T1 were higher in the Țurcană breed than in the Asaf breed.

#### Conclusions

In this study, it was determined that the breed and the time post-partum were effective in improving the quality of the colostrum in sheep. It was believed that the difference between the Brix values and the rank scores obtained may be due to the colostrum IgG content. The Brix refractometers used in the study are a useful, cheap, and easy method that can be easily used by sheep breeders. With the use of this method in raising sheep, the death of the lambs can be prevented due to the consumption of poor quality colostrum. Studies on the quality of colostrum in literature have focused on dairy cows, and sheep studies have been limited. Studies on this tonic on sheep will make valuable

