

Seasonal Clinical Indicators of Karakul Sheep Raised in Various Ecological Regions

Jiyanmuradova Shakhlo Khamdamovna- Doctoral Student
Research Institute of Karakul Sheep Breeding and Desert Ecology

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Annotation: This article presents information on the study of body temperature, heart rate, and respiratory rate of Karakul sheep raised in various ecological regions, based on comparative analyses by seasons.

Keywords: physiological parameters, thermoregulation, stethoscope, carbon dioxide, alveoli, oxygen, microbe, physical-geographical

INTRODUCTION

Relevance of the Topic: Each type of pasture is found in a specific ecological environment and differs significantly in terms of usage characteristics. The type of pasture is considered the main result of the natural development process of plant cover in a specific physical-geographical setting. In recent years, the region has frequently experienced adverse weather conditions, leading to food resource shortages. As a result, Karakul sheep are often forced to be temporarily moved to other areas or pasture lands from their main grazing areas.

In healthy animals, the heat produced and the heat lost are balanced, which allows the body temperature to remain constant. The body temperature is influenced by various factors, including the type, age, sex, breed of the animal, time of day, season, external temperature and humidity,

body condition (lean or overweight), activity level, health status, and many other factors. Younger animals generally have a higher body temperature than older ones. Lean animals tend to have lower temperatures than overweight ones. Female animals typically have higher body temperatures than males. Additionally, temperature increases during the last months of gestation.

The respiratory system plays several vital roles in the organism. Its primary function is gas exchange, which occurs during inhalation and exhalation. The primary function of the respiratory system is gas exchange, where oxygen enters the lungs and passes into the bloodstream. Hemoglobin, combined with carbon dioxide in the blood, transfers the carbon dioxide gas to the alveoli and binds with oxygen. The respiratory system also participates in fluid exchange within the organism. Excess fluid is expelled from the body as vapor through respiration. If there is insufficient fluid in the organism, moisture from the air passing through the nasal cavity is absorbed through mucous membranes. Furthermore, the respiratory system plays a role in thermoregulation. This function is particularly important during lung ventilation, especially in animals that lack sweat glands. This mechanism helps maintain body temperature within a certain range. The mucous membranes of the respiratory tract also serve a protective function. Intact mucous membranes prevent microbes and their toxins from entering the organism. Therefore, we aim to conduct a comprehensive study of the clinical indicators of Karakul sheep raised in various ecological regions by seasons.

Research Object and Methodology: Our research was conducted based on the clinical indicators of Karakul sheep raised in the "Saxoba ota qorakol nasl" LLC in the Nurobod district of the Samarkand region and the "Yangigazgon nurli diyor" LLC in the Konimekh district of the Navoi region. Five sheep were selected from each farm according to the principle of 'paired analogs' for the experiments.

Body temperature was measured daily in the morning, before feeding, using a DT-624 electronic thermometer, accurate to $\pm 0.1^{\circ}\text{C}$. Heart rate was measured with a stethoscope, and respiratory rate was counted based on the movement of the chest and abdominal walls as well as the movement of the nostrils (Table 1).

Results and Analysis: In spring, the average body temperature of the lambs in the experimental group at "Saxoba ota qorakol nasl" LLC was $38.8 \pm 0.8^{\circ}\text{C}$ in the morning and $39.1 \pm 0.11^{\circ}\text{C}$ in the evening. The heart rate averaged 74.6 ± 0.21 beats per minute in the morning and increased to 74.8 ± 0.33 beats in the evening, while the respiratory rate changed from 23.2 ± 0.16 breaths to 23.7 ± 0.38 breaths. In the experimental group at "Yangigazgon nurli diyor" LLC, the average body temperature in the morning was $38.9 \pm 0.67^{\circ}\text{C}$ and $39.2 \pm 0.81^{\circ}\text{C}$ in the evening. The heart rate was 74.5 ± 0.9 beats per minute in the morning and increased to 74.9 ± 0.28 beats in the evening, with the respiratory rate changing from 23.7 ± 0.15 breaths to 24.2 ± 0.7 breaths.

Table 1

Clinical indicators of Karakul sheep by seasons. (n=5)

Groups	Examination Period		Body Temperature ($^{\circ}\text{C}$)	Heart Rate (beats per minute)	Respiratory Rate (breaths per minute)
"Saxoba Ota Qorakol Nasl" LLC	Spring	Morning	$38,8 \pm 0,8$	$74,6 \pm 0,21$	$23,2 \pm 0,16$
		Evening	$39,1 \pm 0,11$	$74,8 \pm 0,33$	$23,7 \pm 0,38$

	Summer	Morning	39,2±0,2	75,7±0,9	26,1±0,26
		Evening	39,4±0,7	76,3±0,5	27,2±0,51
	Autumn	Morning	38,9±0,23	74,4±0,41	22,6±0,8
		Evening	39,0±0,42	74,9±0,5	23,1±0,21
	Winter	Morning	39,2±0,9	77,1±0,14	27,3±0,34
		Evening	39,5±0,13	77,8±0,11	27,5±0,28
“Yangigazgon Nurli Diyor” LLC	Spring	Morning	38,9±0,67	74,5±0,9	23,7±0,15
		Evening	39,2±0,81	74,9±0,28	24,2±0,7
	Summer	Morning	39,3±0,24	78,5±0,36	27,9±0,38
		Evening	39,4±0,19	79,1±0,17	28,6±0,24
	Autumn	Morning	39,0±0,26	73,2±0,28	23,6±0,7
		Evening	39,2±0,6	73,8±0,26	23,9±0,9
	Winter	Morning	39,2±0,74	77,4±0,11	27,1±0,62
		Evening	39,6±0,31	78,1±0,17	27,3±0,8

P<0,5

In summer, the average body temperature of lambs in the experimental group at "Saxoba ota qorakol nasl" LLC was 39.2±0.2°C in the morning and 39.4±0.7°C in the evening. The heart rate averaged 75.7±0.9 beats per minute in the morning, decreasing to 74.9±0.5 beats in the evening, and the respiratory rate changed from 26.1±0.26 breaths to 27.2±0.51 breaths. In the experimental group at "Yangigazgon nurli diyor" LLC, the average body temperature was 39.3±0.24°C in the morning and 39.4±0.19°C in the evening. The heart rate was 78.5±0.36 beats per minute in the morning, increasing to 79.1±0.17 beats in the evening, while the respiratory rate changed from 27.9±0.38 breaths to 28.6±0.24 breaths.

In autumn, the body temperature of lambs in the experimental group of “Saxoba Ota Qorakol Nasl” LLC averaged 38.9±0.23°C in the morning and increased to 39.0±0.42°C by evening. The heart rate was recorded at an average of 74.4±0.41 beats per minute in the morning and rose to 74.9±0.5 beats per minute in the evening. The respiratory rate increased from 22.6±0.8 breaths per minute in the morning to 23.1±0.21 breaths per minute by evening. According to the recorded indicators, the body temperature of lambs in the experimental group of “Yangigazgon Nurli Diyor” LLC was 39.0±0.26°C in the morning and increased to 39.2±0.6°C by evening. The average heart rate was 73.2±0.28 beats per minute in the morning, rising to 73.8±0.26 beats per

minute by evening, while the respiratory rate changed from 23.6 ± 0.7 breaths per minute in the morning to 23.9 ± 0.9 breaths per minute by evening.

In winter, the body temperature of sheep in the experimental group of “Saxoba Ota Qorakol Nasl” LLC averaged $39.2 \pm 0.9^\circ\text{C}$ in the morning and increased to $39.5 \pm 0.13^\circ\text{C}$ by evening. The heart rate was recorded at an average of 77.1 ± 0.14 beats per minute in the morning and increased to 77.8 ± 0.11 beats per minute by evening, with the respiratory rate changing from 27.3 ± 0.34 breaths per minute in the morning to 27.5 ± 0.28 breaths per minute by evening. In the same period, the body temperature of lambs in the experimental group of “Yangigazgon Nurli Diyor” LLC was $39.2 \pm 0.74^\circ\text{C}$ in the morning and increased to $39.6 \pm 0.31^\circ\text{C}$ by evening. The heart rate averaged 77.4 ± 0.11 beats per minute in the morning, rising to 78.1 ± 0.17 beats per minute by evening, while the respiratory rate changed from 27.1 ± 0.62 breaths per minute in the morning to 27.3 ± 0.8 breaths per minute by evening.

Conclusion: The lowest recorded body temperature among the experimental Karakul sheep in the “Saxoba Ota Qorakol Nasl” LLC was 38.8°C in the spring morning, while the highest temperature of 39.6°C was noted in the “Yangigazgon Nurli Diyor” LLC in the winter evening. The lowest heart rate recorded was 74.4 beats per minute during the autumn morning for the “Saxoba Ota Qorakol Nasl” LLC, while the highest heart rate was 79.1 beats per minute in the summer evening for the “Yangigazgon Nurli Diyor” LLC. The respiratory rate was the lowest at 23.1 breaths per minute in the autumn evening for the “Saxoba Ota Qorakol Nasl” LLC and the highest at 28.6 breaths per minute in the summer evening for the “Yangigazgon Nurli Diyor” LLC.

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