IJIAET International Journal of Innovative Analyses and Emerging Technology

| e-ISSN: 2792-4025 | http://openaccessjournals.eu | Volume: 1 Issue: 5

Dependence of Clinical and Morphological Indicators of Blood of Cows on the Seasons

Amirov Shavkat Kuzibaevich

Scientific leader, Ph.D., Associate Professor of Samarkand Institute of Veterinary Medicine

Javharov Oybek Zulfiqorovich

Independent researcher, head teacher of Andijan Institute of Agriculture and Agrotechnology

ANNOTATION

The climate conditions of the Republic of Uzbekistan are sharply continental. Under such conditions, it is natural that the clinical indicators of cows, certain changes in the morphological composition of the blood.

The article describes the changes in the clinical and hematological parameters of Swiss cows in the foothills of Kashkadarya region depending on the seasons. Although there were some changes in the clinical and morphological composition of the blood of the experimental cows at different times of the year, it was found that they did not deviate sharply from the level of physiological norms.

Introduction

External environmental influences have a direct effect on physiological processes in the body of cows, and through them on metabolism. Periodic changes in physiological functions in the body indicate that the external environment is not constant. This is because the animal lives in an organic connection with the external environment. Every change in the external environment enters the cow's body with its own effects. This is reflected in the clinical and hematological indicators of cows in a positive or negative state.

In the sharp continental climate of the Republic of Uzbekistan, the creation of productive herds of cattle is a topical and problematic issue. Especially, particular importance is the study of the adaptive properties of goods imported from the northern regions.

Clinical indicators of cows (respiration, pulse, body temperature) and hematological parameters of the blood represent the degree of their adaptation to natural-climate conditions and ultimately affect their productivity, viability and self-reproduction indicators [1; -21-23 p.].

[8] in their experiments studied the clinical indicators of cows of different activity types (over-active, moderate-active and under-active) in terms of etiology by season. The clinical indicators of the cows in the experiment was slightly higher in summer than in winter. However, it was concluded that all clinical indications in cows were at the level of physiological norm, indicating a good level of adaptation to the fertilized area.

On hot summer days, the change in body temperature of cows at noon compared to the morning time indicates their heat resistance, and this is evaluated as a heat resistance index by the .Yu.Rauschenbach method. The heat resistance index was found to be 82,0 in local zebu cattle and 77,0–81,2 in Holstein red desert cattle, and 81,8 in local red desert cows [4, pp. 25-26]. .

[3; -43 p] studied the summer clinical indicators of Holstein cows of Hungarian and Chinese selection imported from foreign countries. The rise in air temperature from 20 ℃ in the morning to 39 ℃ in the afternoon affected the physiological condition of the animals, including body temperature in Hungarian Holstein cows by 0,70 ℃, pulse by 13,4 times / min and respiratory movements by 5,4 times per minute. In Chinese Holsteins, the increase was 0,2 ℃, 0,5 times / minute and 16 times / minute, respectively.

This led to a prolongation of the service period, which was 162 days in the Hungarian Holstein and 146 days in the Chinese Holstein, the duration of the service period was 70-85 days longer than normal and had a negative impact on calving rates. The volume of erythrocytes in the blood of Hungarian Holsteins was 6,5 million/mm^3, leukocytes - – 9,84 thousand/mm^3 and hemoglobin – 10,4 g%, which is higher than the indicators of Chinese Holsteins (respectively 6,18 million/mm^3; 7,68 thousand/mm^3 and 10,1 g%). The authors interpreted this situation as a response of the organism to protection from the effects of the external environment.

ISSN 2792-4025 (online), Published under Volume: 1 Issue: 5 in October-2021

Morphological and biochemical parameters of blood are the main indicators of homestasis of the organism and change under the influence of various factors. The respiratory-oxidative function of the blood changes during the summer, even though relatively under the influence of the external environment. It is known that the number of erythrocytes in the blood of cattle during the summer has a tendency to decrease. This is due to the influence of thermal factors. The number of leukocytes is related to the protective function of the blood and increases under the negative influence of the external environment. A decrease in the number of leukocytes indicates an increase in the body's adaptability to environmental conditions. [5; p.-280], [6; p.-61-64], [7; p.-256].

[8]. In their experiments, they studied the changes in the morphological composition of the blood of cows of different active types according to the seasons, according to the etiology of the Holstein breed. The content of erythrocytes, leukocytes and hemoglobin in the blood of cows of group I (highly active type) is 0,23 million/mm^3in summer compared to winter; In cows of experimental groups II (medium active type) and III (slow active type), which were higher than 0,20 thousand /mm^3 and 0,13%, these values were 0,20, respectively; 0,23; 0,28 and 0,19; Showed high performance at 0,24 and 0,27 units. Accelerated metabolism in the body of cows in the summer is characterized by an increase in the number of shaped elements in the morphological composition of their blood.

[9; -23-24-p] studied the clinical and hematological parameters of Holstein red desert heifers imported to the Republic from Ukraine. The authors note that the adaptation of these goods to the conditions of the Aral Sea region can be assessed as satisfactory. Their clinical manifestations were at the level of physiological norm, in summer the body temperature was 38,85 °C, heart rate 76,1 beats per minute, respiratory movements – 54,3 times. Hematological indicators are also normal, the total protein in the blood is 6,81 g%, the number of erythrocytes in 1 ml of blood – 6,24 million, leukocytes – 7,06 thousand, hemoglobin – 53,6 (according to Sali), color index – 8,59. At the same time, the authors note that during the hot summer months, these indicators increased slightly, in particular, body temperature increased by 1,4% in summer compared to spring, heart rate – 6,0%, erythrocytes – 5,8%, leukocytes – 0,8.

According to [2; p.-55], the main factors influencing the animal organism in many stages include air temperature, atmospheric pressure, solar radiation and geomagnetic rhythms, intensive storage, cattle microclimate, hypodynamics, transportation and other factors. A specific systemic reaction occurs in the animal body against these effects, and such systemic reactions form the basis of adaptation and stress. The author notes that the sum of non-conjugated 11-oxycorticosteroids in the blood of cows averaged 22,79 mcg%, indicating the activity of the adrenal cortex in newborn cows. This figure reaches its peak at the first birth (27,67 mcg%) and decreases slightly by 3-4 months of lactation. However, the presence of excessive amounts of free 11-oxycorticosteroids in cows has a negative effect on milking levels, i.e., such a condition inhibits milk secretion.

Climate change or the transfer of animals from one condition to another is a major stress factor. This, in turn, requires the study of the nature of such stresses of climatic etiology and the development of scientifically based measures against it [10; p.-56], [11; p.-8].

The purpose of the study. Study and analysis of clinical and morphological indicators of blood in the seasons of cows.

Object of research and methods. In the foothills of Kashkadarya region, the offspring of Swiss cows bred on the farm for a long time with pedigree bulls imported from Germany (I-group) and their Swiss-bred bulls bred on the farm (II-group).

Clinical parameters of cows (body temperature, respiration and heart rate) were studied by the method of EA Arzumanyan (1957).

Morphological parameters of cattle blood (erythrocytes in the blood, the amount of hemoglobin and leukocytes) 1mm3 of erythrocytes and leukocytes in the blood Chondraxin I.P. (1985 y)

Goryaev was counted in the counting grid. The amount of hemoglobin in the blood was determined on a Sali hemometer.

Results obtained and their analysis. Swiss cattle of local selection have been bred for a long time at the farm “Bosh buloq chorva” LLC in Kitob district of Kashkadarya region. In 2014, 2 bulls of Swiss breed were brought to the farm from Germany, and the cows on the farm were bred and bred. We studied the seasonal clinical performance of the obtained breeds and the second-generation Swiss cows bred on the farm, and presented its variation in the table below.

ISSN 2792-4025 (online), Published under Volume: 1 Issue: 5 in October-2021

IJIAET International Journal of Innovative Analyses and Emerging Technology

| e-ISSN: 2792-4025 | http://openaccessjournals.eu | Volume: 1 Issue: 5

Table 1 **Clinical indications of cows by seasons (n-10), X ±S_X**

Indicators	Groups	
	I (experiment)	II (control)
In spring		
Body temperature , ^{0}C	38,2±0,032	38,0±0,030
Heart rate, 1 min / time	69,0±0,47	68,3±0,04
Breathing, 1 min / time	27,0±0,60	26,5±0,52
In summer		
Body temperature , ^{0}C	38,5±0,033	38,1±0,028
Heart rate, 1 min / time	70,3±0,74	69,0±0,48
Breathing, 1 min / time	29,7±0,55	28,0±0,51
In autumn		
Body temperature , ^{0}C	38,4±0,042	38,1±0,03
Heart rate, 1 min / time	69,4±0,67	68,0±0,53
Breathing, 1 min / time	28,7±0,46	27,6±0,37
In winter		
Body temperature , ^{0}C	38,2±0,039	38,0±0,033
Heart rate, 1 min / time	68,4±0,65	68,0±0,54
Breathing, 1 min / time	28,2±0,40	28,0±0,36

The data in Table 1 shows that no significant changes were observed in the clinical indicators of cows during the seasons and were at the level of the physiological norm.

During the spring of the year, there was no big difference in body temperature of cows in both groups, with an average body temperature of 38,2 ° C in the experimental group and 38 ° C in cows in the control group. However, there was no significant difference in heart rate (69 beats per minute in the experimental group, 68,3 beats in the control group) and respiratory mode (27 beats per minute in the experimental group, 26,5 beats in the control group).

In the summer, the cows in the experimental group had a body temperature of 38,5 °C, a heart rate of 70,3 beats per minute and a respiration rate of 29,7 beats per minute, while the control group had 38,1 °C, respectively. 69,0 times and 28,0 times, respectively. These results indicate that in the control group, the body temperature was 0,4 °C lower, the heart rate was 1,3 times lower, and the respiratory status was 1,7 times lower. In addition, body temperature in the experimental group increased by 0,3 °C, heart rate by 1,3 beats per minute and respiration rate by 2,7 beats per minute, compared with the spring months, 1 °C, 1,3 times, and 2,5 times, respectively.

By the fall of the year, cows in both groups had results almost equal to those in the spring. In particular, the cows in the experimental group had a body temperature of 38,5 °C in the spring, a heart rate of 69,0 beats per minute and a respiration rate of 27,0 beats per minute. 28,7 times. A similar situation was observed in the control group, which was 38,0 °C in the spring, 68,3 and 26,5 times, while in the summer it was 38.1 °C, 68,0 and 27,6 times, respectively. However, when these results were compared between groups, it was found that some cows in the experimental group had higher rates. That is, in the experimental group, body temperature was found to be 0,3 °C higher, heart rate 1,4 times higher, and respiration 1,1 times higher than in the control group.

In winter, the cows in the experimental group had a body temperature of 0,2°C, a heart rate of 0,4 times, and a respiratory rate of 0,2 times higher than those in the control group, so there was no significant difference in cows in both groups this season.

Morphological indicators of cow blood

The general physiological and functional state of a living organism is analyzed by studying the morphological parameters of the blood.

This is because all the tissues and cells in the body are supplied with nutrients and oxygen through the blood. Knowing the morphological parameters of the blood, it is possible to assess the intensity of the metabolic process and, through it, the level of milk yield of cows. Hence, the morphological composition of the blood is related to the breeding and productivity qualities of the animals. Various factors affect the amount of trace elements in the blood. One of the main ones is that they change depending on the seasons of the year. Different animals react differently to outside weather conditions. It is characterized by the body's response to the effects of the external environment. Therefore, in our experiments, we tried to study the changes in the content of erythrocytes, leukocytes and hemoglobin in the blood of cows during the seasons, and obtained the following results.

ISSN 2792-4025 (online), Published under Volume: 1 Issue: 5 in October-2021

IJIAET International Journal of Innovative Analyses and Emerging Technology
| e-ISSN: 2792-4025 | http://openaccessjournals.eu | Volume: 1 Issue: 5

Table 2 **Morphological indicators of cow's blood by seasons (n-10), $X \pm S_X$**

Indicators	Seasons	Groups	
		I (experiment)	II (control)
Erythrocytes $10^{12/l}$	Spring	7,35±0,23	6,80±0,21
	Summer	7,44±0,17	6,88±0,27
	Autumn	6,38±0,13	6,20±0,22
	Winter	6,95±0,18	6,58±0,24
	Average	7,03±0,21	6,61±0,24
Leukocytes $10^{9/l}$	Spring	8,56±0,17	8,10±0,14
	Summer	9,76±0,03	9,21±0,04
	Autumn	8,33±0,09	8,27±0,02
	Winter	8,24±0,11	8,18±0,16
	Average	8,72±0,10	8,44±0,09
Hemoglobin g/l	Spring	11,84±0,12	10,96±0,11
	Summer	11,97±0,11	11,08±0,14
	Autumn	10,30±0,29	10,01±0,38
	Winter	11,21±0,37	10,62±0,49
	Average	11,33±0,22	10,67±0,28

From the data in Table 2, it can be seen that although there were some changes in the blood composition of cows during the seasons, there was no abrupt deviation from the physiological norm.

The following was revealed when the cows' blood was analyzed for changes in its composition during the seasons. In particular, the number of erythrocytes in the blood of cows in the experimental group in the spring was 7,35 million per 1 mm^3. 7,44 million during the summer. 6,38 mln. and 6,95 million in winter. The average content of blood in the experimental cows was 7,03 million. was found to be equal to one.

In addition, the blood content of cows in the control group was 6,80, 6,88, 6,20 and 6,58 million, respectively. units and an average of 6,61 mln. was observed.

When we compared the performance of these indicators in the groups, in the experimental group compared to the control group in the spring of the year was 0,55 mln. per unit, 0,56 mln. units, 0,18 mln. pieces and 0,37 million during the winter season. and the average number of erythrocytes is 0,42 million. was found to differ from one. The results of the analysis show that the amount of erythrocytes in the blood of cows decreased during the change of seasons.

At the same time, the amount of hemoglobin in the blood of cows in the experimental group was 11,84 g/l in spring, 11,97 g/l in summer, 11,30 g/l in autumn and 11,21 g/l in winter., this result was 10,96, 11,08, 10,01, and 10,62 g/l, respectively, in the control group, and the mean values were 11,33 g/l in the experimental group and 10,67 g/l in the control group, respectively.

When comparing these values between groups, in the experimental group, compared to the control group, 0,88 g/l in spring, 0,89 g/l in summer, 0,29 g/l in autumn and 0,59 g/l in winter. and an average of 0,66 g/l. These indicators are explained by the fact that they are associated with the amount of erythrocytes and the fertility of cows, the growth of the fetus in the embryo.

In addition, the number of leukocytes in the blood of cows in the experimental group was 8,56 thousand in spring, 9,76 thousand in summer and 8,33 thousand in autumn, the number of leukocytes in the blood of cows in the control group was 8,10, 9,21 and. 8,18 thousand units. This means that as a result of warmer weather, the number of leukocytes in the blood also increased accordingly. However, when the blood composition was studied in winter, a slight decrease in the number of leukocytes was observed, 8,24 thousand units in the experimental group, 8,18 thousand units in the control group, 8,72 thousand units in the experimental group and 8,44 thousand units in the control group.

When these results were compared between groups, the content of leukocytes in the blood of cows in the experimental group was 0,46 thousand in spring, 0,55 thousand in summer, 0,06 thousand in autumn and 0,06 thousand in winter and an average of 0,28 thousand more.

Conclusion. Although changes in the morphological composition of cow's blood were observed during the seasons, their amount did not deviate sharply from the norm. In cows, as the fetus developed, the amount of leukocytes in the blood increased, while the amount of erythrocytes and hemoglobin decreased. The farm needs to pay good attention to feeding the cows during this period.

ISSN 2792-4025 (online), Published under Volume: 1 Issue: 5 in October-2021

List of used literature

1. Bakirov B., Boboev O., Ruzikulov N. Adaptation and stress of pedigree cattle // Zooveterinary. 2012, № 10, 21-23 p.
2. Golikov A.I. Physiological adaptation of animals. // Veterinary. Moscow, 1989 № 11, p.- 55.
3. Nosirov U., Dosmukhamedova M., Shokirov Q. Features of adaptation of Hungarian and Chinese Holstein cows to the new natural-climatic conditions. // Zooveterinariya. 2012, № 10, 43 p.
4. Raushenbax Yu.O. About the nature and resilience of agricultural animals to specific factors. Works on the biological foundations of increasing animal productivity M., publishing house. Academy of Sciences, 1952.
5. Romenskaya N.V. violation of the blood picture with liver disfunction k.r.s .: abstract diss.kand. Vet. science. 16.00.01 Belgorod. 2007. p. 20
6. Saxautdinov I.R. Hematological parameters of young cattle of the Simmental breed of Austrian selection in the conditions of the Bashkir Trans-Urals. Continent of All-Scientific Practice Veterinary Conferences: Modern Approaches to Ensuring Animal Health. Innovation, experience, problems and solutions. - Ufa, 2012. p. 61-64.
7. Simonyan G.A. Veterinary gambiology. M. Kolos, 1995. p. 256.
8. Suyunova Z.B. Dependence of milk productivity of Holstein cows on ethological indicators. Author's abstract of the dissertation of the Doctor of Philosophy (PhD) on agricultural sciences.-Samarkand, 2021.
9. Xudoyorov R. Abdolniyozov Sh. Features of adaptation of Holsteinized Red Desert Cattle to Aral Sea conditions. // Veterinary medicine . 2010, № 10., 23-24 p.
10. Shoven R. Behaviour of the animal. M. 2009. p.5.
11. Ernst L.K., Venediktova T.N., Zelner V.R. Behaviour of farm animals. M.1974. p.8.

ISSN 2792-4025 (online), Published under Volume: 1 Issue: 5 in October-2021