Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

THE RELATIONSHIP BETWEEN ENZYMES IN BLOOD PLASMA AND GROWTH AND PRODUCTIVITY INDICATORS OF KARAKUL LAMBS

Ismoilov Komil Tuygunovich
Samarkand State Veterinary Medicine, Animal Husbandry and Biotechnology University, independent researcher, Samarkand, Uzbekistan.
Mukhitdinov Shavkat Mukhammedjanov
Candidate of biological sciences, associate professor
Samarkand State Medical University,Samarkand, Uzbekistan
E-mail:k88146525@gmail.com
Tel;+998935900289

Abstract. The article presents information on the relationship between live weight and serum enzymes at different ages, which are considered one of the characteristic indicators of the productivity of Korakul lambs, and indicators of the productivity of breeding animals.

Key words: live weight, gene pool, genotype, phenotype, enzyme, aspartate aminotransferase (AST), first control group, second control group, ontogeny, ortho diphenol oxidase, esterase, tissue.

Introduction. Monitoring the live weight of animals allows for assessment of their productive orientation, physiological state, and viability. Ensuring that the live weight, or degree of fatness, of Karakul sheep is within the normal range will enable high-quality product and offspring production in the future.

There is a certain degree of correlation between the development of an animal's organism and its age and live weight, with a particularly close relationship between development and changes in live weight. At a certain age, an animal's live weight is very significant, as fast-growing animals reach slaughter weight more quickly than slow-growing animals [6,10].

Developing scientifically sound methods for utilizing biologically active substances and trace elements to increase sheep numbers and enhance Karakul sheep productivity is an urgent task. An important factor in animal growth and development is the intensity of biochemical processes, which perform necessary functions in the tissues and organs of all growing organisms. During growth, metabolism occurs at varying intensities in different age periods. Peroxidase is involved in the oxidation of organic matter in an animal's body, ultimately decomposing organic substances to water through hydrogen oxidation reactions. The carbon dioxide exhaled during respiration is not a direct product of organic molecule

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

oxidation, but rather the result of changes initiated by hydrogen oxidation in molecules, which facilitates carbon dioxide release from molecular changes. [1,2].

Literature review and methodology. Most growth hormone in daily lambs is produced 1-2 hours after falling asleep. Natural growth hormone levels are influenced by many factors, including age, sex, body type, exercise, nutrition, and sleep. Growth hormone is mainly produced in glands. It has a multifaceted effect on carbohydrate and fat metabolism. Growth hormone increases the transport of certain amino acids to cells, accelerates protein synthesis, and affects fat metabolism and fluid balance in the body [3,9].

Due to its anabolic effect, growth hormone increases the breakdown of excess fat and triglycerides in fat cells, reducing fat accumulation. The effect of increasing growth hormone effectiveness has not been fully clinically proven.

Most scientific studies show that growth hormone increases muscle mass and reduces fat content, but does not increase muscle strength or improve aerobic capacity in healthy young individuals [1,7].

Enzymes, particularly peroxidase and tyrosine aminotransferase, exhibit different activities in enhancing the viability of Karakul sheep. Based on the relationship between enzymes and productivity in Karakul lamb growth and development, it can be concluded that orthodi phenoloxidase and esterase enzymes are actively involved in metabolism, and when their levels are high in the blood, lambs also show high viability rates. [2,3]. The biological and productive properties related to varying blood aspartate aminotransferase activity in offspring were studied, and relationships were identified for increasing animal productivity and the effectiveness of biochemical blood indicators in breeding rams. [4,5]. At the current stage of sheep breeding industry development, genetic and breeding research is one of the main tasks. Selecting and mating animals based on biochemical blood parameters yields good results. Such studies have used aminotransferase and other enzyme activities as primary selection indicators in various animal species, including cattle, rabbits, and Karakul sheep. Live weight gain is a product of all biological processes occurring in the animal organism and progresses at different rates depending on the animal's hereditary, physiological, and individual characteristics. [7,9].

Research Methodology. Medium-weight sheep bred in different ecological zones were selected for the research. Quantitative indicators of biologically active substances in the blood were studied using standard biological methods. The obtained results were subjected to biometric analysis using N.A. Plokhinsky's method.

The experiment was conducted on Karakul sheep raised in the breeding farm of the Kashkadarya region. The live weight dynamics of sheep at different ages were determined by measurements using spring, platform, and electronic scales. Commonly accepted methods were used to categorize the experimental sheep into ethological types (Belyaev D.K., Martinova V.N., 1973). The obtained results were processed using biometric methods [4, 6.8].

Results and analyses. The main objective of the research is to develop scientifically-based methods for increasing the viability and productivity of animals by applying biochemical indicators to improve the efficiency of preserving the gene pool of Khusori sheep through

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

experiments. Based on the correlation between enzyme activity and productivity in the growth and development of experimental lambs, it can be concluded that aspartate aminotransferase and alanine aminotransferase enzymes actively participate in metabolism, and lambs with higher levels of these enzymes also exhibit higher survival rates. In farm animals, depending on various factors, one and other genotypic traits exhibit variability under different conditions. The live weight of lambs depends on their age, sex, and individual characteristics. Supplementary feeding is an effective method to increase the meat productivity of Karakul sheep. To study the influence of feeding factors on meat productivity, Karakul sheep in the experimental and control groups were selected based on similar principles of age, physiological state, and degree of fatness. The animals in the experimental group were supplemented with a high-protein diet, while the animals in the control group were fed a standard farm diet. Researchers have studied the influence of environmental and genotypic factors on the growth and development of Karakul sheep.

The association of AsAT activity in blood serum with live weight and growth and development of lambs n=12. (mol/s.l)

1-table

Experimental lambs (one month old)	**Experimental area**	**Ram lambs M ± m**			**Female lambs M ± m**		
		Live weight	**AsAT**	**S %**	**Live weight**	**AsAT**	**S %**
Control group	Desert area	5,54±0,47	38,4±1,54	10,5	5,02±1,54	37,3±1,02	8,4
	Foothill area	6,01±1,04	41,2±0,12	10,4	5,78±0,41	40,1±0,32	9,1
First Control group	Desert area	6,58±0,12	40,2±1,87	9,5	6,02±0,76	40,5±0,24	9,3
	Foothill area	6,49±1,78	42,9±1,57	10,1	6,81±1,32	41,0±0,08	10,0

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

Second Control group	Desert area	7,01±0,96	41,5±0,65	10,5	6,87±0,21	40,5±0,41	9,2
	Foothill area	7,48±1,25	43,4±0,47	9,1	6,71±1,14	41,7±0,44	10,4

Reminder: R < 0,05*

The table data from the conducted research shows that the live weight of Karakul lambs at birth is characterized by their intrauterine development. The live weight of newborn lambs differs from one another in the width of their body structure, the development level of internal organs, bone segments, and wool coverings. In most scientific studies, lambs born with higher birth weights are found to be more resilient and resistant to environmental factors compared to lambs born with lower birth weights. It should be noted that one of the main factors in the growth and development of farm animals is their genotype, which is based on the organism's hereditary traits. Many scientists conclude in their research that when determining the effectiveness of aspartate aminotransferase in animals' parents, the animals develop better at all ages, while animals with relatively low enzyme levels have lower rates of growth and development. In terms of live weight, aspartate aminotransferase levels were found to be higher in the first and second groups of ram lambs compared to the control group. No significant changes in aspartate aminotransferase levels were found in the blood of experimental lambs in desert and foothill regions. Analysis of our scientific research results shows that aspartate aminotransferase activity in the second experimental group of rams under the same feeding and housing conditions showed significant differences. Compared to the control group, in the second experimental group, it was 10.5% higher in desert-dwelling animals and an average of 30.0% higher in terms of aspartate aminotransferase. Similar indicators were found in rams raised in mountainous and foothill areas. Analysis of the live weight of female experimental lambs showed that the live weight of lambs in the second experimental group was 18.5% higher than in the control group. This indicates that additional nutrients, such as camel thorn and probiotics, have a positive effect on metabolism in the body.

Indicators of the relationship between enzyme activity and growth and development at the time of separation from mothers n=12. (mol/s.l)

2-jadval

Experimental lambs	**Experimental area**	**Ram lambs M ± m**			**Female lambs M ± m**		
		Live weight	**AsAT**	**S %**	**Live weight**	**AsAT**	**S %**

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

(one month old)							
Control group	Desert area	12,4±0,47	39,6±1,54	11,8	12,0±1,54	37,5±0,09	9,3
	Foothill area	12,8±1,04	41,4±0,24	10,9	11,7±0,41	41,3±1,21	8,1
First Control group	Desert area	13,8±0,12	40,9±1,14	12,0	11,2±0,76	41,4±1,87	10,7
	Foothill area	14,9±1,78	42,2±0,85	12,9	12,1±1,32	40,7±2,97	11,4
Second Control group	Desert area	14,0±0,96	40,5±0,17	11,3	12,7±0,21	41,9±1,52	11,2
	Foothill area	15,8±1,25	43,4±2,72	12,3	13,1±1,14	42,6±2,33	10,9

Reminder: R < 0,001* R < 0,01****

In our research, we studied the dynamics of age-related variability in experimental lambs. To improve the selection process of breeding animals in the biological and theoretical ontogeny of Karakul sheep growth and development, it is necessary to consider qualitative data on their development. Determining the live weight of lambs at the time of weaning is of significant importance. As evident from the table data, aspartate aminotransferase levels were higher in the first and second experimental groups of both male and female lambs compared to the control group in terms of growth and development indicators. When compared by region, it was found that experimental lambs raised in mountainous and foothill areas had higher levels than those in desert areas. Significance level (note: P < 0.001*** P < 0.01**).

Conclusion. Based on scientific research on the relationship between blood composition and enzymes on the productivity and viability of Karakul sheep, it can be concluded that an important factor in the growth and development of lambs, based on enzyme activity, is the activity of biochemical processes, which perform necessary functions in the tissues and organs of all growing organisms. During growth processes, metabolism occurs with varying intensity at different age periods. Analysis of the amount of biologically active substances in the blood of the experimental lambs shows that there are differences in biochemical indicators in the blood between the groups.

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

It has also been established that the productivity and viability of Karakul sheep are associated with the activity levels of aspartate aminotransferase. Probiotics actively influence biochemical processes in all growing organs and tissues. It has been observed that probiotics have an impact on the body's immunobiological transport and catalytic functions.

REFERENCE

1. Арипов У.Х. Научное обоснование испытания типов и повышения эффективности селекции каракульских овец. Автореф. Дисс. докт. с/х. наук. Дубровицы, Московской области – 1990 г. с. 33.
2. Алиев Д.Д. Сурхондарё сур қоракўл қўйлари маҳсулдорлигини оширишнинг физиологик жиҳатлари. Автореф. Дисс. биол. фанлари докт. Тошкент 2021. 6-бет.
3. Атайбеков Б. И. Продуктивные и биологические особенности курдючных грубошерстных овец разных пород на юго-востоке Казахстана Москва, 2021.С.156
4. Бельков, Г.И. Продуктивные и биологические особенности лимузинского скота в климатических условиях Южного Урала / Г.И. Бельков, В.А. Панин // Зоотехния. – 2010. - №8. – С. 16-18.
5. Ismoilov Komiljon Tuygunovich, Aliev Dilmurod Davronovich, Matkarimova Gulnoz Maksudzhanovna, Rajabov Jasur Pardaboevich - Ecological Bases of Productivity of Flow-Colored Sheep. Jundishapur Journal of Microbiology Research Article Published online 2022 April . Vol. 15, No.1 (2022)
6. Кондрахин И.П. Методы ветеринарной клинической лабораторной диагностики: Справочник - М.: Колос С, 2004. С. 296-297.
7. K.T.Ismoilov, D.D.Aliyev, O.S. Avazov, Sh.H. Murodillayev “Cho‘l-dasht va tog‘-tog‘oldi ekologik hududlarida urchitilayotgan sur qorako‘l qo‘ylari hamda qo’zilarining o‘sish va rivojlanishiga muhit omillarining ta’siri”. VETERINARIYA MEDITSINASI. Maxsus son 3. 2023 98-101 bet.
8. Мартынова, В.И. Итоги изучения высотной акклиматизации овец / В.И. Мартынова // Горное животноводство северного Кавказа: сб. тр. – Орджоникидзе, 1963. – 358с.
9. Mukhitdinov, Sh., Aliyev, D., Ismoilov, K., & Mamurova, G. (2020). The Role Of Biologically Active Substances In The Blood In Increasing The Productivity Of Sheep. European Journal of Molecular *& Clinical Medicine*, *7*(03), 2020.
10. Muxitdinov Sh.M., Aliyev D.D., Ismailov K.T., Ochilov B.S., Avazov O.F., Influence of Ecological Zones on Immune Function and Viability in Sur Karakol Lambs: A

Western European Journal of Medicine and Medical Science
Volume 2, Issue 12, December 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

Comparative Study of Mountainous and Desert-Steppe Regions. Journal of Angiotherapy 8(7) 1-6.