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Age-dependent changeability of melanin of Karakalpak Sur

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Abstract
The article presents the results of research about level of lightening dourness on wool of newborn karakul lambs of turtkul factory type in all coloration optimal criterias about the length of wool dependent on the level of lightening, dourness coloration, content amount of pigment (melanin) in wool of newborn lambs of 1-3 days old depending on their coloration were identified and changing amount of melanin in age-dependent dynamics was studied.

Keywords: Karakalpak breed type, turtkul factory type, coloration, level of dourness, lightening, length of wool, amount of melanin, age dynamics

Introduction
Nowadays there are raised more than 500 breed type sheep of different productivity in the world, today their general amount is 1,25 billion sheep and only karakul kind can make magnificent beauty and grace lamb fur, among them fur coloration sur of Karakalpak breed type is the most original.
The demand for a karakul of different colours, especially on the variety of colours of sur is constantly growing not in the domestic and foreign markets.Karakul producers of the republic are faced with the most important task of increasing the number of Karakul sheep of valuable coloration and studying the selection bases of breeding will remain an actual problem. In this regard, the main task of the Karakul producers of the Republic of Uzbekistan is to increase the number of sheep and to create highly productive specialized herds of animals that provide a steady production of scribble valuable and rare dawns. In this case, the preservation of the gene pool, the improvement of methods of selection and creation of karakul sheep of new types, colours and coloration that produce export-oriented products are relevant.
The aim of the research is to develop scientifically grounded methods and ways for breeding Karakul sheep of the Karakalpak sur, identifying important breeding features characteristic of each colouring.
The object of the research were purebred karakul sheep of the colour of sur of the Karakalpak breed type, lambs, karakul fur, skin and wool samples of animals in different ages.
Methods of the research Experimental studies were carried out in the breeding farm of "KyzylKum" in Turtkul region.
The lamb pelt quality was assessed at birth by individual boning at 1-3 days of age in accordance with the instructions for boning with the basics of breeding (T. 2015). A selective study of scrawl on lambs and skins was conducted selectively in accordance with the recommendations of the research institute (R.T. Pismennoy, M.D. Zakirov, 1963). Studies of the qualitative composition of the melanin of the karakul fur of various dawns were carried out on the basis of the electron paramagnetic resonance spectrometry (EPR) according to the methods described in the works [4], the resulting digital material is processed by variation statistics methods [9].
Results of the research Based on the complex study of the Karakul sheep of the sur of the Karakalpak breed type, the available dawns, their main selection characteristics and qualitative indices for the selection of animals have been determined, as well as the criteria for evaluating the lambs of each coloration that will be used in breeding and creating specialized flocks of sheep for valuable coloration.

Among lambs of original coloration of Karakalpaksur in the main mass of lambs uruk-gullightening is 3/10 and 4/10-71,3%, like this among coloration kamar was – 68,8%, shamchirak-gul – 67,2%, pulat-sur – 61,3%. The little lightening (1/10, 2/10) in a big measure is characteristic for coloration shamchirak-gul – 11,8% and uruk-gul – 10,5% and among lambs of coloration pulat-sur this indicator is only – 3,7%. Lightening (5/10) in a large level is characteristic for coloration pulat-sur– 35,0%, this kind of coloration among lambs of coloration uruk-gul is two times less – 17,9%.

Varieties of the dawn of the kamar were with different shades of wool.For red kamar in a large level incidental wool coloration 3/10 and 4/10 – 77,2%, and kamar of dark variation in a large measure characteristic 4/10 and 5/10 – 74,3%.At first glance, rather contradictory data have been obtained.

However, in our opinion, a certain pattern can be noted here. As indicated above, the lambs of the colorationshamchirak-gul and the pulat-sur were distinguished by their extreme severity and contrast, by the abrupt transition of the dark base to the light tip of the wool, and the animal kamar was characterized by a gradual transition. It should be mentioned that among lambs of coloration kamar, the more variation the more 5/10 – 40,0% coloration and vice versa.

The pigment of fur (meloprotein) in the pigmented wool is concentrated mainly in the cortical layer, its quantitative content in the woolline of animals has long been intertwined by biologists and livestock specialists. The presence of trace elements and metals is found in the wool pigment. In this case, according to the data [23;P-105], black wool contains more sodium, cobalt and iron, and in light calcium wool and in red-molybdenum.

The definitions of melanin content in lamb's wool serve as criteria for determining the degree of severity of Karakul smells.

Studies of this indicator gives evidence that in the scalp of the Karakalpak breed type (shamchirak-gul, uruk-gul, pulat-sur and red kamar) mainly eumelanin is located, it is rounded and densely located in the cortical layer, in the transition from the base to the bleached tip melanin has a somewhat elongated shape and its density is relatively small. The white-orange hue of the tips of the wool in these colors is due to the presence of a very small amount of pheomelanin located in the medulla. A distinctive feature of lambs kamar is that in their wool, mainly contains pheomelanin, while in light variations of coloring melanin has a more elongated shape and a lower concentration, and in dark variations - close to a rounded shape and a greater concentration.

In our research, to study the quantitative features of melanin, the wool of Karakul lambs of various colors (on the sacrum) was used to take the curl of newborn lambs.

Melanin in the wool of the lambs is a shamchirak-gul, the pulat-sur are mainly located on the lower part of its base, 60-70% of the length not reaching the brightened part.

Table 1: The content of melanin in the wool of new born lambs

Colorations	Amount of the examples	J_0 (%) from black		
		M±m	σ	C_v
Shamchirak-gul	8	4,98±0,37	0,97	4,47
Uruk-gul	13	3,66±0,39	1,38	9,38
Pulat-sur	6	3,91±0,43	1,67	5,37
Kamar (average)	12	4,08±0,26	0,89	4,48
Dark	4	5,26±0,41	1,02	5,12
Red	4	4,13±0,31	0,96	3,97
Light	4	3,47±026	0,78	4,01
Shabdar	3	6,43±0,63	1,07	7,29
Chakir	3	5,87±0,56	1,29	6,34

It is obvious from the data of the table 1, that the content of melanin and its characteristics in the wool of lambs (new born) have some differences. In the wool of lambs of shamchirak-gul – 4,98%, uruk-gul – 3,66%, kamar in average – 4,08% (in dark variant – 5,26%, red – 4,13% and fair – 3,47), less valuable coloration Shabdar and Chakir is accordingly: 6,43 and 5,87%.

Table 2: The content of melanin EPR-spectrometry (5-5,5 month age–lamb's wool)

Colorations	Amount of the examples	J_0 (%) from black		
		X±Sx	σ	C_v
Shamchirak-gul	8	0,98±0,21	0,73	5,7
Uruk-gul	13	0,74±0,15	0,52	4,6
Pulat-sur	6	1,04±0,28	0,81	6,01
Kamar (average)	12	1,15±0,27	0,92	7,7
Dark	4	1,76±0,34	1,08	8,4
Red	4	0,98±0,24	0,89	7,4
Light	4	0,92±0,35	0,83	5,2
Shabdar	3	2,04±0,51	1,17	6,4
Chakir	3	1,91±0,46	1,09	6,1

Analyzing the obtained data on the melanin content in the wool fur, it can be noted that with the age of the lambs it decreases. In animals, the color of sur of Karakalpak breed type, reached 5-5.5 months of age, the wool covering is depigmented. The study of melanin content in wool lambs of 4.0-4.5 months of age showed that the process of depigmentation of wool cover is intensive. So, if the quantitative content of melanin in the wool of lambs coloration of the uruk-gul is taken as 100%, then in 4.0-4.5 months of age, there remains 26.0%, while the process of depigmentation in lambs of light variations is faster than in dark and the wool cover acquires a white-brown shade.

Table 3: The content of melanin EPR-spectrometry (18–month age – autumn wool)

Colorations	Amount of the examples	J_0 (%) from black		
		X±Sx	σ	C_v
Shamchirak-gul	7	0,58±0,12	0,41	3,1
Uruk-gul	13	0,41±0,10	0,36	2,8
Pulat-sur	6	0,64±0,11	0,39	2,2
Kamar (average)	12	0,94±0,07	0,27	2,3
Dark	4	0,99±0,08	0,31	2,7
Red	4	0,91±.0,06	0,25	2,1
Light	4	0,92±0,06	0,28	2,4
Shabdar	3	1,09±0,10	0,29	3,4
Chakir	3	1,01±.0,09	0,31	3,2

The research showed (table 3) that in adult animals original coloration of karakalpak sur the process of depigmentation happens more intensive with the age. If the content amount of melanin on wool of lambs coloration uruk-gulis taken as 100%, then in 18 months of age, there remains 11,2%. While as, in the coloration kamar this indicator is accordingly equal –23,0%.

Animals of the coloration shamchirak-gul, uruk-gul and pulat-sur in 18 months age to 60-65% had fair-grey wool, this indicator did not increase from35-40% in coloration kamar, shabdar and chakir. Wool of animals of Karakalpak sur (shamchirak-gul, uruk-gul and pulat-sur) in 18 months age mainly obtains white-creamy colour.

Conclusion

There by, it should be mentioned by supply in results of the research, that the length of wool cover and its lightening part can serve as the test indicator of coloration and must be used in the selection process in choosing animals and also planning production of fair-grey wool.

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