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DEVICE ESTIMATION OF HAIR COAT PIGMENTATION OF KARAKUL SHEEP OF BLACK COLOURING

Abstract. The article provides traditional and device data on the pigmentation of hair color black of Karakul sheep.In article the data on studying of pigmentation of a coat of karakul sheep of black colouringis cited. Under the melanin content have the specific features and are in limits from 7,93 to 12,54%. As criterion of selection of different degrees of expressiveness of pigmentation following parametres are accepted: intensive-from above 10,0 %; normal-in limits of 8,5–10,0 %) and the weakened-is lower 8,5 %.Microscopic researches of classification of cages layer of karakul lambs hair of black colouring are differentiated on classes. For black colouringon intensity and with different degree of pigmentation 5 classes are characteristic and 3 rd is modal (60 %).

Key words: karakul, lambs, coloring, hair, melanin, microscope, electron-paramagnetic resonance (EPR).

Variability of coloring is inherent in Karakul breed. Now in breed there are six main colourings, twenty eight colorations and shades.

Many options of the Karakul lambs colourings are described in monographs, guidelines for breeders are known (N.S. Gigineyshvili [1], Instruction on conducting breeding work in Karakul farming [2], E.B.Vsevolodova.o. [3], to S.Adalsteinsson [4], A.M.Ombayev [5].

S.Adalsteinsson suggests classifying wool coloring by three signs: 1 – as a pigment; 2 – on nature (drawing) of coloring; and 3 - on existence or lack of white spots [4].

Different colourings are modifications of process of the pigmentation, being expressed in change: 1) the general contents of melanins in a hair, 2) qualitative structure of melanins (ratios of black eumelanin and red pheomelanin components in a pigment), 3) distributions of melanin in a hair. In turn, distribution of melanin depends on physiology of cells of melanocytes, settling down in a bulb of a hair follicle (E.B.Vsevolodov and others). [3].

Melanin biopolymers are formed of various quantities tyrosine and cysteine (G.Prota [6], Ito e.a. [7], Vsevolodova O. [8]). Distinguish two types of melanins: dark brown eumelanin and red - brown pheomelanin. Melanins on degree of color selectivity are various, so pheomelanin has a big difference in extent of absorption of blue-violet and red - yellow beams, than eumelanin and therefore it has more expressed red shade.

The quantity and type of a pigment are studied biochemical (Ito e.a. [7], Sponenberga O. [9] and biophysical (Vsevolodova O. [8], Sealy et.al [10] methods.

Okuno Sachiko [11] noted that absolute and relative quantity the eumelanin and the feomelanin granules in the hair defining coloring, it is necessary to consider as final result of activity of melanocytes and their interactions with keratinocytes. Farragut J.A. et al. [12] established that the main processes of melanogenesis are carried out in the melanocytes – the most part of the factors inhibiting process, operates on this stage. The factors of biochemical and genetic character controlling quantity and quality of active molecules of tyrosinase enzyme, render direct effect on the current melanogenesis. Possibly, this possibility of change of activity of the main enzyme is realized as one of the main regulatory mechanisms of process.

In selection of karakul sheep of different colourings and colouring there are the specific features, in particular, at black colouring desirable is intensive pigmentation, at grey colouring of a blue colouring depending on specialisation directions equall light blue, sredne-blue and dark-blue, at all intrapedigree types of colouringsour (Bukhara, Karakalpak,Surkhan-Darya and Kazakh) intensive expressiveness of a colouring.

Selection-breeding work in a karakul breeding is directed on increase of genetic potential of karakul sheep of different colourings and colouring for the purpose of production of astrakhan of desirable quality types.

Available methods are labour-consuming and bulky for mass researches. Especially great difficulties in an estimation of type of colouring arise at an appraisal of quality of numerous shades and astrakhan colouring where it is a question of various combinations of brown, yellow and red shades, sometimes against black and grey tones of deep layers of a coat. For studying of inheritance of a colouring very important accurately and objectively to outline a sign which inheritance is necessary for studying. Otherwise, there is a risk that by means of a hybrid analysis two different colourings which we not in a condition are reliable for distinguishing but which objectively are different, everyone with the special gene mechanism of reproduction will be studied.

Black colouring is most extended among karakul sheep and it usually characterises the given breed.

Karakul sheep of black colouring are not subdivided into shades and colouring, but share on expressiveness of black colour on intensively-black, is normal-black and is weakened-black.

Thus the most desirable for selection is intensive.

Degree of expressiveness of pigmentation black karakul lambs is defined visually and consequently the big errors are supposed at their estimation by bonitious [2]. Thereupon at the present stage of development of selection-breeding work with karakul sheep of black colouring by an actual problem is working out of objective methods of an estimation of degree of pigmentation

Methodics. Samples of hair, were sheared at lambs with dorsal body surfaces in area of sacrum. Degree of expressiveness of pigmentation of black Karakul lambs defined visually (appraisal) and objective method (EPR- spectrometry). In early published researches has been shown possibility of EPR-spectrometer diagnostics of types of the melanin defining colouring of hair.

Counting of cover cells with different degree of pigmentation on the smear of cover cells hairs received by the way of acid hydrolysis to karakul lambs to methodic E.B.Vsevolodov and all [8].

Results. Therefore, as one of objective methods in the researches applied method EPR-spektro-metricion and microscopy (table 1).

Table 1 – The melanin Content in hair at karakul lambs of black colouring

Inpercentage

Expressiveness	It is considered lambs	The melanin content		
		> 10,0	10,0-8,5	<8,5
Theintensive	37	73.0±7,3	16,2±6,06	10,8±5,10
Thenormal	35	17.1±6,36	65,7±8,02	17,1±6,36
Theweakened	31	12.9±6,02	22,6±7,51	64,5±8,59
Intotal	103	35.9±4,73	35,0±4,70	29,1±4,78

Proceeding from the general quantitative content of melanin at lambs of black colouring within 7,93-12.54 %, its indicators subdivided into three groups: the first-from above 10,0 %; the second-10,0-8,5 %; the third - below 8,5 %.

The expert estimation on the content of melanin at the lambs of the black colouring carried on a traditional visual method to intensive, normal and weakened is spent. The content of melanin inherent in them over 10,0 % - 73 %, normal - 8,5-10,0 %>, by average - 65,7 of % weakened below 8,5-64,5 % is thus established for intensive lambs.

Thus, as criterion of selection of different degrees of expressiveness of pigmentation of black lambs of karakul breeds following parametres are accepted: intensive-from above 10,0 %; normal-in limits of 8,5-10,0 % and the weakened-is lower 8,5 %.

As a method characterising degree and uniformity of pigmentation the microscopic method of calculation of cages layer on dabs macerates hair is used.

Research of types of distribution of melanin in cages a layer karakul lambs of different colourings has shown that the corresponding data (table 2) is inherent in each class.

Table 2 – Frequency of layer cages of different classes of pigmentation in macerates hair of karakul lambs of black colouring

Inpercentage

Expressiveness	Stake-in of goals	Classes of cages on pigmentation					
		0	1	2	3	4	5
Theintensive	37	–	2,7±2,66	8,1±4,48	54,1±8,19	21,6±6,76	13,5±5,62
Thenormal	35	–	2,9±2,84	11,4±5,37	60,0±8,28	17,1±6,36	8,6±4,74
Theweakened	31	–	6,4±4,40	12,9±6,02	67,7±8,40	9,6±5,29	3,2±3,16
Intotal	103	–	3,9±3,64	10,7±3,05	60,2±4,82	16,5±3,66	8,7±2,78

Depending on pigmentation degree distinguished following classes of cages: 0 is not present melanin, 1 no more than 20 separate melanosoms in a cage, 2 more than 20 separate melanosoms, but they, basically, can be counted, 3 only separate melanosoms ("scattering" melanosoms), but them so much, is 1-3 «glybki» (compact congestions melanosoms) the melanin which diameter does not exceed 1/2 diameters of a cage, 4 in a cage there are huge glybka a pigment, on diameter more than 1/2 diameters cages. 5 pigments in a cage a hook are a lot of that its congestions shield each other and to count them it is impossible.

Results of the analysis show (table 2) that for all black lambs absence of a class 0 and the lowest frequency of 1 and 2 classes is characteristic. 3 class which microscopy has found out only separate melanosoms ("scattering" melanosoms) has high frequency of occurrence. Them it has appeared so much, it is impossible what to count, as they shielded each other. In the given table the third class has kept the modality. In the first class primary expressiveness of the weakened pigmentation 6,4±4,40 % is observed. In the second class also the weakened expressiveness has an indicator a little above the others 12,9±6,02 %. Intensive expressiveness of pigmentation considerably prevails in 4 and 5 groups-21,6±6,76 of % and 13,5±5,62 % accordingly. It is characteristic that indicators of the intensive and weakened expressiveness inversely proportional each other. Lambs of normal expressiveness of pigmentation give out stably average indexes on all classes.

Thus, instrument estimations of pigmentation of a coat of karakul sheep of black colouring by the EPR-spectrometry and microscopy method have great value for identification of expressiveness of the colouring, based on definition of the content of melanin in a coat and microscopy of cages layer of hair. We recommend following criteria of selection of expressiveness of colour for the purpose of their typification and classification: black intensive - the content of melanin from above 10,0 and microscopy of classes of cages layer-3, 4 and 5.

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ҚАРА ТҮСТІ ҚАРАКӨЛ ҚОЗЫЛАРЫНЫҢ ЖАМЫЛҒЫ ТҮГІНІҢ ПИГМЕНТТІҢ АСПАПТЫҚ ЖОЛМЕН БАҒАЛАУ

Аннотация. Мақалада қара түсті қаракөл қозыларының жүн талшығының бойында пигмент меланиннің мелшері және түктің қыртыс қабатындағы кератиноциттегі меланин таралуын аспаптық-объективті жолмен бағалау қарастырылған. Қара қозылардың түсінің жүннің құрамындағы меланин мөлшеріне байланысты болуының өзіндік ерекшеліктері олар мынандай шамада болады: қара түс – 7,93-12,54% аралығында болады.

ЭПР спектромерии зерттеулер көрсеткендей, меланин мөлшері қанықтылығы қарқынды – 10,0% жоғары, қалыпты – 8,5–10,0% шегінде және әлсіз дәрежедегі 8,5% төмен. Жамылғы түгінің қыртыс қабаттың жасушаларын микроскоптық зерттеу арқылы топтастыру, қаракөл қойларының жүндерін кластарға бөліп дифференциялау. Қара түсті реңдер үшін пигменттелу дәрежесі 5 класқа бөлінеді және модалдық болып 3-клас саналады (60%).

Түйін сөздер: қаракөл қозылары, түс, жүн талшығы, меланин, микроскоп, электронды-парамагнитті резонанс (ЭПР).

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ПРИБОРНАЯ ОЦЕНКА ПИГМЕНТАЦИИ ВОЛОСЯНОГО ПОКРОВА КАРАКУЛЬСКИХ ОВЕЦ ЧЕРНОЙ ОКРАСКИ

Аннотация. В статье приводятся данные по изучению пигментации волосяного покрова каракульских овец черной окраски. По содержанию меланина имеют свои специфические особенности и находятся от 7,93 до 12,54%. В качестве критерия отбора разных степеней выраженности пигментации приняты следующие параметры: интенсивная – свыше 10,0%; нормальная – 8,5–10,0% и ослабленная – ниже 8,5%.

Микроскопические исследования классификации клеток коркового слоя волос каракульских ягнят черной окраски дифференцированы по классам. Для черной окраски по интенсивности и с разной степенью пигментации характерны 5 классов и модальным является 3-й (60%).

Ключевые слова: каракуль, ягнята, окраска, волос, меланин, микроскоп, электронно-парамагнитная резонанс (ЭПР).

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