

# Features of Skin Histological Structure of New Sheep Breed Artlukh Merino

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## ABSTRACT

There were bred the Artlukh Merino sheep breed in the breeding farm of APC "Krasny Oktyabr" of Kazbekov district in Dagestan Republic. This research work had been carried out since 2005. (Patent for selection achievement No. 10112 "State Commission of Russian Federation for testing and protection of selection achievements"). The breed was bred by using the initial stage of Stavropol breed gene, and at the final stage was the Manych Merino breed. The peculiarity of this new breed is the high shearing of washed wool. It is 1,9 kg which is 26,6 % higher than the original breed. This article presents data characterizing the histological structure of skin of the new sheep breed Artlukh Merino in mountainous Dagestan Republic. However, it is obtained non-merino wool from this sheep breed. S.F. Silkina notes that "Fiber is a special corneal formation of the skin. It is a product of activity of hair follicle cells. As wool is derivative product of the skin its qualitative indicators are due to histological structure of the skin". The purpose of this work is to identify the features of histological structure of skin of the new sheep breed Artlukh merino.

## Methodology

Histological studies of the skin were carried out according to the method of N.A. Diomidova, co-authored, 1960 (4). 10 skin samples were taken by biopsy from the side behind the shoulder blade. According to its vertical sections, the total thickness of the skin and individual layers - the epidermis, pilar and reticular layers were determined and according to horizontal sections, the emptiness of follicles (fiber roots) by 1 mm<sup>2</sup>, as well as the correlation of primary and secondary fibers. Preparation of skin samples and their studies were carried out in the laboratory of morphology and product quality of Russian Scientific Research Institute of Sheep and Goat Breeding, branch of the North Caucasus Federal Scientific Agrarian Center [1-4].

## Results

Three layers of sheep skin are distinguished by its structure origin, functional significance and histological. As M.I. Pavlova and others point out «The epidermis consists of epithelial cells, keratinized in the upper part and oval shaped soft cells in the lower part forming so called Malpighian layer. These cells are adjustment to the layer of their own receive nutrition through conical elevations called dermal papillae. The average values of skin thickness and its layers of sheep breed Artlukh merino are presented in the table. According to the table, the total thickness of sheepskin is 2297.6 microns. The percentage of epidermis in it is small - 0.66%. This can be explained by the fact that the protective function of the

body was mainly assumed by a thick cover. The subsequent pilar layer is a loose connective tissue, inside of which there are hair follicles, sweat and sebaceous glands. The thickness of this layer is closely related to the development of hair follicles (6). The overall development of the pilar layer depends on the qualitative indicators of wool fibers (Table 1). In relation to the total thickness of skin, the percentage of the pilar layer according to Table 1 is 66.2 % and this is a good indicator for a good indicator for the normal growth and development of bulb of secondary downy wool fibers. The reticular layer is formed by connective tissue density of bundles of collagen fibers of different diameters. The strength of leather fabric depends on density and shape of the ligature of the collagen fibers, the thicker and denser the weave, the stronger the leather fabric. When assessing the mechanical properties of sheepskins, the ratio of the thickness of the ocular layer to the reticular layer is of decisive importance. The lower this indicator is the better the mechanical properties of the leather fabric. In this case the indicator is 1.99 while young Stavropol breed has- 2.56 (7).

Table 1.

Data	Mmm (N=10)	% Total Thickness
Total thickness	2297,623134,15	
Epidermis	15,323,94	0,66
Pilar layers	1520,56+98,24	66,19
Reticular layers	761,74339,33	33,15
Density of hair follicles per 1 mm <sup>2</sup> of skin	39,1531,14	
Number of secondary follicles per 1 primary	9,1430,21	

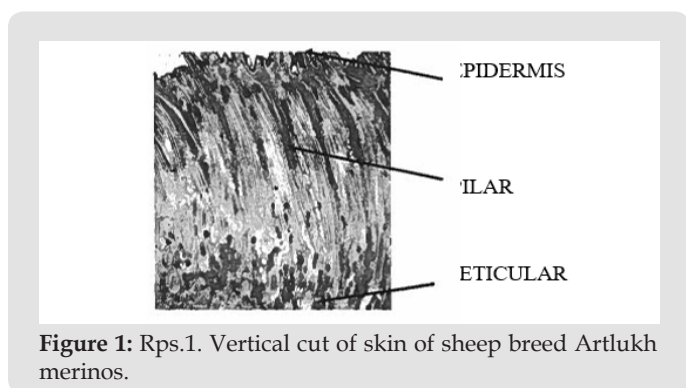


Figure 1: Rps.1. Vertical cut of skin of sheep breed Artlukh merinos.

Indicators of wool productivity mainly depend on density of wool, which is determined by number of hair follicles on a certain area of the skin. The study of wool density is showed that new sheep breed Artlukh merino has 39 follicles (fiber roots) per 1mm<sup>2</sup> of skin (Figures 1 & 2), which indicates the presence of potential opportunities for improving animals by this feature while original Manich breed has this indicator equal to 60 (8). The wool density of hair follicles of sheep breeds Artlukhsky merino. Thus, according to the results of conducted studies we state that high shearing of pure wool of new breed sheep Artlukh merino is over 1.9 kg due to the relatively high - 66.2% thickness of pilar layer and good wool density - 39 pieces of follicles per 1 mm<sup>2</sup> of skin. The optimal toning is 20.9 microns and length of 9.5 cm of these types.

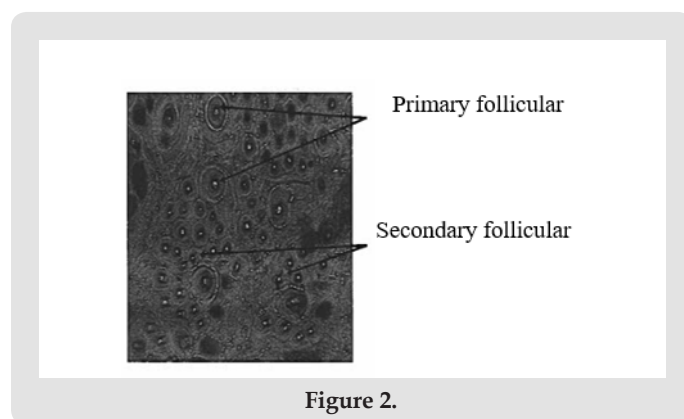


Figure 2.

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