STUDY OF FACTORS AFFECTING WOOL WASHING

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ANNOTATION

The growth rate of the skin exceeds the growth rate of the fetus, so folds are formed in the embryonic skin. At the same time there are profound changes in the structure of the skin.

Keywords: Leather, wool, follicle, fiber, fur, skin, development, length, non-standard or standard

INTRODUCTION

Karakol sheep are divided into different types of raw karakul depending on the embryonic developmental stages of the fetus or the age of the lambs during the lactation period. Embryonic development of Karakol lambs lasts 145-150 days. During this period, wool follicles begin to appear on the skin of the growing fetus, and wool fibers grow, forming the characteristics of the skin of the fetus. In addition, the skin of lambs torn from the mother's womb is evaluated taking into account the stages of fetal development. Depending on the nature of the skin and the length of the hair, it is called a non-standard or standard haircut. The length of the astrakhan skin is also assessed depending on the presence of glare or flowers. Depending on how many lambs are slaughtered, their skins are divided into raw, skinned and skinned raw materials. During the 115–125-day period, the skin of the lambs, which is torn from the mother’s abdomen, is covered with smooth, very short, sparse, very low lying hair all over the surface of such a small skin. The growth rate of the skin exceeds the growth rate of the fetus, so wrinkles form in the embryonic skin. At the same time there are profound changes in the structure of the skin. The peculiar phomological structure of wool fibers creates conditions for the formation of fibers, and as such fibers enter the skin surface, the shape of their ends changes, which creates a silky sheen. As the fibers move away from the skin, tendons, dyes, and crowns form.

The mechanical effect on the toughness of the curl affects its retention of shape and condition over time. The toughness of the curls is one of the important properties of astrakhan leather. In addition, the age of the fetus also depends on the conditions of development of the fetus in the mother's womb.

In addition, the toughness of the curl is taken into account due to its structural properties and the quality of the wool fiber. The softness and length of the fibers also affect the curl strength. The softer and longer the fiber, the looser the curl. The thickness of the wool fibers is also directly related to the strength of the curls. An important factor in the primary processing of wool fiber is the effective removal of fatty substances. The amount of fat in wool can range from 0.5% to 30%. As the amount of fat content increases, the vapor, air, and water permeability properties of wool fiber decrease, and conversely, the tensile strength, solubility, softness, and strength properties increase during stretching. Fats are unevenly distributed across the fiber sections. Fiber can be of 2 types of fats, bound and unbound. The bound fats are separated by extraction through organic solvents. Unbound fats are separated from the fiber content by hydrolysis using a strong base. Fatty substances: can be animal fats, vegetable oils, synthetic oils and fatty substances. These substances have different solubilities and are separated from the fiber content using different solvents. Dichloroethane, chloroform, methyl alcohol and carbon chloride are often used as solvents. There are several different methods for determining the binding fat content in a fiber, the most common of which is the extraction method. This device consists of: a conical tube, a return cooler, a glass sleeve, a glass cartridge. By extraction of the bound fatty substances by means of organic solvents, 3-4 g of wool fiber is weighed on an analytical balance and placed in a

glass sleeve. The top of the sample is covered with the same filter paper. The glass sleeve is threaded back to the bottom tube of the refrigerator. The refrigerant and the glass sleeve mass are attached with a clear, conical tube and an organic solvent is placed through the top hole of the refrigerator. The distance between the solvent and the sleeve should be 1 cm. The tube is placed in a sand electric bath. When the solvent begins to boil, the vapors condense and drip into the sleeve, going to the refrigerator. Drops of solvent pass through the sample, extract the lubricant, and fall into the flask. Extraction time is 1-1.5 hours. If no grease remains on the filter paper from the droplets dripping from the cartridge into the tube, the extraction process can be considered complete. Continuing to heat the flask, the cartridge case is replaced with a glass cartridge and the solvent is pumped out. The solvent collected in the cartridge is taken to another container. This solvent can be reused. After the solvent is pumped, the tube is dried in an oven at 129-1300S for one hour, cooled and measured. The amount of unbound fats can be determined by the following formula:

$$x = \frac{a \cdot 100}{H}; \%$$

a is the remainder, g

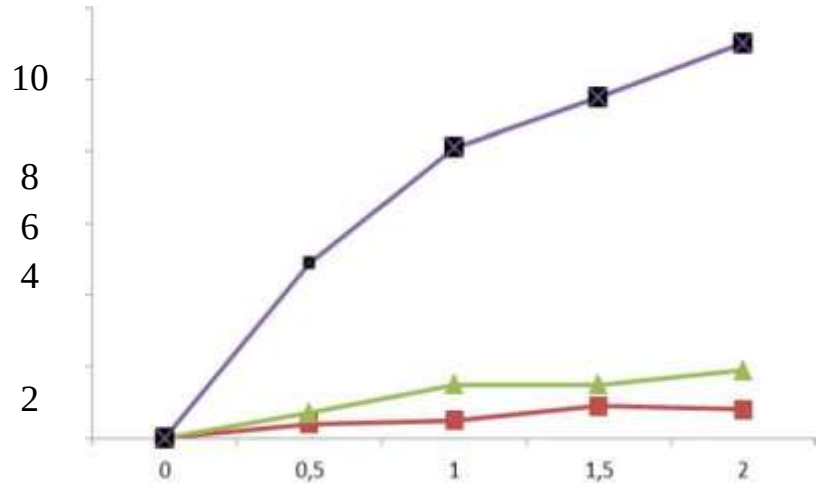
H - wool fiber weight, g.

In this way, wool fibers are extracted from fatty substances in various organic solvents (Diagram 1). **Table 1.1**

Determination of the amount of fat in wool fiber using organic solvents.

Solvent	First	After extraction	The difference	The amount of fat separated output, %
Heptane with acetone $CH_3(CH_2)_5CH_3$	0.5	0.4512	0.0083	1.8%
Perchlor ethylene	0.5	0.4604	0.0562	11.2%
Tetra chlorine ethane	0.5	0.4962	0.0038	0.7%

In this way, wool fiber was extracted from fatty substances in various organic solvents, the results are shown in Figure 1.1.



■ - Ethylene perchloride (C_2CI_2)

x - Heptan acetone mixture SNz (SI_2) 5SIz

■ - Ethylene tetrachloride ($CHCl_2$-$CHCl_2$)

Figure 1.1. Dependence of the efficiency of extraction of fatty substances from wool fibers on the type of organic solvent.

Based on the results presented, perchlorethylene was used to degrease the raw wool fiber for further studies.

In order to give the required capillary to the degreased wool fiber and to remove other contaminants, a wool washing process was carried out. The effect of the concentrations of chemical reagents used and other factors on the wettability of the fiber was studied. In the initial processing of wool fibers, washing, dripping and bleaching processes are of particular importance. The purpose of washing is to remove various types of waste, natural oil residues, mineral waste from wool fiber materials. The complex composition of the waste, in addition to natural waste, also requires the selection of special technology and equipment for the preparation of starch, its hydrolysis products, PVS, PAA, mineral oil, etc., which are used in enterprises. The composition of the washing solution consists of surfactant and soda.

Table 1.1.

The effect of the surfactant net on the washing quality of the wool fiber

Washing solution contained in SAM type	SAM concentration, g / l	Initial wool mass, g	Decrease in wool fiber length,%	Fiber resilience gi, min		Mass of wool after washing	The difference,%
				first	From washing next		
САМ НП-1)	2	3,0	6	4	6 сек	2.72	9,33
	4					2.63	12,0
	6					2.59	13,6
	8					2.61	13,2
САМ (noionogen-Prevotsel В-ОФ)	2	3,0	12	4	9 сек	2.70	10,0
	4					2.62	12,6
	6					2.61	13.2
	8					2.61	13.2

Note: soda concentration 4 g / l, t = 50 C, time-30 min.

Under the influence of soda, the residual fat-wax substances in the fiber become soluble, and the surfactant emulsifies the fat-wax substances that have passed into this soluble state, ensuring their release from the fiber. Various surfactants and soap solutions were used to wash the local wool fiber. The washing quality is assessed by maintaining the fiber length and increasing the wettability. Anionactive SAM - sulfanol NP-1, noionogenic SAM - prevotsel V-OF were used as surfactants in the experiments. Table 1.1 shows the results of the study on the effect of surfactant types on the quality of wool fiber washing. Not only the nature of the

surfactant but also the pH of the solution may have affected the washing process. Therefore, the effect of pH on the process was studied. Conclusion From the given diagram we can construct that the length of the fiber and its permeability are proportional when the medium of the washing solution is pH = 9. When the pH value exceeds 10, the elasticity of the fiber gives a good result, but its size decreases sharply, and on the organoleptic analysis, the fragility of the fiber is also felt. Under the influence of soda, the water softens, the swelling of the fiber improves, as a result it is quickly cleared of waste, neutralizes acidic fats. At the same time, as a result of the decrease in the concentration of alkaline agent in the solution, the release of fatty substances in the fiber is also reduced.

REFERENCES

1. Murodov M.M., Urozov M.K., Turdiboeva N.U., Khalikov M. Synthesis of Technology Carboxymethyl Cellulose With Increased Content of The Main Substance. Journal of Textile Science &Engineering, ISSN; 2165-8064, / USA/, Textile Sci Eng 2018, p. 2 of 2. 18; 9 DOI; 10.4172/2165 – 8064.1000374 (05.00.00 № 23)
2. Murodov M.M., Turdiboeva N.U., Urozov M.K. Development of the technology for Production of Cellulose From Plants of Saflora and Production of Carboxymethyl Cellulose on Its Basis. Journal of Textile Science&Engineering, ISSN; 2165-8064, / USA/, Textile Sci Eng 2018, 18;10 DOI; 10.4172/2165 – 8064.1000374 (05.00.00 № 23)
3. Murodov M.M., Muxitdinov U.D., Turdiboeva N.U., Urozov M.K. Comparative Researches of the Composition and Properties CMC In Different Degree of Polymerization. 2nd International Conference on Electrical Engineering and Automation (ICEEA2018). March 25-26, p.414-415. 2018, Chengdu, China.
4. Murodov M.M., Muxitdinov U.D., Turdiboeva N.U., Urozov M.K. Comparative of Degree of Stability to Thermal Destruction Na-CMC on a Basis Inhibitor to Sampes With Various Na-CMC. 2nd International Conference on Electrical Engineering and Automation (ICEEA2018). March 25-26, p. 416-417. 2018, Chengdu, China.
5. M.M. Муродов, M.K. Урозов, Д. Мухамаджонова Development of technology for production of cellulose from plants of tissue and receiving na-carboxymethylcellulose on its basis INOVATEUR PUBLICATIONS JournalNX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581 – 4230 VOLUME 6, ISSUE 12, Dec. -2020
6. M.M. Муродов., M.K. Урозов., Д. Мухамаджонова Comparative researches of the composition and properties cmc in different degree of polymerization INOVATEUR PUBLICATIONS JournalNX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581 – 4230 VOLUME 6, ISSUE 12, Dec. -2020
7. M.M. Муродов M.K. Урозов Д. Мухамаджонова Technology of making carboxymethyl Cellulose By using local raw materials International journal for ennovative Eneniring and magament research Vol 09 Issue12, Dec2020 ISSN 2456 – 5083
8. M.M. Муродов., M.M Халиков., M.K. Урозов Obtaining Technical Carboxymethyl Cellulose Increased In Main SubstanceAcademicia An International Multidisciplinary Research Journal (Double Blind Refereed & Peer Reviewed Journal) ISSN: 2249-7137 Vol. 10 Issue 12, December 2020 Impact Factor: SJIF Murodov M.M., Muxitdinov U.D., Urozov M.K., Xudoyorov X.O. Comparative researches of the composition and properties cmc in different degree of polymerization. //Композицион материаллар илмий техникавий амалий журнал 2018 №1 - с.57-58 (02.00.00 № 4)

9. Мухитдинов У.Д., Муродов М.М., Урозов М.Қ. Кунгабоқар ўсимлиги пояси ҳамда тўқимачилик корхоналари толали чиқиндилардан юқори сифат кўрсаткичларга эга бўлган целлюлоза олиш технологияси. //Композицион материаллар илмий техникавий амалий журнал 2018 №1. -с. 65-66 (02.00.00 № 4)
10. Турдибоева Н.У., Муродов М.М., Урозов М.Қ. Разработка технологии получения целлюлозы из растений клещевина получения Na-карбоксиметилцеллюлоза на её основе . Композицион материаллар илмий-техникавий ва амалий журнали. – Тошкент, 2018. -№3. с.36 (02.00.00 № 4)
11. Урозов М.Қ., Турдибоева Н.У., Муродов М.М. Развитие технологии для производства целлюлозы от заводов saflora и производства целлюлозы карбоксиметила на ее основе. //Композицион материаллар илмий-техникавий ва амалий журнали. – Тошкент, 2018.-№3. с.58 (02.00.00 № 4)
12. Murodov M.M., Urozov M.K., Turdiboeva N.U., Khalikov M. Synthesis of Technology Carboxymethyl Cellulose With Increased Content of The Main Substance. Journal of Textile Science &Engineering, ISSN; 2165-8064, / USA/, Textile Sci Eng 2018, p. 2 of 2. 18; 9 DOI; 10.4172/2165 – 8064.1000374 (05.00.00 № 23)
13. Murodov M.M., Turdiboeva N.U., Urozov M.K. Development of the technology for Production of Cellulose From Plants of Saflora and Production of Carboxymethyl Cellulose on Its Basis. Journal of Textile Science&Engineering, ISSN; 2165-8064, / USA/, Textile Sci Eng 2018, 18;10 DOI; 10.4172/2165 – 8064.1000374 (05.00.00 № 23)
14. Муродов М.М., Урозов М.Қ., Тожиев Ж.П. Инновацион технологиялар асосида маҳаллий хом ашёлардан целлюлоза ва унинг эфирларини олиш ва ишлаб чиқаришда қуллаш // Композицион материаллар илмий-техникавий ва амалий журнали. – Тошкент, 2011. -№1. -с. 39-41. (02.00.00 № 2)
15. Рахманбердиев Г.Р., Муродов М.М., Эгамбердиев Э.А., Урозов М.К. Исследование целлюлозного полуфабриката, полученного из отходов текстильной промышленности для различного назначения // Кимё ва кимё технологияси журнали. – Тошкент, 2011. -№2. -с. 39-42. (02.00.00; №3)
16. Muxitdinov U.D., Murodov M.M., Turdiboeva N.U., Urozov M.K. Technology of Making Carboxymethylcellulose by Using Local Raw Materials. 2nd International Conference on Electrical Engineering and Automation (ICEEA2018). March 25-26, p. 409-410. 2018, Chengdu, China.
17. Murodov M.M., Muxitdinov U.D., Turdiboeva N.U., Urozov M.K. Comparative Researches of the Composition and Properties CMC In Different Degree of Polymerization. 2nd International Conference on Electrical Engineering and Automation (ICEEA2018). March 25-26, p.414-415. 2018, Chengdu, China.
18. Murodov M.M., Muxitdinov U.D., Turdiboeva N.U., Urozov M.K. Comparative of Degree of Stability to Thermal Destruction Na-CMC on a Basis Inhibitor to Sampes With Various Na-CMC. 2nd International Conference on Electrical Engineering and Automation (ICEEA2018). March 25-26, p. 416-417. 2018, Chengdu, China.
19. Muradov M.M., Muxitdinov U.D., Urazov M.K. Ways to reduce waste the orphaned tile sample in the production of ceramic plates. Янги композицион ва нанокомпозицион материаллар тузилиши, хусусияти ва қўлланилиши. Республика илмий – техникавий анжуман тошкент 2018й. –с. 120 б.

20. Муродов М.М., Урозов М.Қ., Мухитдинов У.Д., Турдибоева Н.У. Пахта тозалаш саноати чиқиндилари асосида целлюлоза олиш технологиясини ишлаб чиқиш. // Янги композицион ва нанокомпозицион материаллар тузилиши, ҳусусияти ва қўлланилиши. Республика илмий – техникавий анжуман, тошкент 2018й. -122 б.
21. Муродов М.М., Мухитдинов У.Д., Урозов М.К. Толали чиқиндилар асосида олинган целлюлозадан юқори тозаликка эга бўлган Na-КМЦ (карбоксиметилцеллюлоза) олиш технологияси. Республика илмий – техникавий анжуман тошкент 2018й. –с.175 бет.
22. Муродов М.М., Турдибоева Н.У., Мухитдинов У.Д., Урозов М.Қ. Пахта тозалаш саноати чиқиндилари асосида целлюлоза олиш технологиясини ишлаб чиқиш. Республика илмий – амалий анжумани мақолалар тўплами. Тошкент-2018й. –с. 376 бет.
23. Turdiboeva N.U., Urozov M.K., Murodov M.M. Comparative characteristics of samples of cmc from cotton and microcrystallinecellulose obtained in the semicontinuous and monoapparatus way. Республика илмий – амалий анжумани мақолалар тўплами. Тошкент-2018 й. - с. 378 бет.
24. Мухитдинов У.Д., Муродов М.М., Турдибоева Н.У., Урозов М.Қ. Маҳаллий хомашёлар-кунгабоқар ўсимлиги пояси ҳамда тўқимачилик корхоналари толали чиқиндилардан целлюлоза олиш. Республика илмий – амалий анжумани мақолалар тўплами. Тошкент-2018 й. –с. 380 бет.