Chemical Methods for Cleaning Skin Products Produced from Cattle of the Fergana Valley

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ABSTRACT

Everyone knows about the value of genuine leather. This is an expensive material, resistant to moisture, having an attractive appearance, pleasant to the body. Mankind cannot do without such material as leather. But the choice is complicated by a huge range of skins, and the dressing method is of great importance. It affects not only the price of raw materials, but also its operational characteristics

Keywords: leather, goatskin, pigskin, calfskin, sheepskin, macro- and microelements, albumins, globulins

Introduction: The skin of the animal is distinguished by a rather complex chemical composition. Depending on the type of animal, age, conditions of detention, the chemical composition of the skin may vary, but the average values of the content of the main components are as follows: water - 64-68%, dry matter - 32-36%. In turn, the dry matter of the skin consists of organic and inorganic substances that are different in their complexity and properties. Protein components are represented by globular (albumins, globulins) and fibrillar (collagen, reticulin, elastin and keratin) compounds, as well as enzymes. The share of protein substances accounts for approximately 90-95% of the dry matter mass of the skin. Lipids are divided into two groups - fats themselves, as well as waxes and complex compounds of fats with other substances. The amount of lipids in the skins ranges from 3-10%. Carbohydrates are contained in the skin in small quantities - 1.5-2%.The minerals of the skin are mainly represented by sodium and potassium ions, as well as small amounts of calcium, iron, magnesium, aluminum, zinc, etc. The mineral content does not exceed 0.8% of the dry matter mass of the skin. All these components of the skin, as well as water, play a significant role in physiological processes, are responsible for the formation of various morphological structures, and also determine the presence of a number of valuable properties of the skin. That is why it is necessary to consider in more detail the modern ideas about the chemical composition and properties of the main components of the skin and their importance in the processes of primary processing and further production[1-3]. Lipids are organic substances that are part of the tissues and fluids of the animal body and are fats and fat-like substances. They differ in their structure, composition and properties. A characteristic feature of lipids is their insolubility in water and solubility to varying degrees in organic solvents: benzene, ethyl ether, alcohols, acetone, chloroform, etc. Lipids play an important role in the body of animals, being solvents of vitamins. In animal tissues, lipids are both in a free state and in the form of compounds with proteins, carbohydrates and other lipids. The lipid content in the skins of various animals ranges from 3 to 10%, but sometimes it reaches 40% (in the skins of pigs and sheep). Lipids are divided into two main groups - fats themselves (glycerides of fatty acids) and lipoids (waxes and complex compounds of fats with other substances -

phospholipids and glucolipids). In appearance, lipoids are similar to fats proper, but differ from them in origin, chemical composition and properties, as well as distribution in the layers of the skin. Lipoids are formed, apparently, in the cells of the epidermis, which contain in the protoplasm single droplets of a fat-like substance consisting of animal waxes and their complex compounds with other substances. The sebaceous glands contain esters of fatty acids with higher alcohols (cetyl, cholesterol). These compounds come to the surface of the skin, lubricate it and give it hydrophobicity. Lipoids are found in the sebaceous and sweat glands. Simple fats - glycerides of fatty acids - are formed from the actual fat cells of the connective tissue and are deposited in the dermis and in the subcutaneous tissue between the fibers. The fat content in animal tissues is different. Fats containing unsaturated fatty acids have been established to be of great importance for the life of the body: linoleic, oleic, linolenic, arachidonic. Exclusion from the feed of animal fats containing these acids leads to a serious disease, expressed in skin damage, hair loss, necrosis of the tail, growth arrest. Timely introduction of unsaturated fatty acids into the body eliminates these disorders. The average amount of fat in the dermis of cattle hides varies depending on the age of the animal: calf skins 0.4-0.5, cows 0.1-0.2, bulls - 0.7% or more. In addition, the amount of fat in the skin depends on the type of animal, the conditions of its detention and feeding. So, in the dermis of the bull, it on average reaches 11, goats 2-2.5, sheep and pigs - up to 30% of the dry matter mass of the dermis. In the skins of many animals, fat cells of the subcutaneous tissue form a continuous layer of fat, often germinating to the reticulate layer of the dermis. Very often, in the skins of cattle of intensive cultivation, stall keeping and grain fattening, a thick layer of subcutaneous fat is also formed. Similar phenomena are observed in the skins of pigs, as well as in the dermis of sheep skins. The fat contained in the skins of sheep differs in its composition from the fat of the skins of cattle and approaches the waxes. This layer of fat has to be mechanically removed in the raw materials or during soaking operations, as it prevents the uniform and correct penetration of working solutions into the skin. The natural fat contained in the skin is a weighting agent and, depending on the location in the thickness of the dermis, to a greater or lesser extent worsens its quality and skin output. Often, in the process of solar drying at high temperature, fatty substances are melted from the subcutaneous tissue and ducts of the glands of the skins of sheep, pigs, and sometimes goats. They impregnate all layers of the skin, making it extremely difficult to soak and causing the formation of fatty deposits on the surface of the finished skin. Leather made of heavily oiled sheepskin or goat, after intensive degreasing, is characterized by relative looseness, delamination and low strength. Skins from cattle hides with a high fat content are also loose and tend to form fat spots, which, when heated during drying processes, increase and become dark.One of the most important indicators of the suitability of leather raw materials for use in the production of durable and high-quality leather is the fat content in it, its distribution in the layers of the dermis and the possibility of timely removal (degreasing) [4-5 The amount of minerals (ash) in the skin is small. These are mainly salts of potassium and sodium (up to 0.4%), as well as a small amount (0.01-0.001%) of salts of iron, copper, phosphorus, calcium, aluminum, etc. The ash content in paired skins, depending on the age and type of animal, ranges from 0.35-0.5% of the mass of the paired dermis. Most of the minerals can be removed by washing and soaking. Despite the fact that minerals are contained in the skin in very small quantities, they are involved in a number of processes. For example, copper plays a significant role in the pigmentation of the skin and hair. Compounds of phosphorus and silicon are found to a greater extent in the papillary layer of the dermis and epidermis. Arsenic, calcium and magnesium were also found there. It is believed that the epidermal layer removes arsenic from the body, and calcium causes cohesion between cells and increases their resistance to external influences[3-4].The paired skin contains a lot of water (moisture), the amount of which ranges from 55-75%, depending on the type of animal. The water

content in the paired skin is associated with the presence of fatty substances in it: the more fat deposits in the skin, the less water there is in it. The water content is not the same in different topographic areas (most of all in the neck and gender) and individual layers of the skin. The more developed the epidermal layer and its appendages, the less water in the skin as a whole. Relatively little water in the subcutaneous tissue. For example, the subcutaneous tissue of cattle hides contains about 30% of water, and in highly fat skins (sheepskin, pig skins, North American coarse raw materials) - 20% or less. The average water content in a steamed hide is 67% (this is taken into account in the standards when recalculating from the mass of paired raw materials to the mass of canned and back), the highest in the solder - 73.3% and in the catfish - 78.6%, the lowest - in the uneaten pig skins of the male - 56.9% and the female - 64.2%. The skins of young animals, as well as females, all other things being equal, contain more moisture than the skins of adult animals and males, respectively. Water is an integral component of collagen fibers, which in the native state are usually swollen. Collagen has a high hydrophilicity and contains molecularly and capillarily bound water. The presence of water in the dermis has a significant impact on the properties of both raw materials and skin. In a paired skin, a distinction is made between swelling moisture, or free, filling the capillaries and interfiber space, and hydration moisture, or bound, which is associated with the skin tissues and makes up to 40% of the skin's moisture[3-5].These are organic compounds built from amino acid residues and characterized by a number of common features and biological features. While in a living organism, proteins are associated with more or less water, the removal of which from the protein-water system very often leads to irreversible changes in the protein. Dried proteins are formless non-crystalline substances, hard and brittle in a completely dry state. Proteins have an affinity for water: some of them dissolve in it, others absorb it, turning into a gelatinous substance, and, finally, there are proteins that do not mix with water. The elementary composition of proteins, regardless of their origin, is qualitatively the same. They contain carbon, hydrogen, oxygen, nitrogen and sulfur. These elements are included in various proteins in the following quantities, % in terms of the mass of absolutely dry matter: carbon 48-55; hydrogen 5-7,5; oxygen 20-34; nitrogen 15-19,5; sulfur 0,3-2,5. The composition of many natural proteins also includes phosphorus, calcium, iron and other elements. The structure of proteins and the characteristic properties of their individual groups are mainly determined by the number and type of amino acids from the residues of which polypeptide chains are composed, as well as the sequence of amino acids in the chain[6-7]

Materials and methods.

Leather processing technology is a very complex and lengthy process, depending on the size and thickness of the product and other indicators it can take several days or even weeks. Before treating the skin, put it in clean water to make it supple. Skin processing consists of the following stages [8-9]. 1.The skin in the woolen state is placed in the drum. During the day, rinse with soap and soda. At the same time, all areas of the skin should be washed equally. Forthat, take clean water at 20^0C. 2.

At 20^0°C, caustic and lime are added to the water. Stir for one day. In this case, the skin becomes more elastic. Then it is removed from the drum. 3. With the help of a special apparatus, the underside is smoothed and fat is removed. After cleaning the skins, they are washed in a special solution. To prepare this solution in warm water dissolve 3 g of soda, 20 g of salt and stirfor 5 minutes, squeeze and laya t in the solution. 4. Fits into the drum. Ammonium sulfate is then added to the drum. After removing the sulfate, salt, vinegar and chromium tanner are added.

Chromium tanner - performs the function of tanning the skins of the skins. After that, the skin does not burn and does not rot when burning. After the chrome tanner, the dicarbonateacts and is re-sanded. Then it is removed from the drum. Acids and salts loosen the skin fibers, making them elastic and sticky.

After this step, it will be possible to stretch the skin in any direction.5. In this stage, itpasses through 2 machines.

6. After prohodgingI through 2 machines, again fits into the drum. Salts and a chrome tanner are added to the drum. Toeachsalt fromthe washimmediatelyafter application. After the chrome tanner, I add sodium formate. The dicarbonate after the sodium formate is placed. This stage is called neutralization. At this stage, the skin is constantly stirred. At the end of the step, pulling and bending check the skin.

7. Ipourwater and add new water and oil. To do this, you can use pyby fat or synthetic oil. This is a very important process, andthe substances penetrate the tissue and prevent the shrinkage of the fibers during drying. This, in turn, gives elasticity and softness to the skin. In this process, lack of oil or excessive lubrication is not allowed. At 80^0C, the skin is placed in water in a drum, closed with a lid and rotated for 2 hours. Then withan alivayut 1% solution of CH_3COOH. Stir yut for 10-15 minutes.Poured into a drum, stirred for half an hour, drained of the skinfrom [9-10] . Then it is removed from the drum and the skin is stained. After painting, it is dried with an iron. For drying, it is transferred to the floor or dried on a thingrate with the skin outwards. The fermentation process ensures high quality of the skin and the strength of the skin. Forthis 1 liter of hot water, add 200 g of oatmeal or rye flour and feathereme sew. 20-30 grams of salt and 0.5 grams of soda are added to it. After the solution has cooled, the skin is transferred. The duration of fermentation is 2 days. From time to time, stir thesolution. Dried in the oven at 40^0C for 5-10 minutes. Presscomfort, varnish and press again. Then the floweris pressed. After that, the flower is pressed. After pressing the flower, it is measured and packaged with a machine. After eachstage theedges are cleaned. Different colors are available on request. Separate drums are used for each stage. Forleather processing, I usevarious equipment e [11-12]. For example, they use machines for skin cleansing, drilling to soften the skin, centrifuges, rounde drums and other equipment e.

Findings. Everyone knows about the value of genuine leather. It is an expensive material, resistant to moisture, has an attractive appearance, pleasant to the body. Humanity can't do without a material like leather. But the choice is complicated by a huge assortment of skins, and the method of dressing is of great importance. It affects not only the price of raw materials, but also their performance.

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