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WOOL TREATMENT METHOD FROM DRAINAGE WATER

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***Abstract**: This article analyzes the conditions in Kazakhstan and other developed countries to separate wool from drainage water. Electrocoagulation technology has been developed to remove wool from drainage water. Currently, the state pays great attention to agriculture in Kazakhstan. The main issue here is to increase livestock production and improve the quality of its products. In this direction, the production of sheep products is an effective way of manufacturing qualitative products.*

***Keywords**: yolk, grease, lanolin, electro kinetic potential, coagulation*

ЖҮННІҢ ЖУЫНДЫ СУЫН ТАЗАРТУ ӘДІСІ

***Аңдатпа:** Бұл мақалада Қазақстан мен басқа дамыған мемлекеттерде жүн шайырын жуынды сулардан бөліп алу жағдайы сарапталған. Жүн шайырын жуынды сулардан бөліп алудың электрокоагуляция технологиясы жасалды. Қазіргі кезде Қазақстанда ауыл шаруашылығына мемлекет тарабынан үлкен көңіл бөлініп отыр. Бұл жерде ең басты мәселе мал басын көбейтіп, одан алынатын өнімнің сапасын арттыру. Осы бағытта қой шаруашылығының өнімдерін тиімді әдіс қолдану арқылы өңдеп, сапалы өнім алу болып табылады.*

***Түйінді сөздер:** жүн майы, жүн шайыры, ланолин, электрокинетикалық потенциал, коагуляция*

МЕТОД ОЧИСТКИ СЛИВНЫХ ВОД ШЕРСТИ

***Аннотация:** В данной статье анализируются условия выделения шерстного жира из промывных вод шерсти. Разработана технология выделения шерстного жира из промывных вод шерсти методом электрокоагуляции. В настоящее время в Казахстане уделяется большое внимание сельскому хозяйству, так как повышение продуктивности животноводства и улучшение качества его продукции является основной целью. В связи с этим переработка отходов фабрик первичной обработки шерсти могут обеспечить производство переработки шерсти качественной продукцией.*

***Ключевые слова:** шерстный жир, шерстный воск, ланолин, электрокинетический потенциал, коагуляция*

Sheep breeding is an ancient historical heritage of the Kazakh people. Sheep products are made of wool, skin, cologne and meat, butter and milk. This is one of the daily use products. Among these products, we have done a lot of research to find a way to clean sheep wool and its products and to solve these problems.

The purpose of the work is to remove wool crumbs from woolen water by means of electrocoagulation.

Relevance. Woolen oil is a raw material for lanolin, which is an essential oilskin in pharmacy, veterinary and cosmetics. During deep processing of lanolin, high-fat sterile alcohols are added. Cholesterol – a way to obtain a steroid

medication by deep processing of sterile alcohol additives.

Foil factories are currently unable to systematically dispose of woolen oil from washing water during primary cleaning (washing) of wool. For these reasons, the wool crumbs and the chemical impurities that wash wool are dumped into drains or the environment, which can greatly negatively affect the local area. The most important thing in this regard is that the wool crater, which is a valuable raw material in woolen water, is spilled over the field only. Woolen oil is a valuable raw material for cosmetology, pharmaceutical products.

The juice contains: wool fat, sand, clay, sodium chloride, magnesium chloride, wool fiber, potassium chloride, surface active substances, soap, soda, and salts of fatty acids.

An effective way to remove the impurities is to provide for the separation of mechanical impurities (sand, clay), separation of woolen oil, detergents contained in them, water vaporization, water scrubbing, and treated water for wool cleaning.

Many authors have suggested several methods for cleaning the water and returning the same water to wool washing [1,2,3,4,7,8]. These methods employed bio contact oxidation, sedimentation filtration, flotation irrigation, membrane reactor, mechanical cleaning - oils separated by the vacuum pump up to 70% on the surface.

One author suggested that the water was collected in open tanks for about 4-15 days. The process of opening the reservoir takes place within fifteen days [5]. Adds inorganic stabilizers as a sediment. Then add organic flocculants, drain the water with pump and send to the separator. In the separator, wool fat is distributed. This method is very effective for woolen primary processing plants.

Other authors suggested swimming pools, filling the pool with fresh water and injecting them into the pool. The wastewater then enters the electrolysis reaction block. It is processed with sodium hydroxide. The foamy air bubbles are fluttered and collected in the oil compartment. The refined water is returned to the electrolyte chamber again. The uncleaned water is pumped into the dirty water supply system. This is an inefficient method on the one hand [6].

The method of cleaning wool cleaning at the first time allows you to remove the aqueous solution of the washing powder from the odor, remove the wool from the wool.

This method is intended for the treatment of electrodialysis in aqueous electrolysis, separated from coarse-disperse powders, separated by membrane through the membrane and anode part. The purified water is separated into the anode part. There is a change in the pH value of the electrodialysis solution. In the cathodic portion up to 12, the acidic part in this case will be acidified and the pH may decrease to 1. Industrial MK-40 membrane, which is divided into the cathodic and anode fragments, is only capable of carrying hydrogen cations. As a result, the anolyte releases acids, and the metal cations stand on the membrane.

In cathode hydrogen is formed by this reaction: $2H^+ + 2e^- = H_2$. During this reaction, the oxygen molecules are formed in anode: $4OH^- - 4e^- = O_2 + 2H_2O$. The pH value changes in colloidal particles, that is, the micelles that form the core of the nucleus. The micelle is made up of a hydrogenated droplet moistened with a water molecule. Also, a binary electric layer is formed of hydroxyl-ion and then metal cations (e.g., sodium and hydrogen). Reduced pH value results in potential changes in the surface of the emulsion droplets on the surface. It causes damage to the emulsion and flotation of wool fat emitted by the electrolysis of oxygen. Subsequently, the smell of the solution and coagulation of fine dispersed mechanium impurities occurs. The electrostheler is supplied with continuous water, and the treated water is removed from the electrolyzer. Flammable foam-bearing layer with oxygen flows through the top. In this case, oxidation, odorless oxidation and oxidation compounds of the atomic acid activates the absorption process at the moment of oxidation.

In the colloidal-dispersed medium, the mechanism of action of electrodialysis has been developed. The cathodic and anodic chambers separated by the membrane for the electrochemical processing of the suspended wound are made of graphite, and cathodic stainless steel. Woolen

resin (foam oil) is injected into a special container by means of an additional plastic pipe.

The wastewater treatment process parameters, in laboratory conditions, have been implemented on the basis of wastewater from hand-washed wastewater.

Work with the laboratory equipment for the production of woolen resins.

Experiment 1. We start an experiment at 15V for 5 minutes. Initial temperature 26°C.

Preparation: Put the waste resin unit on the stand, and place the unit on the back. The width of the anode and cathode to the wool resorption unit is between 5-7 cm, and between the anode and the membrane is 3 cm, and the cathode and the membrane are also 3 cm. We pour 1 ml of sodium hydroxide into 1,000 liters of cathode. We poured 1 liter of water into the anode. Bubbles appeared in the anode chamber and began to break up fat. The experiment was performed at 15V, 5 minutes, stopped, drain the tap water in the anode chamber, and we collected oil on the surface. We calculated the mass of drying oil.

Table 1 shows the result of electrodialysis, and one subcutaneous solution was spent 5 minutes in the treated water. Water temperature varies from 26°C to 30°C. When the experimental time was increased, the alkaline concentration in the chamber increased, i.e. the pH was increased. Mycelium is susceptible to degradation of pH levels. Removal of wool resin was 36.61%.

Experiment 2. Anode chamber temperature rises to 36°C. Removal of wool resin increased to 73.07%. The main advantage in these experiments is that the current and voltage levels are low.

Table 1. Electrodialysis, volume of anode chamber (V) = 1000ml, electrode area (S) = 210ml (0,02m^2); the amount of oil in the drainage water is 60.9 g/l

Estimatedtime, min	Current, A	Voltage, V	T°C	NaOH, ml	Distancebetweenelectrodes, cm	The distance between the membrane and the electrons, cm	Oiloutput, %
5	6.5	15	30	1000	6	3	36.61

Table 2. Electrodialysis, volume of anode chamber (V) = 1000ml, electrode area (S) = 210ml (0,02m^2); the amount of oil in the drainage water is 60.9 g/l

Estimatedtime, min	Current, A	Voltage, V	T°C	NaOH, ml	Distancebetweenelectrodes, cm	The distance between the membrane and the electrons, cm	Oiloutput, %
0	6.5	15	25	1000	6	3	
10	6.5		31		6	3	
20	5.5		36		6	3	73.07

Table 3. Electrodialysis, volume of anode chamber (V) = 1000ml, electrode area (S) = 210ml (0,02m^2); the amount of oil in the drainage water is 60.9 g/l

Estimatedtime, min	Current, A	VoltageV	T°C	NaOH, ml	Distancebetweenelectrodes, cm	The distance between the membrane and the electrons, cm	Oiloutput, %
0	6.5	15	25	1000	6	3	
10	6.5		30		6	3	
15	6		33		6	3	
20	5.5		36		6	3	
30	5		40		6	3	
40	4.5		41		6	3	87.19

Experiment 3. We have increased the time to increase the amount of oil in this work. Initial temperature is 25°C. The way to practice is as shown above.

This maximum washing time of washing water was 40 minutes. At this time temperature increased to 41°C. The level of separation of oil has been changed to 87.19%. In these experiments, the high level of separation of the fat, high volumes of consumption of electricity, no high temperatures, no longer takes place in the treatment of dirt.

Having analyzed all the experiments, you can make the following conclusions: The electrodialysis device of different structural drainage waters has been detected by the electrodialysis method in the continuous cell in the three-cell cell, and the crude oil of the wool is obtained. The technology of recycling the treated water into a wool wash cycle was developed by forming an effective method for the production of a method for extracting pharmacopoeian lanolin from the crushed oil of wool and eliminating wool crumbs.

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