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PHARMACEUTICAL FROM CELLULAR WASTE OF COTTON GRINDING ENTERPRISES AND CELLULOSE FROM PAVLOVNIY TREE AND BANANA STEMS. AND TECHNOLOGY OF GETTING SEVERAL BRANDS OF E-466 WITH HIGH CLEANLINESS FOR MEDETSINA AREAS

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Abstract

In this section, research has been conducted on the production of several brands of high-purity E-466 for the pharmaceutical and medical industries from fibrous waste from ginneries and cellulose obtained from pavlonia tree and banana stalks. The technical process of purified KMTs includes the following steps: Preparation of products and solutions; Extraction; Squeeze; Drying of purified Na-KMTs; Grinding; Packaging of the finished product; Cleaning the used solution.

Keywords: Banana cellulose, extraction process, basic substance content, cotton lint, polymerization rate, pentosan, alkali sediment, suffocation, ash content, moisture, cellulose, concentration, parameter, optimal conditions, destruction.

Introduction

Cellulose fibers are strong because the cellulose macromolecules are arranged in the fibers. Such a durable fiber manufacturing industry and is widely used in many sectors of the economy. The properties of cellulose mentioned above are based on cellulose, which is good for its reactivity allows the synthesis of a variety of simple and complex esters on a large scale [105-108].

For example, the production of Na-KMTs is widely used not only for the oil and gas and other industries, but also in the food and perfumery industries.

In 1964 at the plant "Karbonam" in Namangan the line of these refined KMTs (carboxymethylcellulose) with a capacity of 6,000 tons per year was put into operation for the first time.
Carboxymethylcellulose has the ability to retain high water. 1 part of MMC can bind up to 120-130 parts of water. This feature is the most appealing to use this supplement in meat and fish processing.
Carboxymethylcellulose, KMTs (carboxymethylcellulose) (E-466) - technological functions - thickener, stabilizer, capsule, coating, carrier.
It dissolves well in cold and hot form, but it is an ionic cellulose ether, the effect of which depends on the salt concentration and other properties of the medium. Typical applications of carboxymethylcellulose E-466 include: strength regulators in 1-3g / kg sweeteners; ice-cream, jelly 2-8g / kg; mayonnaise, sauces, creams and carboxymethylcellulose in pastes 3-8g / kg; carboxymethylcellulose in shells for meat, fish, confectionery, nuts 5-20g / kg. This is due to the high water holding capacity of KMTs (carboxymethylcellulose): 1 part can bind up to 120-130 parts of water.

Physicochemical properties of carboxymethylcellulose, KMTs (E-466) - vary depending on the chain length and the degree of exchange. Soluble in water, alkalis; moderately soluble in acids, glycerin; insoluble in organic solvents**.**
Metabolism and Toxicity Carboxymethylcellulose, KMTs (carboxymethylcellulose) (E-466) - non-absorbable, indigestible soluble ballast substance; A laxative effect may be observed in a single dose of more than 5 g.
Hygienic standards carboxymethylcellulose, KMTs (carboxymethylcellulose) (E-466) - unlimited. Hazards according to GN-98: MPC 10 mg / m3 in workplace air, risk group 3.
Carboxymethylcellulose is approved as a strength regulator in 8 food standards:
• Canned sardines up to 20 g / kg.;
• Canned mackerel up to 2.5 g / kg; Mayonnaise up to 1 g / kg.;
• Some types of margarine up to 10 g / kg.;
• Homemade cheese and sour cream up to 5 g / kg.;
• Processed cheese up to 8 g / kg.;
• Fragrant yogurt and others. 5 g / kg each;
• Soups, broths up to 4 g / kg.
Pasteurized cream in the Russian Federation in the amount corresponding to TI on carboxymethylcellulose, CMC (E-466) TI and in other food products the consistency is allowed as a stabilizer, thickener, texturizer, binder and carrier-filler (clause 3.1.8, 3.6.58, 3.16.53 SanPiN 2.3.2.1293-03).

Carboxymethylcellulose, KMTs (carboxymethylcellulose) (E466) encapsulation and part of the means for tabletting is a part of food additives, a carrier of food additives. Commodity forms of carboxymethylcellulose, KMTs (carboxymethylcellulose) (E-466) - differ greatly in the viscosity of the solutions and their ability to retain moisture. This section includes fiber wastes from ginneries and pavloniya tree and cellulose obtained on the basis of banana stalks, pharmaceuticals and research has been conducted to obtain several brands of high-purity E-466 for the medical field.

The technical process of purified KMTs (carboxymethylcellulose) includes the following steps: Preparation of products and solutions; Extraction; Squeeze; Drying of purified Na-KMTs; Grinding; Packaging of the finished product; Cleaning the used solution.

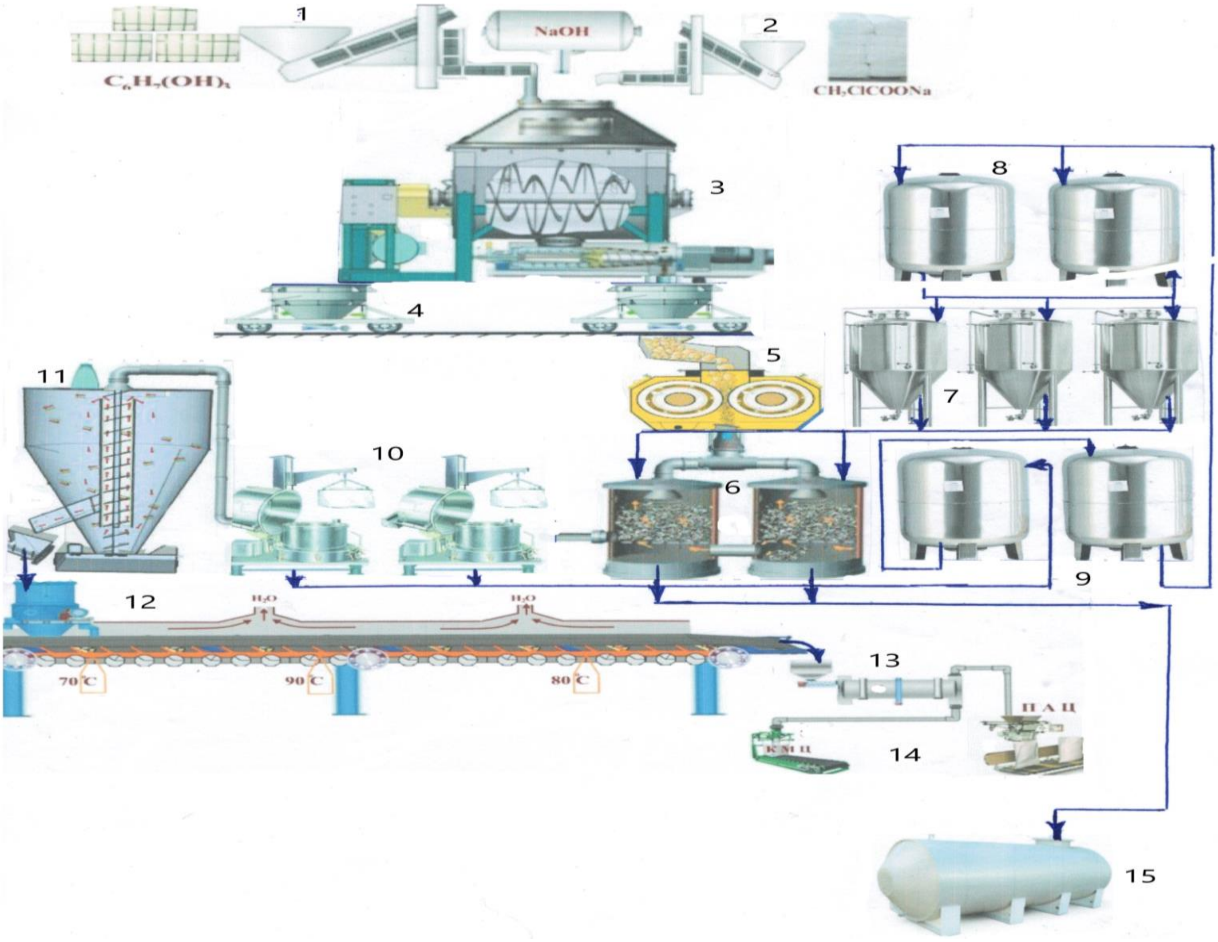
The main task of the technological process is the purification of an aqueous solution of ethyl alcohol by extraction of additional compounds containing Na-KMTs (carboxymethylcellulose) that is, extraction using intermittent pixos and drying of KMTs (carboxymethylcellulose) and squeezing of the finished product in equipment used by a continuous mechanism. Purified Na-KMTs represent the sodium salt of cellulose glycolic acid.

Refined Na-KMTs are a product in the form of powder or fiber, the color of which varies from white to yellow and clear brown, depending on the brand of the product. Purified Na-KMTs are highly soluble in water in 40% aqueous solution of ethanol and in acetone. Insoluble in other types of organic solvents. All quality indicators of refined Na-KMTs must comply with the requirements of TU 6-55-39-90 and Ts 22235949-003: 2015 (internal Ts in the required production of "CARBONAM"). At the initial stage of the scientific work, synthesis processes based on Na-KMTs, PTKTCh (fiber pulp of textile enterprises), Pavloniya and banana celluloses were carried out.

It is known from the literature that Na-KMTs mainly include the process of mercerization of cellulose (NaOH), the process of alkylation of the obtained alkaline cellulose with sodium monochlor acetate reagent and the process of final stage (dosing). The following is a schematic diagram of the process of obtaining Na-KMTs and the technology of obtaining several brands of high-purity E-466 for the pharmaceutical and medical industries based on it;

As can be seen from Figure 1, it contains cellulose, i.e. fibrous waste from ginneries and peacock wood and a schematic diagram of the production of several brands of high-purity E-466 for the pharmaceutical and medical industries from cellulose obtained on the basis of banana stalks, in which the cellulose (1) is loaded on a "Monoapparat" (3) through special conveyors.

The mercerization process is carried out using a concentrated solution of caustic alkali (NaOH). The resulting alkali cellulose is metabolized by the action of a monochlorine acetate (2) reagent. Based on the pre-calculated reagents consumption rate, the semi-finished technical Na-KMTs are transferred to the ethylation (4) (ripening) unit after the alkalization process. In this unit, a semi-finished product is produced as a result of an exothermic reaction. During the ripening process, the temperature rises from 500C to 1100C. At the end of the maturation process, the product of technical KMTs (fiber pulp of textile enterprises), with a moisture content of 35-40% is transferred to the extraction section - the extraction section (capacity) (6) in the process of obtaining innovative products of the brand E-466 with high purity. Here a step-by-step extraction process is carried out at different concentrations of ethyl alcohol.



Pic.-1: 1-cellulose, 2-sodium monochlorine acetate, 3-"MONOAPPARATE", 4-ethyl capacity, 5-double auger, 6-extraction section-tanks, 7-extraction reagent, 8-extraction reagent (ethyl alcohol) regulator capacity, 9-extraction reagent (ethyl alcohol), 10-centrifuge, 11-semi-finished product spinner, 12-drying canon, 13-special mill-grinder, 14-finished product, 15-extraction glycolate sludge spinner.

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As a result of sending the required concentrations of ethyl alcohol from the utilization process (tanks 7-8-9) to the tank, the process of purification from various by-products, organic briquettes, in a word, glycolates is carried out. The purified E-466 product is squeezed using special centrifuges (10) and the crusher is crushed using a hopper (11) and transferred to a drying colony (12). The glucalate-containing sediment of ethyl alcohol separated from the centrifuges is sent to the disposal units and the sediments in the sediment and in the filtration filters are sent to a special separator (15).

The drying process is carried out in a structure consisting of a conveyor belt, conveyor device in the temperature range from 700S to 900S. The dried finished innovative product E-466 is passed through special mills (13) in the required grinding process and packed in packaging compartments (14).

Below are technical Na-KMTs from fibrous waste of ginneries and cellulose obtained on the basis of pavloniya tree and banana stalks, as well as pharmaceuticals from it and a different parameter to some quality indicators of the high-purity E-466 for medical fields and tables showing the effect of factors can be seen, i.e.;

Some physicochemical parameters of Na-KMTs samples obtained on the basis of existing technology in production, as well as by the method of "INNO-CELL-MONO".

TABLE-1

Samples of Na-KMTs	Indicators of Na-KMTs						
	The amount of moisture, %	Degree of substitution with carboxyl groups.	Amount of base substance,%	Dynamic viscosity of 2% aqueous solution, mPas.	Water solubility, %	pH	PD
PTKTCh (fiber pulp of textile enterprises) cellulose-based Na-KMTs							
1*	11	81	45	109,3	97,2	12	420
2+	7	85	50	140,4	98,7	9	600
Na-KMTs based on Pavlonia tree cellulose							
1*	10	82	50	98,6	97,8	12	360
2+	8	85	55	124,2	98,8	9	550
Na-KMTs based on cellulose of banana stalk							
1*	11	82	52	120,2	97,9	12	500
2+	9	85	55	168,2	98,8	8	650

1*- Physicochemical parameters of KMTs obtained on the basis of existing technology in production.

2+- Physicochemical parameters of KMTs obtained by the method “INNO-CELL-MONO”.

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It can be seen from the table that there is a significant difference between the physical and chemical parameters of the samples of KMTs obtained on the basis of existing technology in production, as well as by the method of "INNO-CELL-MONO". Because the difference between the proposed technology and analogues of other types is the intensification of the design of "Monoapparat" in the process of formation of alkaline cellulose that is, a sharp reduction of various chemical and mechanical destructive processes and the resulting product at the expense of increasing from 120 to 240 revolutions / min. and can be explained by a sharp decrease in the destruction of elemental rings in the alkaline cellulose macromolecule.

The effect of the extraction time of Na-KMTs on the amount of the main substance obtained on the basis of fibrous wastes of ginneries and cellulose of pavlovnia tree and banana stalks.

TABLE-2

№	$CH_3 - CH_2 - OH$ Ethyl alcohol, C°	Na-KMTs obtained on the basis of cotton TKTCh cellulose.		Na-KMTs obtained on the basis of Pavlonia tree cellulose.		Na-KMTs obtained on the basis of banana stem cellulose	
		The amount of the original basic substance, 50%		The amount of the original basic substance, 55%		The amount of the original basic substance, 55%	
		Extraction time, minutes	The amount of the main substance , %	Extraction time, minutes	The amount of the main substance , %	Extraction time, min.	The amount of the main ingredient., %
1	**55**	10	56	10	77	10	78
2	**55**	20	66	20	86	20	89
3	**55**	30	75	30	97	**30**	**98**
4	**55**	40	86	**40**	**98**	40	98
5	**55**	50	89	50	98	50	99
6	**55**	**60**	**96**	60	99	60	99
7	**55**	70	98	70	98	70	98

The table shows the effect of the extraction time E-466 on the amount of base substance of the innovative product, which increases the extraction time that is, between 10 and 70 minutes of time, the various elements in the technical KMTs (carboxymethylcellulose) - glycolate content by extraction in 550 solution of ethyl alcohol - were obtained with different optimal parameters for each object. In particular, the extraction time for the innovative product E-466 based on PTKTCh (fiber pulp of textile enterprises) cellulose was determined as 60 minutes, the extraction time based on the pulp of peacock tree was 40 minutes, and the extraction time for the innovative product based on banana pulp E-466 was determined as 30

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minutes. The fact that the extraction time of PTKTCh (fiber pulp of textile enterprises)-based products is higher than that of products based on pavloniya and banana celluloses is due to the fact that the cotton fiber is loose and cluttered. This is because during the extraction period, such fibers contain a different element located in the tangled parts – the process of removing glycolates from the fiber is difficult. Thus, the extraction process of an innovative product based on cellulose of pavloniya tree and banana plant can be observed that the fibers in them quickly get rid of glycosides in a short period of time without any confusion.

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