

қыздыруға жұмсалатын энергия шығынын азайтуға мүмкіндік береді. БТШ мен оның фракциясын өңдеуге негізделген ұсынылып отырған технология, қолданыстағы технологиямен салыстырғанда, экономикалық және технологиялық сипаттағы бірқатар шығындарды қысқартуға мүмкіндік береді.

#### Әдебиеттер

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### **MATHEMATICAL PLANNING OF THE PROCESS OF EXTRACTION SUMMA IRIDOIDS FROM *CISTANCHESALSA***

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The extraction of natural compounds depends on many factors, each of which to a greater or lesser extent influences to the yield of the product. Extraction from over of *Cistanchesalsa* we have applied by the mathematical planning of experiment method of to an estimation of a degree of their influence on process on Box-Wilson. On the basis of the aprioristic information (in this case results of one-factorial experiments) and reference's data have chosen factors, to the greatest degree, influencing on process extraction:

- $X_1$  – concentration of the extract, %;
- $X_2$  – temperature of the extraction, °C;
- $X_3$  – degree of crushing of raw material, mm;
- $X_4$  – h / d extractor;
- $X_5$  – duration of extraction, hour.

As parameter of optimization the yield of the sum of iridoids served. After carrying out of experiment of type  $2^{5-2}$  with generating parities  $X_4 = -X_1X_2$  and  $X_5 = X_1X_2X_3$  have received the mathematical model of process representing the equation of regress of the first order:

$$Y = 31,33X_0 + 3,61 X_1 + 2,52X_2 + 2,57X_3 + 0,1X_4 - 2,51X_5$$

From factors of regress of the equation after calculation of a confidential interval ( $\Delta_{bi} = 1,55$ ) have established, that to the major factors influencing process, the concentration of the extract, duration of extraction and degree of crushing of raw material concern. The statistical analysis ( $F_{exp} = 3,7 < F_{tab} = 4,1$ ) has shown, that the mathematical model is adequate. Under the quantitative contribution factors settle down in the following order:  $X_2 > X_4 > X_1 > X_3 > X_5$ . The yield at the first contact of phases has made 60,5 % that is quite comprehensible. Thus, the output of the sum of iridoids has increased for 3,8 % from the maintenance of raw material.

## **DETERMINATION OF THE ADSORPTION CHARACTERISTICS OF DOLOMITE IN THE OIL–SURFACTANT–WATER SYSTEM**

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Pollution of reservoirs with oil and associated oil industry waste is an acute environmental problem in many regions of Kazakhstan. Petroleum products are one of the most common anthropogenic pollutants of surface reservoirs. The extraction, processing and transportation of oil are accompanied by the fact that a certain amount of oil waste and petroleum products enters the water. They pollute the environment as a result of artificial accidents, the discharge of untreated oily water [1].

Conventional flooding often leads to unsuccessful oil production since most of the injected water tends to be directed to more permeable zones [2].

As a result of the analysis of scientific and technical literature, it was found that along with the use of organic, inorganic and synthetic sorption materials of various compositions for the elimination of oil residues, surfactants have also been widely used [3-4].

The process of adsorption wastewater treatment using a dolomite sorbent and a surfactant of diisobutyl dithiophosphate composition is considered.

To study the sorption properties of dolomite in the treatment of wastewater contaminated with oil, model solutions were prepared in the composition of gasoline: oil: water in the ratio of components (1:2:50) with a total volume of 5 litres, followed by separation into ten fractions. The method of sample analysis is based on the following stages: 1) preparation of the mixture, 2) mixing with a magnetic stirrer; 3) pretreatment by double filtration; 4) cleaning with a dolomite sorbent calculated at 1 gram per 50 ml; 5) thermal decomposition of the aqueous extract, through a reverse Dimroth refrigerator, in order to determine chemical oxygen consumption (COD) by the method [5]. Based on the COD results obtained, the adsorption capacity of the dolomite sorbent was calculated taking