

BASIC PROCESSES IN THE PRODUCTION OF VEGETABLE OILS

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In recent decades, especially in recent years, development has received widespread theory of the processes of chemical and food technology. Perhaps this can be explained by the fact that this discipline combines the possibility of broad scientific generalizations to the proximity to engineering practice.

Keywords: extracting, by mass, experiment, factor, diffusion.

Introduction. The study of processes of production of vegetable oils need for cognition processes and the physical nature of their conduct scientifically proven in production; creating innovative ways implementation processes; development of methods for engineering calculations machines and apparatus; complex automation processes using control computers or other means.

Problem. In the article the solution of the problem on the application of mathematics, namely, analytical and probabilistic methods. This approach to the problem, sootvetsvuyuschiiy current level of research will lead to the most broad generalizations and thus weaken the influence of empiricism that in studying the processes of production of vegetable oils is great.

Analysis of recent researches and publications. In the production of vegetable oils, as in any complex food production technology, there are a variety of phenomena, different physical nature and mechanism of occurrence. The phenomena of mechanical, thermal, diffusion, chemical and other in a complex interplay of simultaneous or sequential emergence and attenuation of the core processes of production of vegetable oils. Knowledge of the patterns and processes of identification impossible without classification of phenomena that underlie them, and a clear definition of events.

Purpose of research: prove the feasibility of using analytical sciences in the production of vegetable oils.

The main material: The basis of the division into classes is the type of difference in the mechanism of phenomena. The mechanism of the phenomena is understood here in the great plan for its main feature. Allocation of certain phenomena in separate classes is somewhat arbitrary. For example, konvektyvnaya diffusion in a separate class of phenomena per se can not be allocated because inside the small volumes of solution carried by convection, and the changing surfaces of contact always occurs and molecular diffusion. On the other hand, pure molecular diffusion in the liquid and gas solutions also almost never happens, because of the different kinds of disturbances (shocks, temperature changes, and so on. P.) arises and convection. Strictly speaking, liquids and gases there is only a mixed diffusion, and therefore to the class

konvektyvnoy diffusion must be taken only diffusion phenomena in which molecular transfer can be neglected and, conversely, to the class of molecular diffusion - the phenomenon of diffusion, which is negligible convection. Typically, molecular diffusion occurs only in solids.

In general, it can be argued that the processes of production of vegetable oils - a collection of different types of events and classes or, in other words, types and classes of events are separate, interconnected side of the process.

Expressed ideas about the process as a combination of events allows to look at the processes of production of vegetable oils as a combination of "simplest" processes. Each course of study in its advisable to allocate main types or even classes of phenomena. For example, in the process of extracting the main type of phenomenon is diffusion (mass transfer). It becomes clear attribution to the extraction process of diffusion processes.

Flow charts processing oilseeds are divided into two groups according to the nature of the final technological operation in the main part of these schemes - completed by pressing (1) and end extraction (2) Each of these groups is divided into subgroups (1a, 1b, 2a, 2b) in the absence (1a, 2a) or the presence of oil extraction prior to pressing (1b) and after extraction (2b). Some subgroups (1b, 2b), in turn, are divided into smaller units by the number of lifts oil used earlier - with single and double previous recovery respectively.

The process of extracting soluble substances from solids are among the most common food technology. Among 20-25 basic processes of food production and distribution in its value in the food technology extraction immediately following the processes of heating, drying, evaporation and getting cold. It is the main process in masloekstraktsiynomu production.

In the process of extraction of solid bodies or kvazytverdoy, like most materials of plant origin, using liquid solvent extracted components that are used primarily for the production of the final product or are secondary, but provide full cycle - zero waste production.

Raw food, podverhayuscheesya extraction, a huge variety of different shapes, sizes, mechanical, thermal, physical and chemical properties, which are also much change during extraction. Therefore, attempts to use devices that have proven themselves to one type of production to another, without sufficient scientific studies do not lead to the desired results.

We use two methods of extraction, and consistent insistence degreasing.

1. The method of infusion. Fresh material is filled with pure solvent. After a while of oil goes in a solvent to form a solution (extract) which then merges. Low Fat material is poured over the pure solvent and so is repeated until, until almost all the oil extracted.
2. The method of successive degreasing. Net solvent continuously fed to maximize fat material and concentrated extract - to svezhezahruzhennoe materials. Using this method makes it possible to get a more concentrated extract and reduce the extraction.

Research results: By heat treatment sludge from it are carbon adsorbents.

An analysis of the various uses of coffee sludge can be concluded that the choice is dictated by utilization of its chemical composition. Composition of coffee sludge was studied in the Odessa State Academy of Food Technologies under the leadership of MS Dudkina, MA Grishina, AA Kochetovoy.

Under the leadership of MS Dudkina studied carbohydrate composition coffee sludge. Established that carbohydrate composition represented mainly lehkohidrolizuemoho polisaharidami (8.3%) and reducing sugars (0.8%). Kochetova AA and co-workers found that coffee sludge moisture content of 13% izoteina is at 13%, 15.7% fat, 6.1% fat, 4% ash. Mineral elements are mainly iron salts - 330 mg / kg and marhantsa16 mg / kg.

Composition of coffee sludge obtained from studies MA Grishina of employees is shown below (in percentage of dry matter), water-soluble extractives - (3.5-4)% redukuyuchymtsukru - (0,75-0,8)%, total nitrogen - (1,2-1,9)% fat - (9,6-10,5)% fat - (60-64)%, ash - (4-4.5)% potassium - (1,16-1,22)% phosphorus - (0,022-0,03)% Calcium - (5,1-5,2)% magnesium - 1.85% sodium - 0.11% caffeine - (0,12-0,15)%, organic acids - 24%.

The following chemical composition of coffee sludge present study P. Podobed: moisture 12.1%, 4.96% crude protein, crude fat 23%, crude fiber 49.2%, raw ERI 15.66%, ash 0.8%.

Conclusions: Analyzing these figures we can conclude relatively high content in coffee sludge extractives and particularly fat. Unsaturated vegetable fats (butter coffee) that make up the various data (6-20)% by weight of the slurry may be partially replace cocoa butter in the food industry.

The basic operation in the production of instant coffee in the domestic enterprises are extracting soluble coffee powder substances hot water. The optimal number of extracted materials for high product considered (19-20)% by weight of roasted coffee beans, and the principal amount ((70-75)%) is waste - coffee sludge. (5.10)% of the mass of raw grains account for moisture. Waste (recycled) produced instant coffee (coffee sludge) require significant costs for removal and disposal. This creates a serious problem, because coffee sludge has a high natural moisture after extraction ((70-80)%), and is composed of proteins, carbohydrates, fats and other substances in the accumulation and prolonged storage decompose and pollute the environment. In addition, raw coffee sludge is a fertile breeding ground for mold, which threaten human health.

REFERENCES

1. Guhman A.A. Application of similarity theory to the study of the processes of heat and mass transfer. Transport processes in a moving environment): CTL, 2010. - 330 C.
2. Kudinov C. A., Kartashov E. M. stefaniuk E. C. Technical thermodynamics and heat transfer. - M.: writ, 2011. - 560 C.

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Summary

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