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Automation of the Technological Process of Obtaining Essential Oils from the Mint Plant

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Abstract: Objective: The use of innovative technologies in the production of essential oils from plant raw materials is also yielding good results. Pepermint- perennial herb plant of the Lamiaceae family. Replace essential oils with synthetic products or additives that are used to meet human needs by taking essential oils in a short, clean and, of course, low cost. During these processes it is advisable to control the process flowchart in automatic control devices.

Results: The essential oils of the mint plant are composed of heat-sensitive chemical compounds,the use of steam distillation technique would inevitably inflict thermal degradation to the natural fragrance. The extract compositions were compared using gas chromatography analysis.

Conclusion: Essential oils out by different techniques and automation methods avoid shortcomings of content optional techniques friendly to environmental to avoid chemical risk and obtain yield quality of essential oils.

Keywords: Energycosts, colon, container, thermal nergy, pressure, surface, outlay, stream, refrigerator, oil, essential oil, reliable operation, system, indicator, heat switch, automatic system.

Introduction

Today, innovative technologies in the world play an important role in increasing the competitiveness and sustainable development of the national economy. It is advisable to use modern innovative technologies to improve the quality of food products. Innovative technologies are also used to extract essential oils from plant raw materials. Pepermint- perennial herb plant of the Lamiaceaefamily. It has varieties of peppers and lemons. The stem is upright, 25-100 cm high, the leaves are opposite. The leaves contain 2. 5-3% of the leaves, 4-6% of the flowers, 0. 3% of the stems. Also flavonoids, vitamins, supplements and organic, inorganic substances. Peppermint oil from the leaves and stems is used in medicine, the food industry and the perfume. Peppermint can improve heart activity, prevent frequent beats, normalize blood circulation, cause colds, fever, stomach aches, convulsions, congestion, severe headaches, nausea and seasickness. plays an important role in the treatment of the disease. Peppermint essential oils, especially camphor and menthol oil, are good antiseptic to protect the organs from colds, scratches or spasms. Mint is widely used in the culinary, confectionery and liquor industries. Mint oil is added to confectionery and acute alcohol. Its fresh greens are served in salads and sour soup with sourdough, meat dishes. It is possible to make a refreshing drink of dried mint leaves or add it to tea. Peppermint also helps lose weight, that is, smelling freshly minted leaves

every two hours will help you get 23% less calories from your meal. If not fresh mint, it is enough to smell the peppermint oil.

Methods

Replace essential oils with synthetic products or additives that are used to meet human needs by taking essential oils in a short, clean and, of course, low cost. In the production of peppermint essential oils, traditional methods such as hydrodynamic distillation, steam distillation, solvent extraction, soaking and flowering oil using odorless vegetable oils are used. The disadvantage of traditional methods is that when essential oils undergo cynic changes (hydrolysis, isomerization, oxidation) and their temperature changes due to high temperatures. When extracting essential oils, it is important to preserve the cynic content. Because, environmentally friendly, sustainable and high efficiency have become the main conditions of production in the modern industry. New methods of extraction introduce a dramatic reduction in extraction time, energy consumption, waste, and the percentage of harmful substances in consumer products. Traditional methods of obtaining essential oils are widely used commercially. However, thanks to technological advances, new techniques have emerged. Microwavehydrodistilization, microwave extraction without solvents, microwave diffusion and collection. If you get mint essential oils through microwave hydrodistilation, it will be easy, cheap and economical. Microwavehydrodistillation is the process of hydrodynamic extraction using a microwave oven. It has been recognized that the use of the microwave oven in obtaining active plant components has been a successful study. The efficiency of microwave hydro distillation depends on the sample and the dielectricity of the water. The principle of microwave heating is based on its direct effect. That is, they are driven by polar materials or solvents and two phenomena that often occur simultaneously: ion conductivity and dipole rotation. The use of microwave hydrodynamics has shown that extraction process can reduce time, solubility and CO_2emissions. Microwave hydrodynamics requires only a fraction of the energy used by traditional extraction methods.

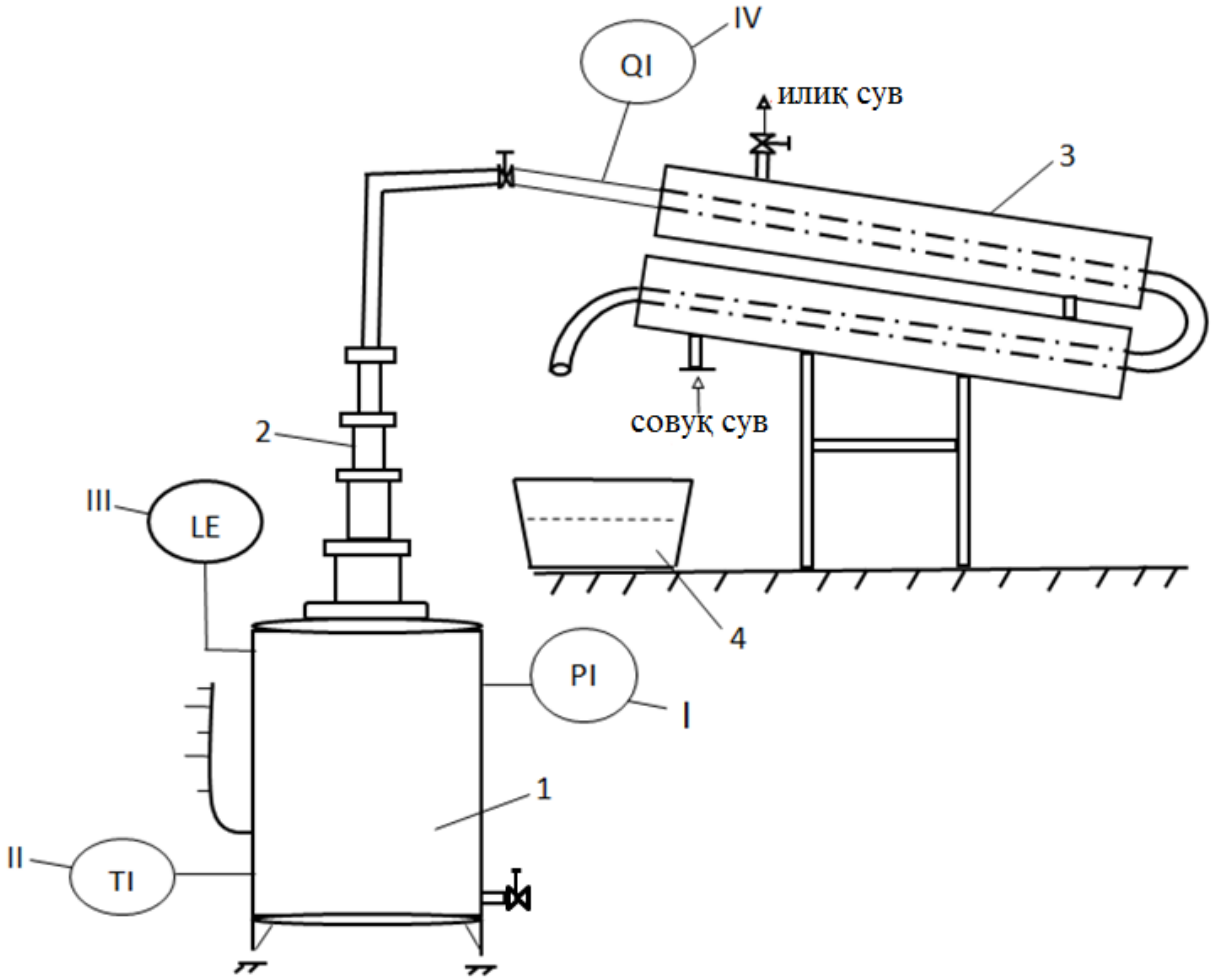
Results:

It is usually advisable to carry out the complete separation of the solutions only in the rectified method in nozzle or plate columns. In the column, the vapor and the solution move in opposite directions and partially evaporate due to heat. Due to the repeated collisions of vapor and solution, the distillate is completely volatile, and the rest of the cube is composed of a difficult volatile component. Extraction of essential oils in a short time, in pure form and, of course, at low cost, more hydrodistillation, steam distillation, extraction with solvents, soaking and extracting oil from flowers using odorless vegetable oils. quality changes due to temperature. When extracting essential oils, it is advisable to control the process of preserving the chemical composition with automatic control devices during the technological process. The main results of the main research work are achieved by controlling the process with automatic control devices in the main parameters of the material and material balances of the process.

Discussions

The scheme of automation of the technological process of extraction of essential oils from the mint plant is provided by the raw material for boiling the container part of the container. turns into oil during the passage of the column. It is possible to get the oil formed by the jug. The process is controlled by an additional pipe connected to the column and the capacity vessel. Modernization of existing enterprises of industry, food and other sectors and the creation of new ones involves a large amount of work to address various issues of automation of production processes. The production of automation systems and their introduction directly into production processes is a multi-step process. Its research, design and installation work is also to ensure the reliable operation of automation systems during operation. The problems to be solved in the automation of modern production processes are the knowledge of specialists on the principles of construction and operation of different types of automation systems, methods of making different types and classes of automated systems, as well as a common technical language with clear and valuable exchange of work. also requires possession. At the same time, all specialists should have a common understanding in the field of

instrumentation of the automation system, the implementation of the given laws of adjustment, methods of installation of instruments and automation tools, transmission of pulse and command lines. The proposed experimental device automation scheme consists of basic adjustable parameters. Adjusting the column temperature control is adjusted by changing the level of the drive device, the output current consumption using automatic control devices. Adjusting the level is provided by changing the current consumption at the entrance to the apparatusIn the scheme, the ambient temperature is automatically adjusted by changing the consumption of the heating agent, and the technological process is carried out by means of automatic control devices. Automation of the technological process of extracting essential oils from the peppermint plant The role of automatic devices in the separation of components of liquid mixtures in the technological process as a result of repeated partial evaporation and condensation of vapors will be of great importance.



Automated technological structure

1-Capacity container 2-Column 3-Refrigerator (tube-tube) 4-Essential oil

I-PI Pressure II-TI Container temperature III-LE Surface IV-QI Column temperature

Conclusion:

Essential oils are natural products which consist of many volatile molecules. They have been used for several applications in pharmaceutical, cosmetic, agricultural and bioactivity example flowers. Extraction essential oils could be carried out by various techniques. Have innovative methods avoid shortcomings of content optional techniques to reduced chemical risk,extraction time and high energy input and obtain yield quality of essential oils. Despite their numerous application,except if essential oils are very sensitive to environmental factors used as such.

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