

31. Extraction in the food industry

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Introduction. Extract is a concentrated extract from medicinal plant raw materials or animal raw materials, which is mobile viscous liquid or dry mass. In medicine, the term "extract" means a dosage form prepared by extraction. In the food industry, extracts provide an opportunity to provide the desired smell to products without spending a lot of resources on it.

Materials and methods Extraction can be liquid – the process of transition of one or several dissolved substances from one liquid phase to another, practically insoluble or slightly soluble in 1 phase, but which dissolves these substances. The process takes place when two liquids are in direct contact phases. Extraction from solid substances with a liquid (solvent) is called extraction. If water is used as a solvent, then this is called extraction leaching. Usually, extraction is combined with rectification to regenerate the extracting liquid. It can also be regenerated by evaporation. The density of the solvent and the mixture of substances to be separated must be different. An extract is a solution of extracted substances in an extractant, and a solution from which removed extractive components – raffinate.

Results. The following stages can be distinguished in the extraction process:

- 1) penetration of the extractant into the pores of the solid material or into the original solution;
- 2) dissolution of the target component;
- 3) transfer of the extracted substance from the depth of the solid part to the surface phase distribution (molecular diffusion);
- 4) transfer of matter from the surface of the phase distribution into the volume of the extractant (convective diffusion). A simple extraction process requires maximizing the interface between the two phases, which often requires more intensive mixing of the sample. In the modern laboratory, manual shake flasks should be replaced by smaller vessels that can be used with an orbital shaker or other automation systems. It is also necessary to optimize the intensity of mixing of the sample, for the maximum extraction of the analyte in the minimum time. The extraction time should also be optimized. It will depend on the mixing mode, the affinity (distribution coefficient) of the extraction solution for the analyzed substance, and the ratio of the sample to the extraction solvent.

Conclusions. So we can see that the extraction of substances achieves the following goals: selective extraction of substances from the original solution and separation of substances contained in the original solution and obtaining them in their pure form.

References

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