

MODERN ASPECTS OF EXTRACTION ESSENTIAL OILS FROM PLANTS MATERIAL

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Traditional technology of extraction essential oils from plant material are based on pressing, extraction with organic solvents, or steam stripping. The quality of the final product is influenced by many undesirable processes - the impact of vapor, oxygen, high temperature, difficulty distillation of residual solvents. It leads to appreciable loss of volatile aromatic substances, upsetting the natural balance of the components in the composition of essential oils in an undesirable decrease in their quality.

A more effective extraction is carbon dioxide extraction. In fact it is variant liquid extraction (similar to the water-alcohol, etc.), but with a more elegant solvent. Carbon dioxide is used in the liquid state in the subcritical region (pressure below 73.8 atm). Subcritical CO₂-extraction, well-known in our country, was developed in the form of a supercritical extraction.

Exactly supercritical (73.8 atm pressure over almost any temperature range) parameters sharply change the selectivity of carbon dioxide as a solvent that allows small changes in temperature and pressure to regulate the extraction process. It provides the most complete extraction of the complex fragrances from natural raw materials of plant origin, preserve their natural balance and high concentration. In the world, according to the European database of organizations DASFAF, engaged in supercritical fluids, it is common supercritical CO₂-extraction. This process is cost-effective, more technological, and produces lot of products. Subcritical CO₂-extraction, where the process is uncontrollable, it turns CO₂-extract with the amount of substances, not reflecting the true composition. Moreover, subcritical CO₂-extraction suffers the same disadvantages as the conventional extraction process, which is active during the process of oxidation, hydration, condensation, etc. Carbon dioxide as a raw material is available, cheap, relatively safe for the environment, as it is removed from the extract by simple evaporation in the latter stages of the technological cycle. This means that the final extract does not contain any traces of solvent, and together this ensures a very good ecological production process. The incorporation of supercritical fluid technology in the practice of producing essential oils provides a range of features to significantly improve the production of process. Solutions based on the use of the special properties of supercritical fluids are modern, knowledge-based, innovative, environmentally friendly and commercially attractive.