THERMAL EFFECTS DURING PROCESSING OF THE MAIN COMPONENTS OF NATURAL BIOSYSTEMS IN THE ENVIRONMENT OF SUPERCRITICAL CARBON DIOXIDE

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On the example of pretreatment of tea leaves with supercritical carbon dioxide, a significant increase in the extraction of physiologically active substances of a natural material during their subsequent liquid extraction is shown. In the interaction of polymeric materials with sub and supercritical fluid media, as a rule, their swelling occurs, as a result of which the molecular structure, local dynamics and free volume of these polymers can and undergo very significant changes.This is of great theoretical and practical interest, since the types of molecular motion that exist in the polymer significantly depend on its mechanical, thermal, dielectric and diffusion properties.The results of the measurement of thermal effects as a function of pressure and various temperatures arising during processing of the main components of tea (caffeine, cellulose, tea leaf) with supercritical carbon dioxide are given.Comparison of the heat of dissolution in supercritical carbon dioxide of the main components of the tea leaves is shown, from which it can be seen that the values of the enthalpy of caffeine and cellulose have practically the same values.

The research was carried out at the expense of a grant from the Russian Science Foundation (project No.18-19-00478).

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