Short Reports

ECOLOGICAL OPTIMIZATION OF POLYMER FORMATION INHIBITOR PRODUCTION BIOTECHNOLOGICAL PROCESS

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Today the industry is undergoing a qualitative updating of technological through biotechnologies, energy and resource conservations, ecological and economic requirements. The global biotechnological boom has transformed biotechnology from ordinary branch into the leading factor of economic development. Biotechnology possibilities are unusually large, its methods are more advantageous than usual: they are used under optimum conditions (temperature and pressure), more productive, they are ecologically pure and they do not demand the chemical reagents poisoning the environment. It is based on proceeding in living systems physiological and biochemical processes, resulting in the energy release, metabolism products decomposition and synthesis, formation of chemical and structural cell components.

Besides, fundamental researches in the field of modern biotechnology – genetic and cell engineering – have allowed to create a scientific reserve and to give an impulse to applied working out set.

We have developed a simple and ecologically pure biotechnological method for tert-butylpyrocatehin producing. Tert-butylpyrocatehin is an effective inhibitor for polymer formation reducing at processing of pyrolysis liquid products, and it is actively used in polymer production. All known existing ways for tert-butylpyrocatehin obtaining are carried out on difficult technology in some stages.

The presented way of producing tert-butylpyrocatehin is based on tert-butylphenol application with bacterium using of *Pseudomonas* or *Bacillus* genera (tert-butylphenol is used to obtain pitches, varnishes, enamels, in the production of phenol-containing additives to oils and fuels in the petrochemical industry). Mineral medium consisting of $NaNO_3$, $KHPO_4$, $NH_4(SO_4)_2$, $CaHPO_4$, distilled water was used for microorganism cultivation. The medium was sterilized at 110^0C for 30 min. As a source of carbon and energy microorganisms was used tert-butylphenol, transforming it into tert-butylpyrocatehin.

The method with application of *Bacillus* genera allows achieving the highest results (94– 96%) in 20 hours at temperature 30 °C, tert-butylphenol is almost completely oxidized in tert-butylpyrocatehin in compared with *Pseudomonas*.