Accelerated Controlled Deactivation Of Water Solutions Of Long-Lived Reactor Radionuclides By Growing Microbiological Cultures

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The problem of decontamination of reactor isotopes is the main problem of environmental radioecology. In the report the results of accelerated deactivation of water solutions of radioactive isotopes during grows of microbe syntrophin associations [**1-3**] are presented. The process of deactivation was connected with accelerated transmutation of radionuclides to different stable isotopes during growth and metabolism of microbiological *MCT* compound. The base of *MCT* is microbe syntrophin associations of thousands different microorganism kinds that are in the state of complete symbiosis. The physical mechanism of isotopes nuclear transmutation in growing biological system is connected with quantum-mechanical stimulated action of natural dynamical micro-holes in structure of growing microcultures on short-term suppression of Coulomb barrier action [4-5].
In initial experiments we have observed the reaction $Ba^{140} + C^{12} = Sm^{152}$ of accelerated deactivation of Ba^{140} and La^{140} radioisotopes in reactor water during growth of *MCT* (see Fig.1).

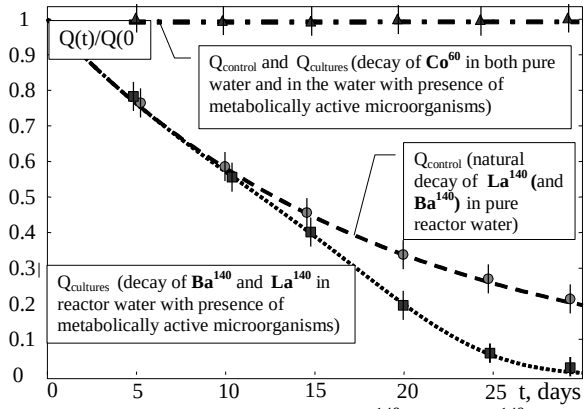

Fig.1. Change of activity of Ba^{140} and La^{140} isotopes in reactor water during growth of MCT.

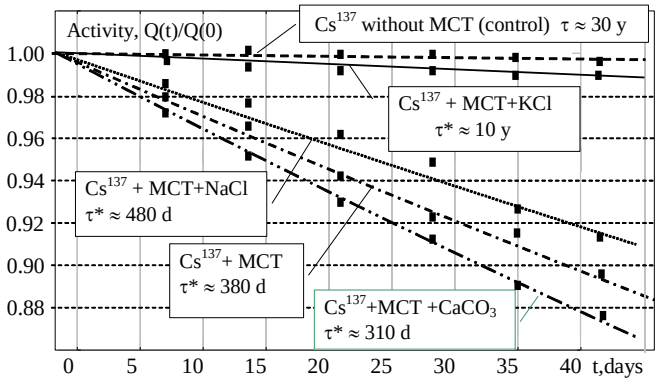

Fig.2. Accelerated deactivation of water solution of Cs^{137} isotope in "biological cells".

Additional experiments has been carried out on the basis of water solution of Cs^{137} isotope with presence of different salts. In control experiment (flask with active water but without *MCT*) the law of Cs^{137} isotope decay was "usual" and life-time of Cs^{137} isotope was $\tau \approx 30$ years. We have observed speeded up decay of Cs^{137} isotope by accelerated transmutation $Cs^{137} + p = Ba^{138}$ in all experiments with MCT (see Fig.2.). The most speeded up decay of Cs^{137} isotope (accelerated by 35 times!) was observed at the presence of Ca salt! This method can be used for clearing of reactor water.

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