BACTERIAL CHITINASE

Description
Pest protection is a necessary condition for effective cultivation and preservation of crops. Methods using chemicals are currently prevailing but they are a serious thread to the environment and secure food production.
Cell walls of most pathogenic microorganisms contain a considerable amount of chitin, a polysaccharide providing resistance of the microorganisms to external impacts. Using chitinases, enzymes catalyzing decomposition of chitin molecules, is promising for this purpose. Bacteria *Serratia marcescens* are the most efficient in producing chitinases.
A stable mutant strain *S. marcescens* M-1 producing chitinase with activity of up to 1.8 U/ml medium was obtained at the Institute of Cytology and Genetics.
New economical conditions for cultivating this strain are adjusted to maximal accumulation of the enzyme in the culture broth. Chitinase preparation is separated and described.
Fungi-static activity of the enzyme preparation is tested. It is shown that chitinase slows down germination of the spores of *Fusarium solani*, a pathogen causing cotton diseases, by 50-60% in three days of growth.

Effect of *Serria mercesceus* chitinase on the germination of fungus *Fusarium* in three days of growth: (1) control without chitinase and (2) treated chitinase

Technical appraisal and economic benefits
Major advantages of bacterial chitinase based on mutant strain *S. marcescens* M-1:
- the preparation of chitinase both proper and combined with fungicide preparations is prospective and ecologically safe for biological control of phytopathogenic fungi;
- approximate price of the suggested preparation is considerably lower than that of analogs produced by other firms.
Application areas
Agriculture, fish industry

Development stage
Prototype

Patent situation
RF patent

Commercial offers
Joint development of prototype

Estimated cost
To be negotiated

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