

THE IMMOBILIZATION OF ALKANE-TROPHIC MICROORGANISMS ON ORGANIC CARRIERS FOR REMEDIATION OF THE OILY GROUND

Khismatullina D.D., Barakhnina V.B.
Ufa State Petroleum Technological University
Ufa, Russia

Nowadays, during the remediation of the oily ground the selection of utilizable inexpensive natural carriers for alkane-trophic microorganisms on basis of the waste is very perspective. It provides the semi-functionality of the biological preparation-oily destructors, that has not only the ability to decompose petroleum pollution, but also to raise the biological ground activity, to provide positive balance humus, to active the microflora of the ground, to influence on rhizosphere of the plants favorably, to provide the adaptation of oily oxidizing microflora and to reduce the stress for microorganisms in a polluted environment.

The main purpose of the work was the substantiation of the ways of wastes' use of the fat-and-oil industry – sunflowers' seedcoats and its modification – as carriers for monocultures *Rhodococcus erythropolis* AC-1339 D and *Fusarium* sp. №56 and their associations during remediation of the oily ground.

There was carried out the modification of sunflower pod for increasing the adhesion properties, preliminary including the extraction of wax-like lipids from it by the light petroleum degreasing. After the solvent removal from the pod, exposed it by concentrated hydrochloric acid (within several hours), washed out by distilled water up to pH=7, then processed by 33% solution of alkali NaOH and again washed by distilled water before neutral reaction, finished the process by drying under 130°C up to humidity 12-14 %. The generated modified carrier was used in the further researches. For just listed carriers was checked the absorption degree of microorganisms – oily destructors by the known procedure.

As a result of researches is revealed, that the application of modified sunflower pod with immobilized association of microorganisms *Rhodococcus erythropolis* AC-1339 D and *Fusarium* sp. №56 in the ratio 1:1 gives the significant increase of a biological degradation degree of petroleum (up to 10-20 %). The large specific surface of the carrier provides not complicated diffusion of substratum to cells of microorganisms- oily destructors and removal metabolite from particles. After the ground cleaning from petroleum the sunflower pod is like a siderate, improves the structural properties of ground, intensifies its moisture and air capacity and of course interchange of energy.

The work was submitted to international scientific conference «Priorities for the development of science, technology and engineering», Greece, March 23-30, 2007, came to the editorial office on 12.03.2008.

BRONCHIAL ASTHMA - LOCAL IMMUNITY AND METHOD OF TREATMENT

Parakhonsky A.P.
Kuban medical university
Medical institute of the supreme sisterly education
Krasnodar, Russia

The purpose of our research was to study local immunity in patients with infection-allergic and atopic bronchial asthma (BA) and efficiency of a new treatment method. 30 BA patients were examined clinically and immunological. Also levels of antibodies to surface bacterial antigens and contents of IgA, IgG, IgM, IgD, IgE, sIgA in bronchial secret and saliva were investigated. Along with low IgA content and absence of IgM and IgD compensatory function, hyperproduction of antibodies to gram-negative bacteria is registered. This form of BA is also characterized by significant decrease in sIgA content and increase in IgE level. BA patients were treated by a complex of immunomodulators and local antihistaminic drugs. This method proved to be more efficient as compared to the basic therapy alone. Immunomodulators and antihistaminic drugs promote better and longer remission of BA patients.

BA patients suffering from respiratory airway inflammatory processes for a long time have serious morphofunctional disturbances in their bronchial mucous membrane. By immunohistochemical methods a marked rise of Type 3 collagen content in the mucous membrane basal layer was revealed; Type 4 and 5 collagen activity round the vessels as well as its content in basal membrane and in spaces between the epithelial cells increases. Against the background of the lipid peroxide oxidation rise the activity of ciliated epithelium reduce. Due to the complex anti-inflammatory therapy of BA patients (laser therapy, anti-inflammatory corticosteroids and cytokins) we succeeded to reduce bronchial airway obstruction by 30%; to abolish asphyxia attacks; to restore mucous membrane epithelium, ciliated epithelium activity.

Some revealed defects of humoral (decrease in IgA level) and cell immunity (decrease in the general amount of the T-lymphocytes and T-suppressors) in children with BA, together with hyperproduction of IgE and immune complexes made us search for new methods of directed therapeutic action on various sections of immunity. Immunol was used in 25 children suffering from BA at the age from 3 to 5 years. Immune status normalization was registered in 16 patients (64%). In the rest 36% the total number of lymphocytes increased significantly. In all patients IgE content and immune complexes level decreased. No increase in their contents was registered after 7 months observation.

Allergen-specific therapy is of pathogenic value in the treatment of BA in children. One year after the treatment, pronounced immunological effect was registered in 60 children (71.4%), while after two