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, exposured 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 130ºC 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.

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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, slgA 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 slgA 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. Immunal 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

years it increased up to 86% children. Specific immunotherapy resulted in normalization of T-lymphocyte functional activity, IgA, IgG and slgA serum levels in nasal secret. Prolonged therapeutic effect was registered in all clinical immunological data after the specific immunotherapy course.

We studied the functional state of central nervous and immune systems in patients with BA and effect of acupuncture on it. Positive result of acupuncture was obtained in 88.6% patients.

Along with objective clinical effect, i. e. ceasing of asphyxia attacks, patients' quality of life became much better: they gained optimism, eagerness to work, decrease of irritation and tearfulness, improvement of appetite and sleep. Immunological parameters also improved. Our results demonstrate high clinical and immunologic effect of acupuncture in BA patients with initial changes in central nervous system.

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IMMUNOTHERAPY AND MAST CELL ACTIVATION

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

In the early phase of allergic reaction mast cells are the main cellular effectors of acute inflammation releasing preformed and newformed mediators. The release of mediators is therefore a marker of mast cell activation and could be used to evaluate early allergic reaction. From the preformed mediators histamine and tryptase can be currently assayed in biological fluids. Histamine can be originated in mast cells, basophils and probably from a pool of other cells or extra cellular spaces in respiratory mucosa. Tryptase is only released by mast cells, has a good stability in fluids and reliable assays are nowadays available. Tryptase is spontaneously released from mast cells in respiratory mucosal after allergen inhalation and its concentration in fluids for instance during pollen season corresponds to the intensity of allergic disease. Nasal challenge with allergen tries to reproduce natural exposure conditions and allows to evaluate on controlled conditions the kinetics and evolution of nasal allergy.

The study of tryptase release after nasal challenge with allergens is therefore a good and reliable method to evaluate mast cell response to allergens. In the last few years we have first tried to standardize the method for tryptase assay in nasal lavage fluid after nasal challenge and in a second phase applied this method to the evaluation of mast cells reactivity to allergen before and after specific immunotherapy in pollinosis.

Nasal provocation tests have been done before pollen season with increasing dosages of 10, 100, 1000 PNU._Tryptase assays in nasal washing have been done at 10, 20 and 30 min after provocation by CAP or RIA methods. Tryptases assays have been done before starting immunotherapy and after 2 years of immunotherapy. Nasal fluid has been always collected in absence of therapy with anti-histamine drugs in the last week, inhaled or systemic steroids DGCS or topical anti-histamines in the last 3 days.

The data obtained suggest that tryptase assays in nasal washing could be a useful addition in diagnostics of pollen allergy. A clear cut increase on tryptase concentration in nasal lavage fluid has been observed after nasal provocation. The results obtained suggest that a higher concentration of pollen extract (1000 PNU) is more reliable for the evaluation and that the more significant results are observed 10 and min after nasal challenge specific immunotherapy clear cut blocks the tryptase release provoked by nasal challenge decreasing the amount of tryptase released by mast cell after each one of the different concentrations employed but also slowing the release process as shown by the latter peak (20 min) observed after immunotherapy. These data point to an effect of systemic specific immunotherapy on nasal mast cell reactivity probably due either to a decrease of fixed IgE through high affinity receptors or to a blockade on mast cell releasability as suggested by the late peak (20 min.) of tryptase release.

Tryptase assays in nasal washing after provocation tests are a reliable, safe and useful additional method in diagnostics of pollen allergy and furthermore in the control of efficacy of specific immunotherapy. Mast cell reactivity in rhinitis can be studied by the assay of tryptase in nasal fluid after nasal challenge. An increase in tryptase in nasal washing is a marker of allergy to the extract employed. Specific systemic immunotherapy significantly decreases mast cell reactivity after nasal challenge with the same allergen as show by the decrease in tryptase release.

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IMMUNOLOGICAL MONITORING OF PATIENTS WITH CHRONIC DISEASES IN THE COURSE OF IMMUNOREHABILITATION

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

Comprehensive phenotypical characterists of immunocompetent peripheral blood cells (CD3, CD4, CD8, CD19, CD25, CD45RO, CD95 and HLA-DR) is presented. Proinflammatory cytokines (IL-lβ, IL-6 and