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#### CHANGES OF ENZYMATIC ACTIVITY OF I AND II TYPE 11 $\beta$ HYDROXYSTEROID DEHYDROGENASE IN PLACENTAS OF GRAVIDAE WITH ACUTE HERPETIC INFECTION

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The hormonal profile change is registered at various infectious processes during gestation (Bazina M.I., 1999; Lutsenko M.T. and others, 2000). Practically always it is attended by cortisol concentration disturbance. The purpose of our work was the given hormone content analysis and its metabolism enzymatic activity estimation in the uterine cake in the course of gestation complicated with a herpetic infection attack.

52 mature placentas taken during the birth process from practically healthy mothers (24 cases) and women undergone laboratory detected herpetic infection attack (28 cases) served as the test material for the study. Depending on the gestation course the material was divided into two groups: control and basic ones. The cortisol study in placental homogenate was carried out by the method of enzyme multiplied immunoassay using the sets of the "Alcor Bio" CJSC (St.-Petersburg) in the spectrophotometer "STAT-Fax 2100" (USA). The detection of 11 $\beta$  hydroxysteroid dehydrogenase (11 $\beta$ -HSD I, 11 $\beta$ -HSD II) was carried out by the method of Lloyd (Lloyd Z. and others, 1982) in modification of the laboratory of etiopatho-

genesis and respiratory system recovery processes (Dovzhikova I.V., 2007).

When studying the influence of the herpetic infection attack, the cortisol content increase was registered not only in the peripheral blood of the pregnant (Lutsenko M.T., Dovzhikova I.V., Andriyevskaya I.A. and others, 2003), but in the placental homogenate as well. At the growth record of G antibody titer against herpes simplex virus (1: 12800) the material analysis illustrated the hormone amount growth 1,6 times (639,2 $\pm$  2,70 nmol/l – at the herpetic infection attack; 395,3 $\pm$ 1,51 nmol/l –in the control group).

To find out a possible cause of the hormone increased concentration the key insights of its metabolism were analyses. The activity study of the enzyme being responsible for the cortisol transformation into inactive cortisone and so protecting from glucocorticoid (11 $\beta$ -HSD II) abundance was carried out. In the control group the enzyme was detected histochemically in the placental plasmodium and villi, cytophotometrically its concentration in the control made 126,70 $\pm$ 2,79 standard units. In the uterine cakes of the mothers with the pregnancy complicated with herpes attack the given 11 $\beta$  hydroxysteroid dehydrogenase isoform activity decrease (36,72 $\pm$ 1,59 standard units) was registered. Undoubtedly, it affected the concentration of glucocorticoids, as the lack of II type 11 $\beta$  hydroxysteroid dehydrogenase will affect their hyperproduction.

We analyzed the activity of the enzyme being responsible for another direction of glucocorticoids' transformation: 11-keto-form into 11-hydroxylic form - I type 11 $\beta$  hydroxysteroid dehydrogenase. Cytophotometrically in the control group the enzyme activity in the *villi syncytiotrophoblast* made 41,0 $\pm$  0,85 standard units. At the herpetic infection attack the intensity of histochemical response to the detection of 11 $\beta$  hydroxysteroid dehydrogenase of the given form rose sharply (159,7 $\pm$  2,95 standard units), that supposes the increase of cortisol production.

Thus, the herpetic infection episode was attended by changes in the work of various forms of 11 $\beta$  hydroxysteroid dehydrogenase. It was established that a low activity level of the enzymes inactivating corticosteroids in the uterine cake result in the action of high concentrations of glucocorticoids on the fetus (Dodic M. et al., 1999, 2002; Moritz K.M. et al., 2002; Yang K., 1997). A high cortisol concentration in the fetal blood can result in some pathologic processes in adult stage: hypertension, diabetes, adiposis (Alexander B.T., 2006; Myatt L., 2006; Yang K., 1997).

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

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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.

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### BRONCHIAL ASTHMA - LOCAL IMMUNITY AND METHOD OF TREATMENT

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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