

tion of the strains out of the stomach and intestines of the examined wild birds.

Blood-sucking arthropods, which serve as bacillicarriers, perform a role in birds infecting with the given group bacteria. It is quite possible that the *Bacillus thuringiensis* strains segregated from the wild birds' liver is connected with the delivery of the bacterium from the blood-sucking arthropods. The mites, possessing a complex biological cycle of development, being closely connected with the microflora of the external medium, feather and skin integument of its host are constantly infected with micro-organisms of various taxons. According to the data from Petrishcheva P.A. (1967) these contacts promoted the appearance of symbiotic interrelations in mites with many micro-organisms in the process of evolution. However, *Bacillus thuringiensis*, possessing entomopathogenic properties, can propagate in certain cases in the intestinal opening of insects and mites, the bloodsuckers being most likely ready to deliver the crystal-forming bacteria transmissibly.

From the materials got on the bacteriological examination of the internal organs of wild birds and their ectoparasites one can conclude that birds, especially insect-eating ones, take direct part in the distribution of the given group of micro-organisms, defining their ecological amplitude.

The existence of intercontinental migration paths of birds (on the ringing data more than half of the wild birds examined by us arrive in the CIS territory from South America, South and North Africa, India, Azores and British Isles...) and establishment of a certain percentage of bacilli carriage among their parasites (plumage lice, bloodsucking bugs and mites) allow us to assume that migrating birds perform a significant role of transcontinental exchange of *Bacillus thuringiensis* strains.

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The work is submitted to III Scientific Conference "The Problems of International Integration of Educational Standards", Czechia (Prague) – Luxembourg – France (Paris), April, 20-27, 2008. Came to the Editorial Office 12.05.2008.

#### IMMUNOHISTOCHEMISTRY OF SOMATOSTATIN SPECIFIC DENSITY IN PANCREATIC GLAND OF FETUSES AND NEWBORNS

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It is known that somatostatin has a significant effect on various digestion processes, slows down the inflow of nutrient materials into portal blood and blocks the critical increase of metabolites in blood [Klimov P.K. and coauthors, 1987].

The earlier carried out investigation of the in-cretory part of the developing pancreatic gland revealed regional morphogenesis features of the organ. It was detected that against the background of the gland's ductal part hypoplasia the insular one exceeded the innate norm in its specific density [Sukhanov S.G., Ulyanovskaya S.A., 2006, 2007]. In connection with this it was decided, first of all, to study the content of somatostatin as one of the main metabolites of the insular tissue of the fetal gland.

The purpose of the work is to study and evaluate quantitatively the content of somatostatin granules in the pancreatic gland tissue of fetuses and newborns by the immunohistochemical method.

Material and methods of the investigation: the work was carried out on the autopsy material collected at the department of morbid anatomy of the SEH ARTH of Archangelsk, the immunohistochemistry and histometry of fetuses' (17-40 weeks) and died newborns' (18 cases) pancreatic gland was carried out. The glands were fixed in the neutral formaline; for the somatostatin granules identification the monoclonal antibodies to somatostatin (DAKO) were used.

The investigation results: during the whole research period the granules containing somatostatin were detected. The granular cells were located, as a rule, in the insular periphery. The content of colored granules in the cells was characterized by the undulation dependency, and the statistical series – by different degree of asymmetry and excess. The average values of the specific density (Aai) in the gland's tissue made: in the fetuses up to 20 weeks -  $8,5 \pm 0,39$ ; 24-27 weeks -  $12,1 \pm 0,56$ ; 28-31 weeks -  $13,5 \pm 0,64$ ; 36-40 weeks -  $7,8 \pm 0,41$ ; in newborns -  $11,1 \pm 0,59$ .

The carried out research testified that the content of somatostatin in the pancreatic gland tissue of fetuses and newborns depends on the age factor significantly. A further study of the fetuses' pancreatic gland insulars' cellular composition using the immunohistochemical method will specify the phenotypically conditioned features of the organ's morphogenesis.

The work was granted in the competition on the priority orientations of the science development in the Archangelsk Region, project N 10-13.

The work was submitted to the International Scientific Conference «Diagnostics, therapy, prevention of socially significant diseases rights». Turkey (Antalya), August, 16-23, 2008, came to the editorial office on 30.06.2008.

### **BIOMEDICAL ENGINEERING IN RAISING EFFICIENCY OF EMOTIONAL PROCESSES DIAGNOSTICS**

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Evidence of emotional marking can be found everywhere in modern medicine. Our study of the emotional and behavioral problems of homeless children are connected with the portable ear-scanners that produce detailed images of internal segmentary trophic centers. Our device allows to receive data performed by image-guided computer instrument. By the registration of the skin resistance changes from the skin surface of an auricle the long-term statistical material we had received by removal ear-scanned topograms of epidermis various activity at healthy and sick conditions. As a result of special processing topograms of electrophysiological parameters of a skin («an instant portrait») a lot of stationary and dynamic processes at a segmentary level in body's vegetative department in a super slow range of frequencies were possible to register conditions of all. Our biomedical engineering device (computer-based skin-scanner)

have been designed and produced by engineers working in collaboration with doctors, biochemists, physicists, and microbiologists. Also the use of our biomedical engineering device are directed in many kinds of treatments, especially in diagnosis and maintaining the basement health functions that are affected by disease or injury. On a ratio of values of base functions in one segment the pathological center is allocated, inflammatory process is classified on a phase, the belonging to concrete body or its part is defined. The objectives of the study were to explore opportunities of the registrations of changes of skin resistance in study the emotional profile of homeless children being considered for deviant behavior, and evaluate the relationship between child emotional and behavioral problems and use of registrations of skin resistance changes. The computer-based method consists in measuring the epidermal resistance of human auricles by scanning them. A sample of 125 youth (between 9 and 11 years old) who were homeless and children from permanent placement were estimated. These children have complex needs. We found significant differences by deviant behavior between homeless boys and girls and boys and girls from permanent housed group, as follows (ANOVA-F=6,68,  $t=2,58$ ;  $p<0,05$ ) and (ANOVA-F=16,47,  $t=4,07$ ;  $p<0,05$ ). The comparison of the revealed parameters with results of other methods of investigation has shown perspectives of informational making up a diagnosis by using this approach. Using ear-external sensors will be able to continuously measure response to treatment. It allows to use computer-based device by the people who look after the patient who will not be medically qualified but will be highly skilled technicians trained in specialized diagnostic and therapeutic devices and procedures. We recommend our device for everyone who may have access to regular non-invasive screenings to detect disease as early as possible.

The work is submitted to the Scientific International Conference "Scientific Research of Higher School on Priority Orientations of Science and Technology", June, 22-29, 2008, Kiel-Bergen-Geiranger-Kiel, came to the editorial office on 04.05.2008.