

### *Shot report*

#### **A ROLE OF NO-ERGIC MECHANISMS AND APOPTOSIS IN THE CONTROL PROCESS OF PROLIFERATIVE ACTIVITY OF EPITHELIAL CELLS**

Reva I.V., Popova K.M., Singur O.V., Bolotnaya V.N., Pervov Yu.Yu., Pogorely V.V., Ignatyev S.V.

*State-run Educational Institution, High Professional Education  
Vladivostok State Medical University  
Vladivostok, Russia*

The basis of the organized research is the fact that the process of age-dependant cell depletion is genetically determined and has the same cytological and biochemical evidences in different organs and tissues and can be defined as the physiological preset necrocytosis. The abnormality of the physiological equation between the division and the death of cells is a base not only of tumorous but also some nonneoplastic diseases. The base of degenerative diseases is probably a dysfunction of the apoptosis system. The influence on the program of necrocytosis or proliferative activity is one of the perspective directions of the conservative medical treatment. We did not manage to find out the exhaustive information about no-ergic mechanisms of influence on the apoptosis processes and the growth of activity regenerative potential of the integumentary epithelial colony-forming.

The high concentration of nitrogen oxide (NO) arises because of the following factors:

- in condition of phlogistic and immune reactions in epithelial mucous plate and epidermis;

- iNOS synthesis activation in cells.

The role of nitrogen oxide in apoptosis mechanisms comes to the cytotoxic influence of

a molecule on a target. Mitochondria play a great role of an acceptor of nitrogen acid in the induction of apoptosis due to the high content of the ferrous sulphide protein ferrous sulphide protein. The poisonous effect appears in suppression of mitochondrial enzymes that leads to the decreasing of production of adenosine triphosphate and ferments, taking part in the process of DNA replication, and also direct damage of DNA.

The deactivating influence of nitrogen oxide on apoptosis is realized through cysteine proteinases by way of nitrilasing of thiol groups of cysteine proteinases.

In ontogenesis and when the reaction to the damage the program of necrocytosis starts the single-type molecular mechanism, however the intensity of the process is connected with various cytotoxic and tissue protective effects of nitrogen oxide. The carried out analysis of NOS activity in epithelial layers of mucosae and epidermis at all the stages of human ontogenesis showed that the physiological NO synthase certainly plays a great role, as an inductor of the differentiation process, the growth and specialization of epithelial cells. As we found the growth of apoptotic index is combined with the positive reaction to iNOS in epithelial cells. Likewise the activity of NADPH-diaphorase is rising, representing the total content of constitutive and inducible NOS.

The change of strictly programmed phases of elective death of cells, caused by apoptosis, correlates with the development of NOS activity in epithelial layer of mucosae and epidermis.

The further analysis of the role of nitrogen oxide, as an active partaker of biochemical and proliferative process in a cell with its unique ability to induce and inhibit apoptosis, is necessary.