

Droz M., Puhteeva I.

*International Sakharov Environmental Institute of Belarusian State University,
Minsk, Republic of Belarus*

THE MEMBRANE EFFECT OF GLUCOCORTICOID HORMONES

Any cell of an organism performs the specific biological functions which are implemented by means of interaction of an extracellular incentive (primary messenger) with a receptor on a surface of a cell and signal transmission in a cells.

Glucocorticoid hormones are regulators of a wide range of the processes proceeding in an organism such as temporary use of a metabolic homeostasis, proliferation of cells, anti-inflammatory and immune response, ontogeny, reproduction and behavior. Glucocorticoids are primary intermediaries that are moved by means of a blood flow from an organ where they are made to an organ which they regulate and unlike many other hormones, are capable to get in a cell. Their action in a cell is implemented through linking with protein receptor of glucocorticoids that is a transcription factor from superfamily of nuclear receptors. That finally causes quick opening of an ion channel and an entrance of ions to the cell.

The purpose of the presented work is the research of structural changes of plasmatic membranes of cells of immune system at action of a synthetic analog of glucocorticoid hormones of dexamethasone.

Research object in work are thymocytes (a thymus cells) of experimental animals.

The analysis of a structural condition of membranes of thymocytes in experiments is carried out pyrene by means of the fluorescent probe. At the same time indicators of polarity and microviscosity of lipids of plasmatic membranes, and also extent of suppression of thryptophane) fluorescence were estimated.

The most expressed changes were observed in the area the annulyarnykh of lipids, microviscosity in this area was enlarged by 1,5–2 times depending on time of an incubation and concentration of dexamethazonum. The augmentation of an exponent of suppression of albuminous fluorescence on average for 50% can be bound to the fact that influence of glucocorticoids causes changes of a conformation condition of membranous proteins as due to change of aggregation of albuminous molecules and their immersion in depth of a lipide component, and owing to modification of protein – lipids interactions in membranes of thymocytes.

Thus, it is established that glucocorticoid hormones, interacting with membranes of thymocytes, cause change of their physical and chemical characteristics: indicators of polarity and microviscosity of lipids of various areas of membranes.