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THE MECHANISM OF REGULATION OF BLOOD PLATELET AGGREGATION IN RATS

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Relevance. Investigation of mechanisms of association and aggregation of platelets is one of the fundamental areas of modern biology.

In recent years there has been a clear tendency towards the creation and use of drugs prepared from natural raw materials, many of which have diverse biological activity and at the same time harmless to the organism.

Search and characterization of novel compounds selectively bind to receptors of the plasma membrane of platelets, will allow the pharmacological regulation of the functional activity of platelets.

Purpose of the study: the action of the alkaloid N-dezatsetillappakonitin (N-Dal) on platelet aggregation

Materials and methods. Platelets aggregometer for the study were in conditions close to physiological temperature at +37°C and stirring rate constant, modeling circulation.

In a study as inducers of ADP aggregation used at a final concentration of 5 μg/ml and collagen at a final concentration of 20 μg/ml.

Results and its discussion. It was determined that N-Dal a concentration of 100 μM had no effect on spontaneous aggregation of platelets, but significantly (70%) inhibited ADP-induced platelet aggregation. In this case the alkaloid N-Dal at a concentration of 200 μM had no effect on the dynamics of change of the curve of the first phase and almost completely inhibited the second phase (90%) ADP-induced platelet aggregation.

It is known that ADP leads to a sharp increase in the intracellular concentration of [Ca^{2+}], and this increase is carried out both by its input from the outside, and release from intracellular stores.

In the study of N-Dal action was not observed for the additional inhibition of ADP-induced platelet aggregation, on background of the calcium channel blocker verapamil.

In the study of action N-Dal on the redistribution of membrane Ca^{2+} in platelets using a fluorescent probe CTC found that in these conditions the N-Dal slightly increases the intensity of fluorescence CTC.

Actions N-Dala to the level of membrane-bound Ca^{2+} in platelets, against ADP, there was a dose-dependent inhibition of the fluorescence CTC induced by ADP.

In the study of action N-Dal on the redistribution of membrane Ca^{2+} in platelets on the background of ADP and verapamil observed further (15%) inhibition of fluorescence intensity CTC. Known adenylate cyclase activator forskolin, the second phase also inhibits ADP-induced aggregation and membrane-bound Ca^{2+} increase in platelets.

Conclusions. The results showed that, the effect of N-Dal on ADP-induced platelet aggregation and inhibition of membrane-bound Ca^{2+} fluorescence possibly due to inhibition of adenylate cyclase activity and the release of calcium from the cytoplasm of the depot.