
МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

COMPARATIVE ANALYSIS OF EXPRESSION OF SOME PROTEIN KINASES
AND PROTEIN PHOSPHATASES IN LAMPREY ERYTHROCYTES
ON THE COURSE OF PRESPAWNING PERIOD

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The living cycle of lamprey *Lampetra fluviatilis* is terminated by prespawning period of genetically determined starvation accompanied by development of metabolic depression. This period is interesting for both studying the mechanisms of adaptation to the state which is pathological for the majority of organisms and for the strategies of defense allowing the animals to survive. One of such mechanisms is a coordinated functioning of intracellular enzymes, above all protein kinases and protein phosphatases.

The goal of work was identification and comparative analysis of expression of some MAP kinases and tyrosine phosphatases in lamprey erythrocytes on the course of prespawning period. The content of enzymes was evaluated by immunoblotting in the cytosolic and membrane fractions of erythrocytes.

At the beginning of prespawning period (in December) ERK1/2 kinase is found in both cytosol and membranes of erythrocytes, whereas JNK — in the cytosol only. Phosphatases PTP1B and SHPTP2 are revealed in both subcellular fractions, with PTP1B being presenting by native and proteolytic fragments. The expression of

ERK1/2 is relatively stable on the course of entire period of starvation, although before spawning its content decreased a little in the cytosol, but increased in membranes on account of active phosphorylated form. The activity of JNK in erythrocytes, in contrast, sharply falls before spawning, with phosphor-JNK virtually not revealing. Total content of PTP1B is relatively constant during prespawning period, however, at the spring an expression of the native form of enzyme decreases in membranes, but the content of proteolytic fragment increases in the cytosol. An activity of SHPTP2 phosphatase does not change on the course of prespawning starvation.

Most probably, the membrane-bound forms of enzymes are necessary for the maintenance of viability of lamprey erythrocytes, especially before spawning and death of the animals in May, for example, for the preservation of integrity of plasma membrane and regulation of transmembrane ion transport.

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