

Using histochemical analysis (NADPH-diaphorase) we have been investigating the influence of intraperitoneal administration of kainic acid, hypoxia and combination of both these factors on neurons of the hippocampus and on the primary auditory cortex in male rats of the Wistar strain.

Kainic acid was administered to 12-day-old and 18-day-old animals, which were exposed to long-lasting repeated hypoxia from the 2nd till the 17th day of age in a hypobaric chamber (for 8 hours a day). At the age of 22, 90 and 365 days, the animals were transcardially perfused with 4% paraformaldehyde under deep thiopental anesthesia. Cryostat sections were stained to identify NADPH-d positive neurons that were then quantified in CA1 and CA3 areas of the hippocampus, in the hilus, dorsal and ventral blade of the dentate gyrus and in the primary auditory cortex.

In 22-day-old animals with kainic acid administered 18th day of life both hypoxia and kainic acid increased the number of NADPH-d positive neurons in the hilus, CA1 and CA3 areas of the hippocampus and in the primary auditory cortex. On the contrary, kainic acid given to the hypoxic animals lowered the number of NADPH-d positive neurons in the dentate gyrus.

In 90-day-old animals with kainic acid administered 18th day of life hypoxia and kainic acid given to both, normoxic and hypoxic animals lowered the number of NADPH-d positive neurons in CA1 and CA3 areas of the hippocampus.

In 365-day-old animals with kainic acid administered 18th day of life both, hypoxia and kainic acid given to normoxic animals lowered the number of NADPH-d positive neurons in all studied areas of the hippocampus. In opposite, kainic acid given to hypoxic animals increased the number of NADPH-d positive neurons in the dorsal blade of the dentate gyrus and in the primary auditory cortex.

In 22-day-old animals with kainic acid administered 12th day of life hypoxia increased and kainic acid given to both, normoxic and hypoxic animals lowered the number of NADPH-d

positive neurons in all studied areas of the hippocampus and in the primary auditory cortex.

In 90-day-old animals with kainic acid administered 12th day of life hypoxia lowered the number of NADPH-d positive neurons in CA1 and CA3 areas of the hippocampus. Kainic acid given to both, normoxic and hypoxic animals lowered the number of NADPH-d positive neurons in all studied areas of the hippocampus and in the primary auditory cortex.