Neurodegenerative changes in rats were induced by intraperitoneal subchronical doses (50 mg/kg animal weight) of iron-dextran solution and by Isoflurane (1.5 %) anaesthesia during the 28 day period. Experimental animals (three months-old rats of both sexes from highly fertile YS9 strain) were divided into four groups with six animals in each.

Neurodegeneration was evaluated by:

a) changes in the oxi-do-reduction status by measuring the level of malondialdehyde (MDA) (Fig. 1.) and glutathione (GSH) (Fig. 2.), activity of catalase (CAT) (Fig. 3.) and superoxide dismutase (SOD) (Fig. 4.) in brain tissue

b) evaluation of the neuro-inflammation, by measuring the relative weight of the brain compared to a healthy control group (Fig. 5.)

c) analyzing osmotic fragility of erythrocytes (Fig. 6.)

We can make conclusion that the used dose of both compounds in combination was sufficient for the occurrence of oxidative stress which led to increased lipid peroxidation and an increase in the concentration of MDA.

Based on the research above which shows decreased relative brain index, it is obvious that repeated anesthesia with Isoflurane or in combination with Fe-dextran leads to increased deterioration of brain cells.

This research suggest that different conditions and lengths of Isoflurane exposure in the presence of iron can certainly be different considering iron accumulation in individual regions as well as the complex mechanisms that take place during iron loading in brain tissue.

A better understanding of all these important points of view will significantly improve our knowledge of iron metabolism in the brain and the use of inhalation anesthetics as well as their role in the development of oxidative stress and neurodegenerative disorders.