

IRON OXIDE DEPOSITS IN HUMAN BRAIN

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Natural Fe oxides occur not only in the lithosphere and pedosphere, but also in the biosphere. Goethite, lepidocrocite, ferrihydrite and magnetite have been found in the various living organism, where they influence iron metabolism, are responsible for magnetotaxis and biological structure. Iron is one of the biogenic elements that play an essential physiological role in all organisms. The aim of this study is examining the chemical composition of iron oxides deposits in *globus pallidus* of the human brain. Prussian blue staining method revealed iron deposits in the vicinity of cells. Energy dispersive analysis of these deposits showed multielemental composition. Besides iron and oxygen, sodium, phosphorus, sulphur, chlorine and calcium were found (fig. 1). Ions of various elements play important role in conversion of biogenic iron to abiogenic forms, which are toxic for the organism [1]. Presence of vestigial amounts of some elements may significantly influences the structure of these deposits.

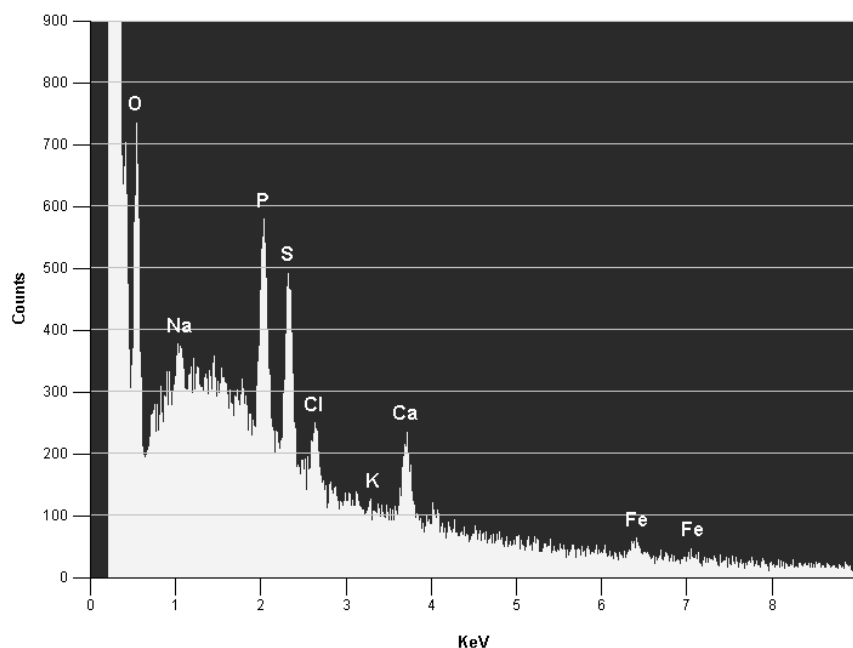


Figure 1: Human brain, *globus pallidus*. EDX spectrum of iron-oxygen rich deposits reveals the presence of Na, P, S, Cl, Ca. Range 0.160 - 9 keV, spectrum time collection 200 s.

[1] M.J. Jurado; V. Barron, and J. Torrent, "Can the presence of structural phosphorus help to discriminate between abiogenic and biogenic magnetites?" *J. Biol. Inorg. Chem.* **8**, 810-814 (2003).