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Nanocrystals in Human Body

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As is generally known, the organism of human beings and the organisms of other animals are containing more than 50 inorganic crystalline particles - biominerals. The most important are hydroxylapatite, calcite, aragonite, magnetite and other. Physiogenic nanocrystals always have specific functions: supporting function, protective function and some others. Hydroxylapatite and calcite are important parts of teeth and bones of human beings and animals. The structure of these nanocrystals is controlled at nanolevel that provides multifunctional properties. Biological nanocrystals are true minerals, but they have other characteristic features, that distinguish them from their inorganically produced analogues.

After the discovering of nanocrystals of magnetic biominerals in the human brain tissues the question about the role of these biominerals in brain function and diseases arise. It was found, that there is the relation between neurodegenerative diseases appearing and quantity of nanocrystals of magnetic biominerals [1]. Moreover, in a number of investigations there were discovered the increased level of deposit iron in brain tissues in cases of Alzheimer disease and others neurodegenerative diseases.

Thus, we are aware that understanding of the nanocrystals formation (biomineralization) in the organism is essential for studying of disease and its future treatment.

[1] Kirschvink J.L., Kobayashi-Kirschvink A., Woodford B.J. *Proc. Natl. Acad. Sci. USA.*, **89**, (1992), p. 7683.