

Applied Magnetic Resonance 2016 vol.47 N6, pages 555-565

EPR Detection of Iron Storage in Rat Tissues After Simulated Microgravity Model

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Abstract

© 2016, Springer-Verlag Wien. By a method of spectroscopy of electron paramagnetic resonance the tissues of rats after exposure of microgravity simulation (model of hindlimb unloading) were investigated. In the tissues of heart, lung, liver and muscles the signals of electron magnetic resonance (EMR) depending on orientation were detected. The temperature and orientation dependences of the signals were studied. Comprehensive analysis of the characteristics of the EMR signals made it possible to identify the source of the signals as a crystalline magnetite. Three types of anisotropic EMR signals corresponding to a variety of spatial forms of accumulation of biogenic magnetite were detected. The appearance of the signals after microgravity simulation indicates an alteration in iron metabolism and an abnormal accumulation of iron in the rat tissues.

<http://dx.doi.org/10.1007/s00723-016-0779-3>
