

EPR STUDY OF NANODISPERSED CALCIUM GLUCONATE

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Calcium gluconate is widely used as a medicine for hypocalcemia therapy. However, the effectiveness of this drug is very low. Earlier, the modified nanodispersed form of calcium gluconate has been produced by mechanical activation that led to the improvement of its bioavailability and pharmacokinetic properties [1]. The Lorenz-shaped EPR signal with $g=2.005$ and a line width of 8.5 Oe has been revealed after the mechanochemical treatment [2]. The goal of this work was to elucidate the physical-chemical transformation of calcium gluconate under mechanical activation and to establish the nature of a paramagnetic center.

The paramagnetic center responsible for appearance of the EPR signal is a long-lived one. The integral intensity of the signal from paramagnetic centers depends on the time of mechanical milling and has remained unchanged within several months. Additional EPR investigation of ingredients of officinal calcium gluconate has shown that the observed line is due to the transformation of the calcium gluconate molecule.

To identify the nature of a radical center the method of electron spin echo envelope modulation was used. The results showed that paramagnetic centers are localized in the vicinity of the calcium atom.

To specify the structure of radicals further investigations are needed.

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- [1] G.N. Konygin et al.: Method of treatment of hypocalcemia, osteoporosis, fractures, Patent of Russia №2268053 (2004).
- [2] G.G. Gumarov et al. Abstr. of Int. Conf. "Modern Development of Magnetic Resonance", Kazan, September 24-29, 2007, P. 170.