Original Paper

Effect of low frequency electromagnetic fields on the heart of white-leghorn chicken embryo

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Abstract

Background and Objective: Many studies have showed malformation of low frequency of electromagnetic fields (EMF) on different tissues. This study was carried out to evaluate the effect of low frequency electromagnetic fields on the heart of white-leghorn chicken embryo.

Materials and Methods: In this experimental study, 90 healthy, fresh and fertilized eggs were allocated into 6 groups including control, sham, and four preincubated experimental groups. Experimental groups I, II, III and IV (1.33, 2.66, 5.52 and 7.32 mT) were located in the electromagnetic device, sham group was located into the same coil with no exposure for 24h before incubation. Control, sham and experimental groups incubated (37±0.5 ºC, 60% humidity) for 14 days.

Results: Disassembling cell regulation in experimental group I, dense nucleus of myocytes and increase of intercellular spaces in experimental group II, necrosis and bleeding in the heart tissue in experimental groups III and IV were seen in compare to control and sham groups. There was a significant increase in the level of activity of alkaline phosphatase in the heart of experimental groups in compare to control and sham groups.

Conclusion: Low frequency of electromagnetic fields caused alternations in cardiac tissue and elevation of Alkaline phosphatase activity in chicken embryos.

Keywords: Electromagnetic fields, Alkaline phosphatase, Chicken embryos, Histology, Heart

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