

Department of Basic Science

Doctoral Degree 2000

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Title	:	Effect of extremely low frequency magnetic field on the cardiovascular system.
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Abstract	:	
<p>This study was designed to investigate the effect of extremely low frequency magnetic fields on the changes in cardiac muscle bioelectrical activity, and on creating phosphokinase, lactate dehydrogenase, glutamate pyruvate transaminase and glutamate oxaloacetate transaminase. all experimental animals were belonged to guinea pigs. eighty male guinea pigs were involved in this study. They were divided into four homogenous groups. Esch group included twenty guinea pigs. Group1:control groups contained twenty guinea pigs and were not exposed to any form of magnetic fields. They were lived under controlled diet, Light and temperature. Group II : Twenty guinea pigs were continuously whole body exposed to 50 HZ,5 gauss magnetic field for a period of two weeks. GroupIII:Twenty guinea pigs were continuously whole body exposed to 50 HZ, 5 Gauss magnetic field for aperiod of one month. Group IV:Twenty guinea pigs were continuously whole body exposed to 50 HZ, 5 Gauss magnetic field for aperiod of one month. The guinea pigs were housed far from magnetic fields (similar to control) for a period of two months later. Electrocardiograph recorded for animals exposed to the magnetic field for a period of 15 days, the ST- segment in the P, QRS and T impulse as measured by lead I was elevated which is an indication of acute myocardial infarction. Since lead I detected this elevation in the ST segment, in addition to the increase in the amplitude of the S- wave as measured by lead III, then the damage was in the anterior wall of the left ventricle At normal conditions of the transient damage to the muscles, The CPK level will increase then it will be cleared out of the blood serum after a short period of time. This is not the case in the present work, since the CPK and LDH levels were increasing continuously over two months post-exposure of the animal. This finding is only supported by the speculation that there is growing damage of the cellular membrane and cells of the different organs of the animal, even after stopping the exposure the magnetic field . This continuous damage is due to the growing toxicity in the cells and hence the increase in CPK-total,CPK-MB and LDH in addition to the changes in the ECG records . Another evidence for this speculation is the growing increase of the SGOT and SGPT levels in blood serum of the animals exposed to the magnetic fields, which matches with the understanding that cellular membranes are deeply injured .</p>		
Key words	1.	Extremely low frequency.
	2.	Magnetic field.
	3.	Cardiovascular system.
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