Theoretical and Experimental Aspects on the Hyperthermia with Magneto-Caloric Effect

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Purpose: Cancer has been a huge problem throughout the decades, as it is very difficult to fight and permanently get rid of, so we have decided to develop an effective way of ridding bodies of this disease. Procedure: The purpose of our experiments was to test and analyse the spread of heat according to different factors. We connected a coil, once with no shunt, and once with a shunt, to an autotransformer that transfers electrical energy from a source. Then we replaced the shunt with 16.65 g of nanoparticles with a thickness of 0.30-0.40 mm and 8.32 g of nanoparticles with a thickness of 0.15-0.20 mm and repeated the experiment. Results: Without the shunt, the coil reached the necrosis temperature after 6 minutes, while with the shunt, after 11 minutes. Interestingly enough, after replacing the shunt with the 16.65 g of nanoparticles, the necrosis temperature was reached after only 6 minutes by the nanoparticles. For the 8.32 g of nanoparticles, the necrosis temperature was reached after 16 minutes by the nanoparticles. Conclusions: The results of these experiments helped us create a mathematical equation of the phenomenon of loss of heat through tissues and keep track of the energy we put through the body in order to prevent possible damage or not reaching the temperature needed.

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