

An *in vitro* 5-flouroucil drug delivery studies of Magnetic Bioglass for Hyperthermia treatments

Saranya V¹, Balakumar S², Kalaivani RA^{1*}

¹Department of chemistry, Vels University, Chennai- 600 117, India.

²National centre for Nano science and Nano technology, University of Madras, Guindy Campus, Chennai-600 025, India.

Corresponding author email: rakvani@yahoo.co.in

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Post Graduate & Research Departments of Biochemistry, Microbiology, Biotechnology and Bioinformatics, Mohamed Sathak College of Arts & Science, Sholinganallur, Chennai-600119, India.

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ABSTRACT

Bioactive ceramics refers to materials, which upon being implanted within the human body interact with the surrounding bone in such a way as to encourage the formation of new bone as well as forming an interfacial bond with the new bone being laid down. Bioactive glasses are a group of surface reactive glasses that release ions into the local environment, which can then trigger a range of biological responses. The most desirable response is for the glass to stimulate the formation of new bone by the release of sodium, calcium, and phosphate ions. In the present work, 45s5 bioglass was chosen, since it has both the property of osteo conductivity (ie. Enhances the cell proliferation) and osteoinductivity (i.e. Supports the bone formation). This material has been coated on magnetite (Fe₃O₄) nanoparticles using modified stober method. XRD, FTIR and TEM characterization were done to analyze the crystal structure and the morphology of the samples. The magnetic properties of the nanoparticle were studied using 5-flourouracil for anticancer.