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## Investigation of silver coated $x\text{Fe}_2\text{O}_4$ ( $x=\text{Mn}, \text{Zn}$ ) doped hydroxylapatite ferromagnetic biomaterials for bone regeneration and magnetically targeted drug therapy

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Magnetically attracted silver coated  $x\text{Fe}_2\text{O}_4$  ( $x=\text{Mn}, \text{Zn}$ ) doped hydroxylapatite samples have been prepared by using co-precipitation method in the laboratory. Bioactive nature of samples has been confirmed from XRD patterns. Ferromagnetic behavior of samples has been studied by using vibration sample magnetometer technique. Cytotoxicity, antioxidant and cell culture studies of the samples have been undertaken by using human osteoblast cell line MG63 and it was found that samples provides healthy environment for the growth of cell lines. Drug carrier ability of samples has been checked by using gentamycin as an antibiotic and results show that samples can be used as excellent drug carriers. Drug loaded samples can be easily targeted to specific area due to their attractive nature towards external magnetic field. Samples have also shown good resistive potential against different gram positive and gram negative microorganisms including highly resistive Methicillin-resistant *Staphylococcus aureus*. Our results indicate that prepared samples possess good bioactive as well as ferromagnetic behavior with drug carrier ability and hence, our samples can be potential candidates for the clinical applications.

### Biography

Vikas Anand has completed his MSc in Physics from Jiwaji University, Gwalior, India. Presently, he is pursuing his PhD degree in the area of biomaterials from Department of Physics, Guru Nanak Dev University, Amritsar, India. His area of interest is to study the structural and bioactive properties of bioactive glasses and ceramics.

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