



Magnetic Nanoparticles: Possibilities and Challenges

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Abstract:

In the recent years, nanotechnology has gained much attention by the researchers due to its widespread applications. The phenomenon of magnetism in the area of nanotechnology have led to the development of a specialised delivery systems named Magnetic Nanoparticles (MNPs). The magnetic phenomenon relates to the compounds having magnetic properties and nanoparticle indicates the particle size in nano range (1-100 nm). The metals, its oxides and metals alloys having magnetic properties are used for the preparation of magnetic nanoparticles. The MNPs can be made functionlized and applied in the improvement of magnetic resonance imaging for medical research and diagnostics. The advantages of MNPs include biocompatibility, large surface area, high stability and easy absorption in the biological fluid. MNPs holds thernostic applications from diagnosis of the diseases to its treatment. These applications includes targeted drug delivery, magnetic resonance imaging, DNA and RNA purification, tissue repair, enzyme immobilization, detoxification, gene cloning and cell separation. The MNPs have also found useful in hyperthermia and to improve chemotherapy in the treatment of cancer. Inadequate magnetic gradient, toxicity and delivery to brain are still the challenges for scientific community in this area, which needs further attention.

Biography:

Harish Dureja has completed his Ph.D. in Pharmaceutical Sciences from Maharshi Dayanand University, Rohtak and awarded with 1st Gold-Medal for Best Ph.D. Thesis.



He is presently working as Professor at Deptt of Pharmaceutical Sciences, Director, IPR Cell and Professional Consultancy Services at M. D. University, Rohtak. He has a total of 20 years teaching experience. He has published one book, Twenty book Chapters and 190 publications in various International and National Journals of repute. He has been has been awarded research projects with a total of 1.2 Crore from AICTE, UGC and Haryana -DST.

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