

Sol-gel auto-combustion synthesis of cobalt ferrite and its cytotoxicity properties

ABSTRACT

Cobalt ferrite (CoFe₂O₄) nanoparticles were successfully synthesized by a sol-gel combustion technique. The particle size as determined by a transmission electron microscope was about 25 nm. A maximum saturation magnetization of 22.31 emu/g and a coercivity of 118 Oe were achieved for the samples. The effect of CoFe₂O₄ nanoparticles on 4T1 murine breast cancer cells was explored by cytotoxicity assay and flow cytometer analysis. The lower concentrations of CoFe₂O₄ nanoparticles did not induce any toxicity in cells, when exposed for 24 h. Concentrations exceeding 400 g/ml produced significant morphological changes and induced cell death by apoptosis and necrosis.

Keyword: Cobalt; Magnetization; Phase formation; Sol-gel