***ZnO AND IRON OXIDES NANOPARTICLES WITH POTENTIAL
APPLICATIONS IN BIOMEDICINE***

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ZnO and iron oxide (ZnONPs and IONPs) received a great attention due to the possibility to be used in several areas of chemistry, physics and material science. The study related with nanoparticle−biological system interactions has increased in the past decade. For biomedical applications, a protective layer is formed on the surface of the particles via specific interactions or chemical bonding between the active sites of NPs and the coating molecules. The surface coating determines the properties of synthesized nanoparticles such as stability, solubility and their uses. ZnONPs and IONPs nanoparticles were made by precipitation and coprecipitation methods, respectively. β-CD, PEG diacid, silicate, 3-aminopropyltriethoxysilane (APTES) and tris(hydroxymethyl)aminomethane (TRIS) were used as coating agents of magnetite nanoparticles (IONPs). The synthesized ZnONPs and IONPs were characterized by IR spectroscopy, XRD, SEM and TEM. Zn-O (435 cm-1) and Fe-O (575 cm-1) stretching were observed in isolated nanoparticles. XRD measurements suggest the presence of wurtzite (ZnO) and magnetite (Fe3O4) phases. A spherical morphology was detected through SEM for IONPs, with an average particle size under 13 nm. On the other hand, nanodisc with approximately 25 nm length and 35 nm in diameter are observed in TEM micrographies for ZnONP.

Magnetic separation assays of oligodeoxynucleotides (ODN) and plasmid DNA (pDNA) were carried out with IONPs.

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