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Synthesis, Characterization and Antitumor activity of Fe_2O_3-Ag_2O-TiO_2 Nanocomposite on MCF-7 Human Breast Cancer Cells

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ABSTRACT

The study deals with the Magnetic Fe_2O_3-Ag_2O-TiO_2 nanocomposite has been prepared by using sol gel method and characterized by X-Ray Diffraction, Fourier transform-infra red spectroscopy (FT-IR), Field Emission- Scanning Electron Microscopy and Energy dispersed spectroscopy has been applied to investigate the structure and morphology. X-ray diffraction studies of the Fe_2O_3-Ag_2O-TiO_2 show the presence of anatase phase of TiO_2. 1 mmol of the prepared sample from had also shown the presence of anatase phase only. The FE-SEM images of the prepared samples showed the decrease in size and morphological change of the TiO_2 particles when compared to undoped TiO_2. The presence of elements iron, silver, titanium and oxygen were characterized by Energy dispersed spectroscopy (EDS). For comparison, the anticancer activity was carried out by using Temoxifen as a standard with Fe_2O_3-Ag_2O-TiO_2 nanocomposite. The anticancer activity of the synthesized catalysts was investigated by the MCF-7 cell line, and it was found that the Fe_2O_3-Ag_2O-TiO_2 catalysts have better anticancer activity than un-doped TiO_2. The present results showed that this prepared nanocomposite might be a potential alternative agent for human breast cancer therapy.

Keywords: TiO_2, Fe_2O_3-Ag_2O-TiO_2, Anticancer activity, magnetic.