Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Informations

Magnetic core-shell nanoprobe for sensitive killing of cancer cells via induction with strong external magnetic field

Running Title: Magnetic core-shell nanoparticle induce cancer cell death

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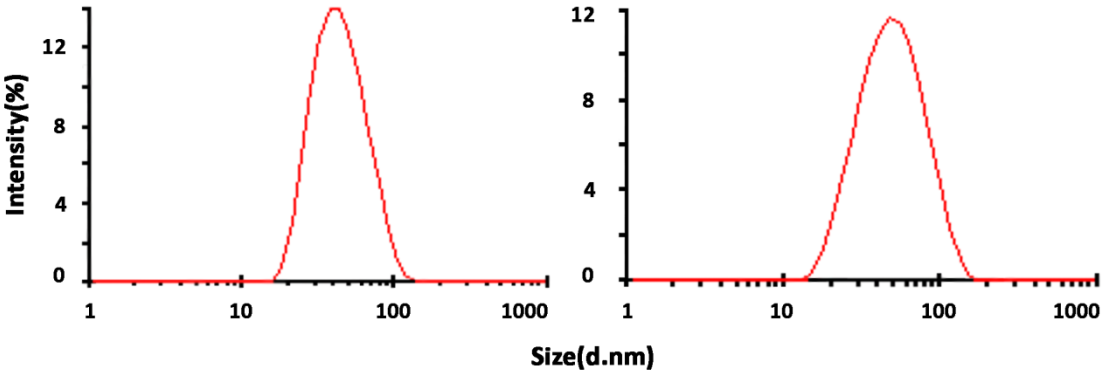

Fig. S1 Representative DLS spectra of (A) IONPs and (B) arsenite containing MCNPs, indicating greater size of MCNPs.

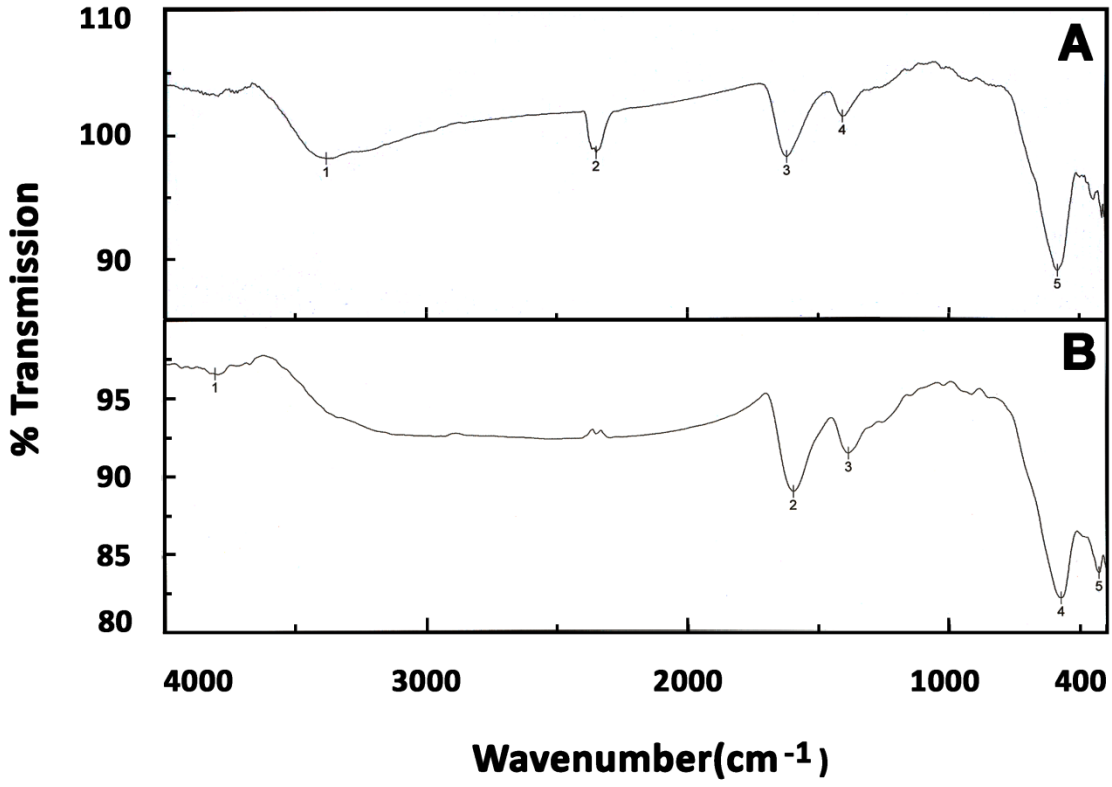

Fig. S2 Representative FTIR spectra of (A) IONPs and (B) arsenite containing MCNPs, indicating the formation of magnetic Fe_3O_4 and MCNPs.

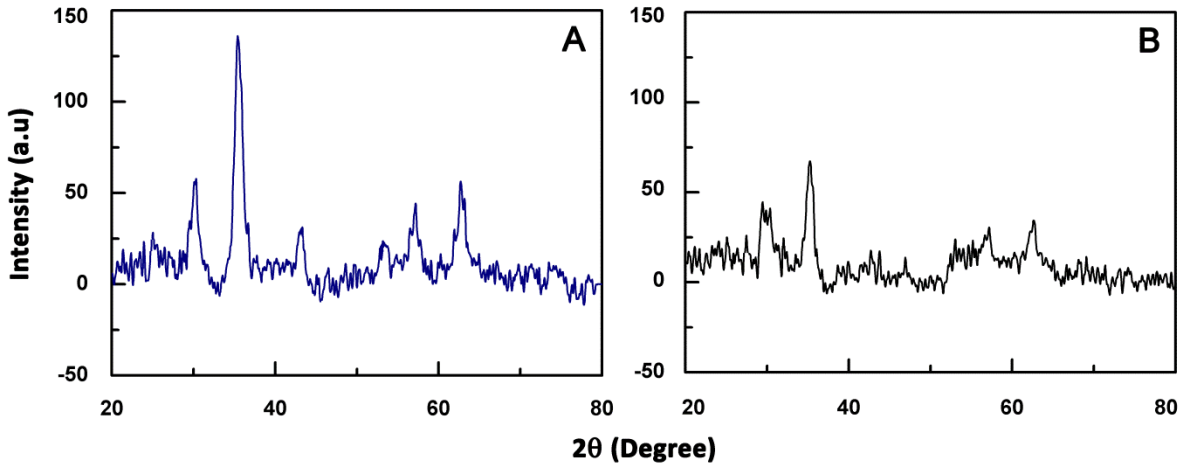

Fig. S3 Representative XRD spectra of (A) IONPs and (B) arsenite containing MCNPs, indicating the formation of magnetic Fe_3O_4 and MCNPs.

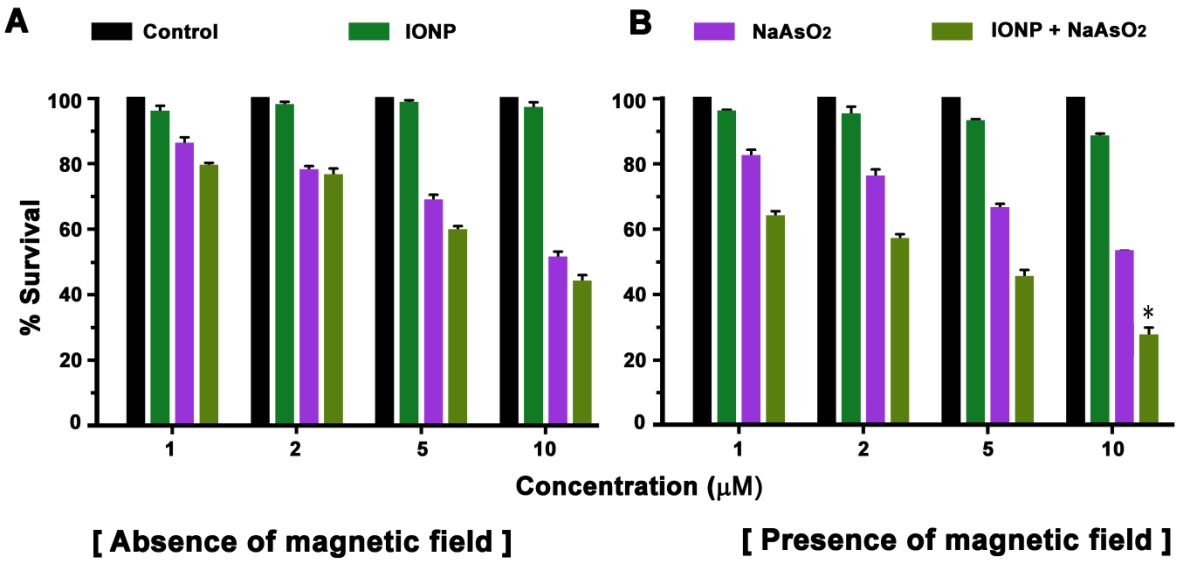

Fig. S4 Effect of IONPs, $NaAsO_2$, and $NaAsO_2$ containing MCNPs on HepG2 cell viability in presence and absence of magnetic field. (A) Cytotoxic effect of IONPs, $NaAsO_2$, and $NaAsO_2$ containing MCNPs on HepG2 cell at different concentration and in absence of magnetic field after 24 h of exposure. (B) Cytotoxic effect of IONPs, $NaAsO_2$, and $NaAsO_2$ containing MCNPs on HepG2 cell at different concentration and in presence of magnetic field after 24 h of exposure. All results represent the average of five independent experiments and the symbol * denote statistical significance ($P < 0.05$).

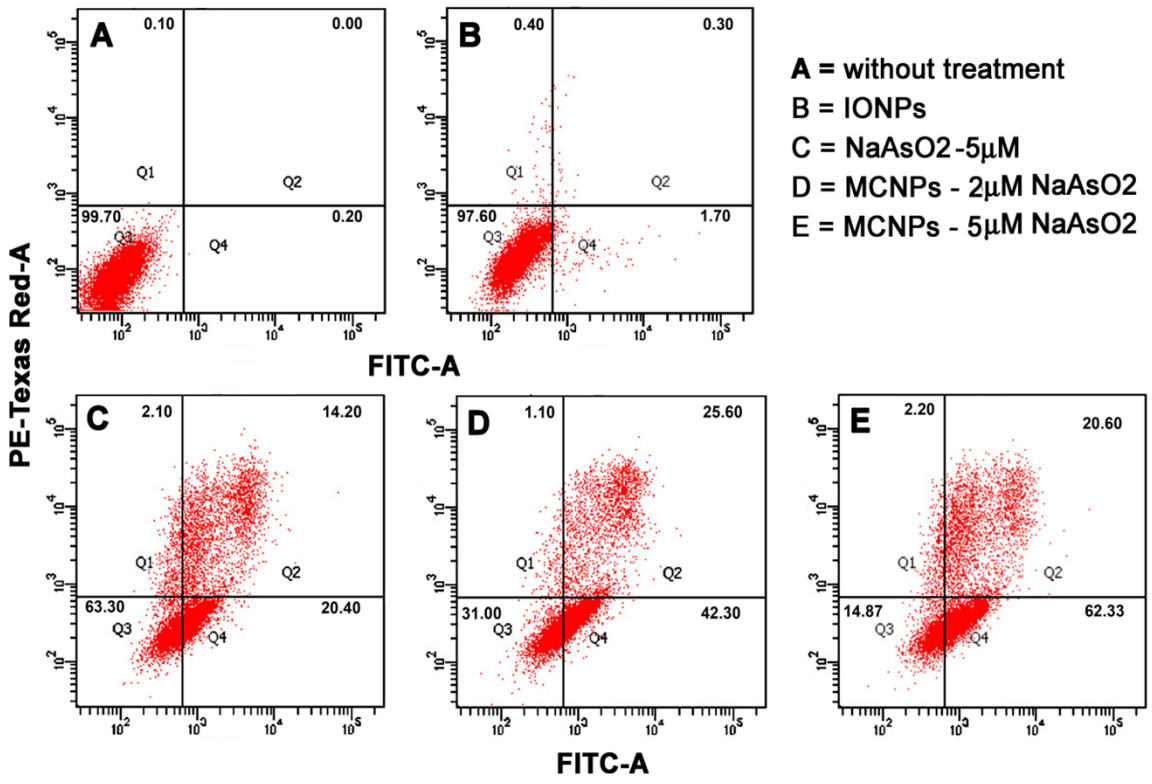

Fig. S5 AnnexinV/PI staining of apoptotic cells. (A-E) represent apoptotic characterization of HepG2 cells after staining with AnnexinV/PI, indicating chromatin and nuclear fragmentation after treatment with 5µM $NaAsO_2$, 2 and 5µM $NaAsO_2$ containing MCNPs for 24 h.

Determination of arsenic concentration in magnetic core-shell nanoparticles

A flow injection-hydride generation-atomic absorption spectrometry (FI-HG-AAS) was used for the estimation of arsenic concentration. Arsenic content in MCNPs was determined by atomic absorption spectrometry (AAS) following wet acid digestion. Briefly, arsenite coated MCNP sample was wet digested with nitric acid for 20 min at 150°C, diluted with de-ionized distilled water and subsequently analyzed for arsenic content. A Perkin–Elmer Model-3100 (Boston, MA) spectrometer equipped with a Hewlett–Packard (Houston, TX) Vectra computer with GEM software, Perkin–Elmer EDL System-2, arsenic lamp (lamp current 400 mA) was used.