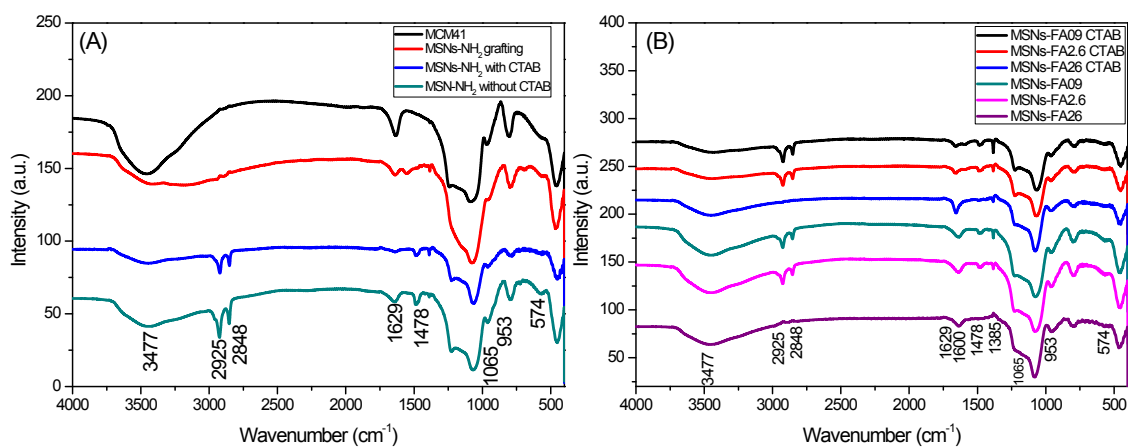
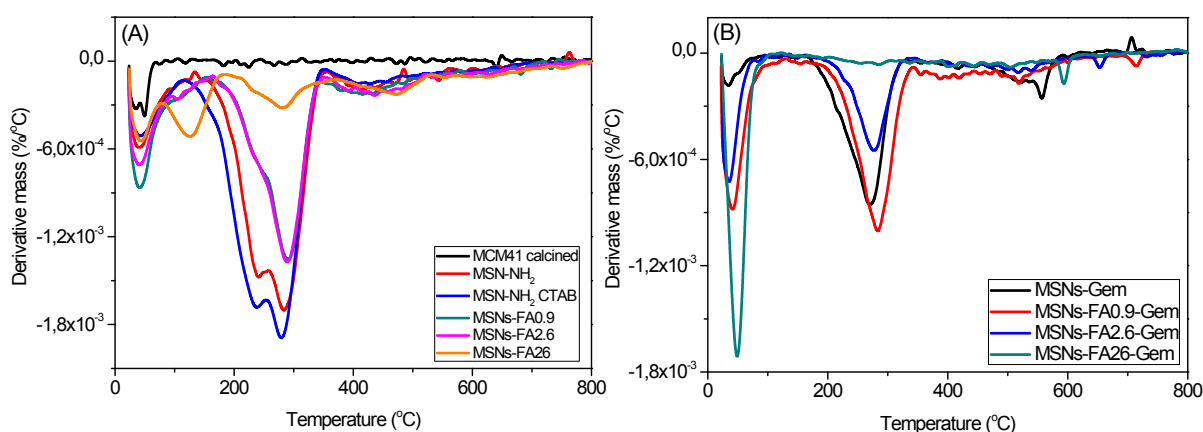


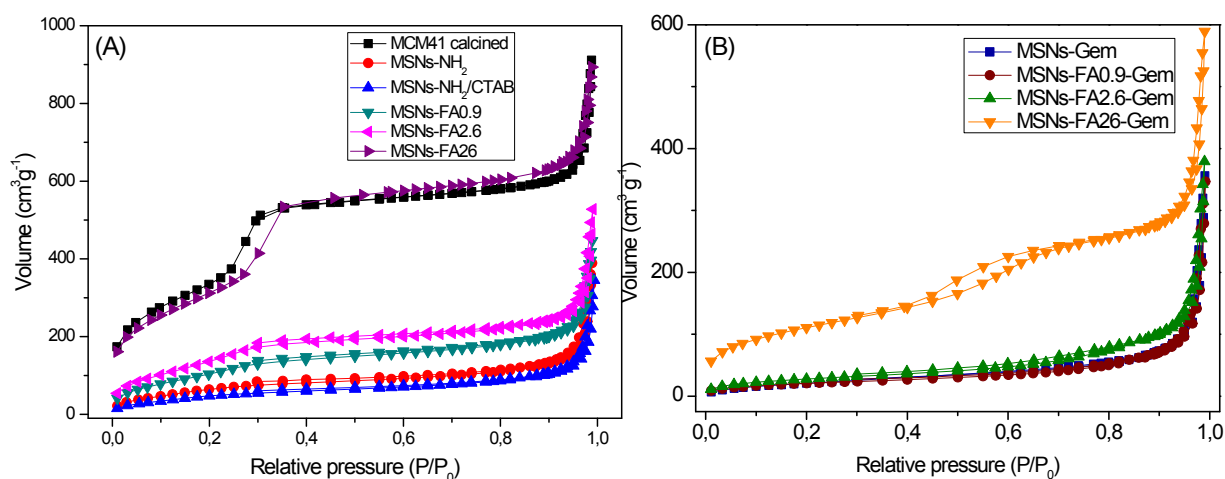
## Supplementary Information



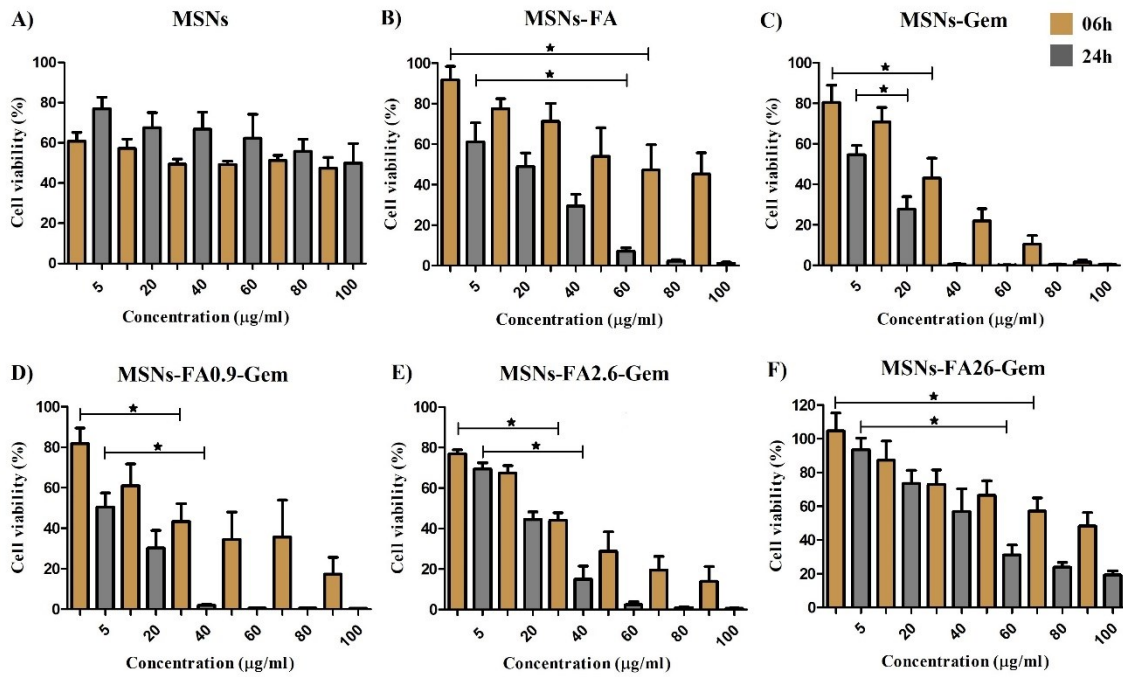
**Figure S1.** FTIR spectra of MCM41, MSNs-NH<sub>2</sub> spelled, MSNs-NH<sub>2</sub> with and without CTAB, MSNs-FA (0.9 - 26%) with and without CTAB.



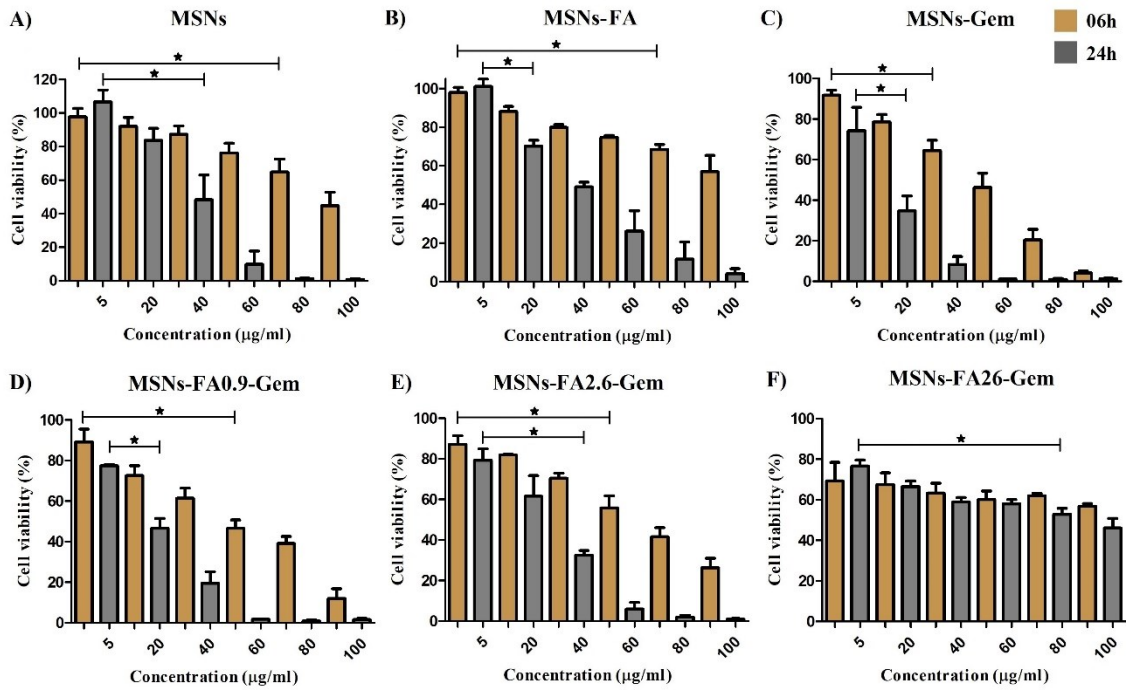
**Figure S2.** DTG (A and B) curves of MCM41, MSNs-NH<sub>2</sub> with and without CTAB, MSNs-FA (0.9 - 26%) with and without CTAB and MSNs-FA (0.9 - 26%) with Gem.



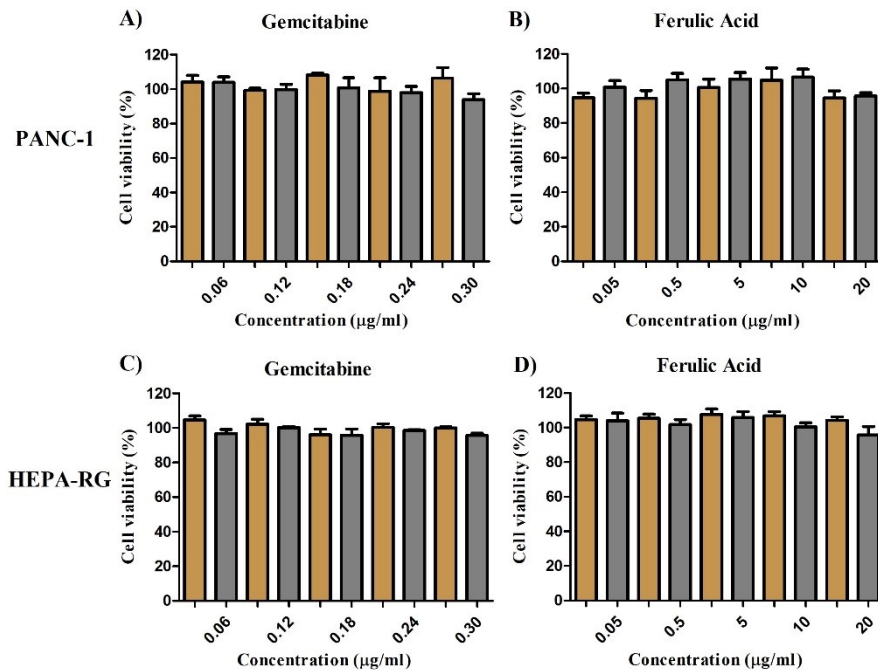
**Figure S3.** Nitrogen adsorption and desorption isotherm of (A) MCM41, MSNs-NH<sub>2</sub> with and without CTAB, MSNs-FA 0.9-26%; and (B) MSNs-Gem and MSNs-FA 0.9-26% with Gemcitabine.



**Figure S4.** MTT assay determined PANC-1 (10<sup>4</sup> cells/well) viability after exposed to (A) pure MSNs, (B) MSNs-FA2.6, (C) MSNs-Gem, (D) MSNs-FA0.9-Gem, (E) MSNs-FA2.6-Gem, and (F) MSNs-FA26-Gem, predicting cell susceptibility and toxicity of nanoparticle in distinct concentrations (5-100 µg/ml). Statistically, significant differences are indicated with \* (p ≤ 0.05). Data of positive control were not considered for statistical analysis and were included just to validate each assay.

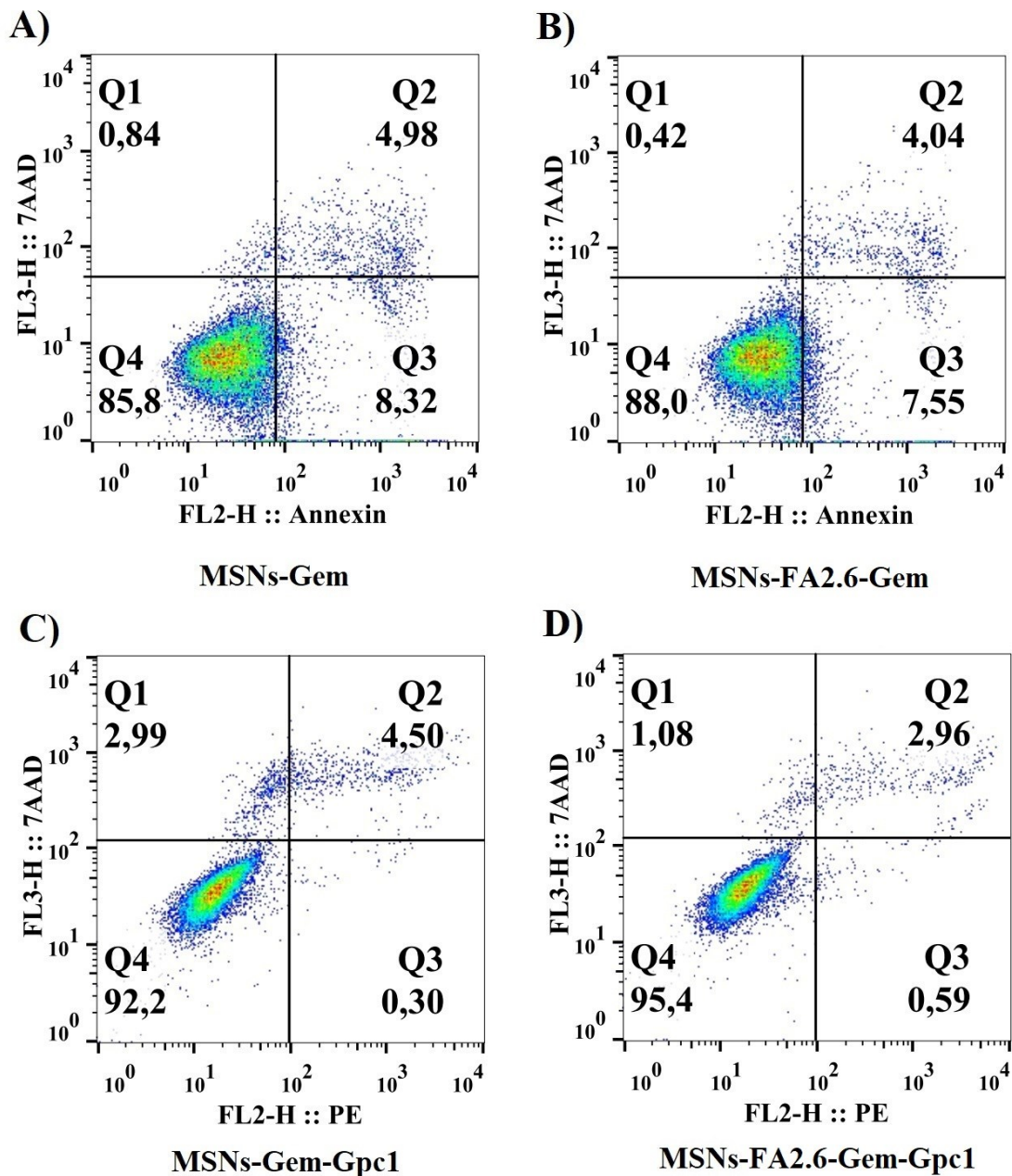


**Figure S5.** MTT assay determined HEPA-RG ( $10^4$  cells/well) viability after exposed to (A) pure MSNs, (B) MSNs-FA2.6, (C) MSNs-Gem, (D) MSNs-FA0.9-Gem, (E) MSNs-FA2.6-Gem, and (F) MSNs-FA26-Gem, predicting cell susceptibility and toxicity of nanoparticle in distinct concentrations (5-100 µg/ml). Statistically, significant differences are indicated with \* ( $p \leq 0.05$ ). Data of positive control were not considered for statistical analysis and were included just to validate each assay.



**Figure S6.** Cytotoxicity of gemcitabine and ferulic acid in pancreatic cancer cells (PANC-1) and healthy hepatic cells (HEPA-RG) evaluated by the methyl tetrazolium (MTT) reduction assay. PANC-1 and HEPA-RG ( $1 \times 10^4$  cells per well) were exposed to different concentrations of Gem (A, C), and AF (B, D) to investigate their response and compare to the action of nanoparticles. No statistical differences were observed between experimental groups.

### HEPA-RG



**Figure S7.** Cell viability analyzed by annexin-V and 7-AAD after 24h of treatment with MSNs preparations. Pseudocolor graphs represent early apoptosis at Q1 (7AAD<sup>+</sup> cells),

late apoptosis at Q2 (Annexin V<sup>+</sup>/7AAD<sup>+</sup> cells) and dead cells at quadrant Q3 (Annexin V<sup>+</sup>), depicting the effect of 5 µg.ml<sup>-1</sup> of (A) MSNs-Gem, (B) MSNs-FA2.6-Gem, (C) MSNs-Gem-Gpc1, and (D) MSNs-FA2.6-Gem-Gpc1 on hepatic normal cells (HEPA-RG).