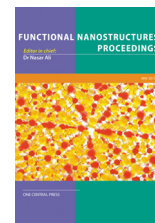


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## Magnetic Nanoparticles loaded Human Adipose Derived Stem Cells for targeted drug delivery - an in vitro model

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### ABSTRACT

Iron oxide based magnetic nanoparticles (MNPs) are under scrutiny as agents for cellular magnetic separation, magnetic resonance imaging (MRI) or drug delivery for diagnostic and therapeutic purposes for regenerative medicine (RM) and cancer therapies [1]. Stem cell mediated delivery represents a modality to target remote, metastatic tumors or regenerative sites for controlled drug delivery. The magnetic behavior of MNPs allows their use as contrast agents for MRI [2]. Palmitic acid coated magnetite (MNP-PA) could be up-taken by human primary adipose derived stem cells (ADSCs) that were found to retain viability, proliferative capabilities and efficient magnetization. ADSCs loaded with MNP-PA and mitoxantrone (MIT) were able to target tumor osteosarcoma tissue-like structures in vitro. Present results support the design of stem cell mediated delivery of MNP-AP with or without MIT for targeted drug delivery. The magnetic characteristics of the prepared ADSCs-MNP-PA support their use as contrast agents for MRI imaging, fact that needs to be confirmed in vivo.

### REFERENCES

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