

## Biodistribution of gadolinium- and near infrared-labeled human umbilical cord mesenchymal stromal cell-derived exosomes in tumor bearing mice.

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#### Abstract

We speculate that exosomes derived from human umbilical cord mesenchymal stromal cells (HUC-MSCs) will accumulate within tumors and have the potential for both tumor location or drug delivery. **Methods:** To determine proof of concept, HUC-MSC exosomes were labeled with an MRI contrast agent, gadolinium, or a near infrared dye. Exosome accumulation within ectopic osteosarcoma tumor-bearing mice was determined by 14.1 T MRI or bioimaging over 24-48 h after injection. *In vitro* studies examine the accumulation and physiological effect of exosomes on human and mouse osteosarcoma cell lines by MTT assay, confocal microscopy, and flow cytometry. **Results:** Systemic HUC-MSC exosomes accumulated continuously in tumor over a 24-48 h post-injection period. In contrast, synthetic lipid nanoparticles accumulate in tumor only for the first 3 h post-injection. **Conclusion:** These results suggest that HUC-MSCs exosomes accumulate within human or mouse osteosarcoma cells *in vitro* and *in vivo* over a 24 to 48 h after infusion.