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Exosome-mediated Delivery of RNA Interference and miRNA Mimic

Fatemeh Momen-Heravi
University of Massachusetts Medical School

Et al.

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Title: Exosome-mediated delivery of RNA interference and miRNA mimic

Full name of all Authors: Fatemeh Momen-Heravi*, DDS; Shashi Bala*, PhD; Terence Bukong, PhD; Gyongyi Szabo, M.D, Ph.D

*Equal contribution

Institutional affiliations: Department of Medicine, University of Massachusetts Medical School, Worcester, MA

Contact Information: Fatemeh Momen Heravi, UMASS Medical School/LRB-270

Fatemeh.MomenHeravi@umassmed.edu

Poster Abstract

Exosomes, membranous nanovesicles, naturally carry bio-macromolecules and play pivotal roles in both physiological intercellular crosstalk and disease pathogenesis. Here, we showed that B cell-derived exosomes can function as vehicles to deliver exogenous miRNA-155 mimic or inhibitor into hepatocytes or macrophages, respectively. Stimulation of B cells significantly increased exosome production. Unlike in parental cells, baseline level of miRNA-155 was very low in exosomes derived from stimulated B cells. Exosomes loaded with a miRNA-155 mimic significantly increased miRNA-155 levels in primary mouse hepatocytes and the liver of miRNA-155 knockout mice. Treatment of RAW macrophages with miRNA-155 inhibitor loaded exosomes resulted in statistically significant reduction in LPS-induced TNF α production and partially prevented LPS-induced decrease in SOCS1 mRNA levels. Furthermore, exosome-mediated miRNA-155 inhibitor delivery resulted in functionally more efficient inhibition and less cellular toxicity compared to conventional transfection methods. Similar approaches could be useful in modification of target biomolecules in vitro and in vivo.