



# MESENCHYMAL WHARTONS JELLY EXOSOMES

Experience the pinnacle of regenerative medicine to treat various autoimmune diseases, neurodegenerative disorders, and tissue injuries.

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## ORIGINATION

MSC-exosomes originate from mesenchymal stem cells and are a by-product of their replication. They are tiny extracellular vesicles that MSCs naturally release, carrying bioactive molecules like proteins and lipids that facilitate cell-to-cell signaling and regeneration. These exosomes play a crucial role in MSC therapy by delivering healing signals to damaged tissues, modulating immune responses, and promoting repair without requiring direct stem cell transplantation. Exosomes can also protect cells from death (apoptosis), preserving tissue integrity after injury or during disease.

## CHARACTERISTICS

MSC-Exosomes are nano-sized extracellular vesicles carrying bioactive molecules that signal cells to heal the areas of damage in which they are injected. They possess potent anti-inflammatory, immunomodulatory, and tissue-repairing properties while offering high stability, low immunogenicity, and the ability to cross biological barriers. These characteristics make them a robust, cell-free tool for regenerative medicine to enhance cellular repair.



## ROLE IN REGENERATIVE MEDICINE

MSC-Exosomes function as **paracrine mediators**, modulating cellular processes like **angiogenesis**, **immunoregulation**, and **tissue remodeling**. Also, they facilitate intercellular cell-to-cell signaling by transferring bioactive molecules.



## AUTOPHAGY

MSC-Exosomes stimulate autophagic pathways in the recipient cells, enhancing cellular clearance of damaged proteins and organelles. They also work with other extracellular vesicles, such as microvesicles and apoptotic bodies, to coordinate regenerative responses.



## SYNOPSIS

MSC exosomes are formed through the endosomal pathway, where multivesicular bodies (MVBs) selectively package bioactive molecules before secretion. They carry a diverse range of proteins, lipids, and enzymes, influencing cell signaling and homeostasis.

Notably, they promote angiogenesis by delivering vascular endothelial growth factor (VEGF) and other pro-angiogenic factors to endothelial cells, enhancing blood vessel formation. Additionally, some MSC exosomes facilitate mitochondrial transfer, providing damaged cells with functional mitochondrial components to restore energy metabolism and improve cellular function.



## APPLICATIONS

Exosomal therapy may be used in neurological disorders, autoimmune diseases, cardiovascular repair, cartilage and joint degeneration (osteoarthritis), anti-inflammatory treatments, anti-aging/skin rejuvenation, and pulmonary diseases.

## Exosomes

- Mediate intercellular communication
- Transport various molecules, including nucleic acids, lipids, and proteins, between cells
- Exhibit low or limited immunogenicity
- Cross barriers (e.g., blood-brain)

