

How Are Exosomes Applied?

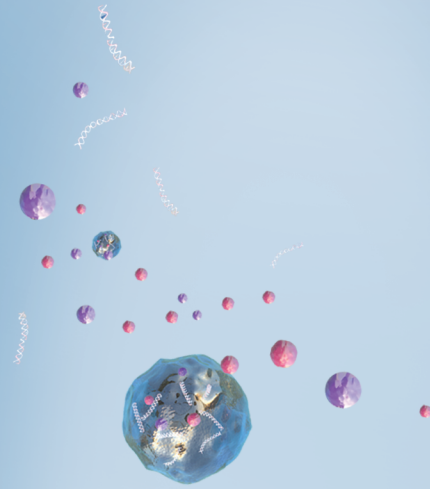
Exosomes are obtained from the umbilical cord which is accepted at the Stembio Laboratory after undergoing all quality control processes in accordance with cGMP conditions. Mesenchymal stem cells, isolated from the tissue, are cultured in special culture vessels using a cell-specific medium. Dead cell debris is removed from the culture medium. Following the preliminary processing steps, exosomes are isolated by ultracentrifugation at high speed. The obtained exosomes become ready for use after passing quality control tests and are stored under appropriate conditions.

Storage Conditions and Special Warnings:

24 months at -80 °C.

6 months at -20 °C.

It is recommended not to refreeze the frozen product after thawing. The frozen product should be used immediately after thawing. A slow thawing process should be applied. The frozen product should be allowed to thaw at room temperature or at +4 °C. Each dropper should be used for only one patient application.



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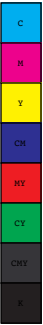
ExoView
MSC DERIVED EXOSOMES

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For eye applications only.





Mesenchymal Stem Cell Derived

EXOSOME

What is an Exosome?

Exosomes are nano-sized vesicles secreted by stem cells that carry proteins associated with tissue regeneration as well as various growth factors. They function as natural biochemical packages obtained by isolating mesenchymal stem cells from their culture medium using specialized processes. They stimulate cell regeneration in tissues; mesenchymal stem cell-derived exosomes contain growth factors and signals that assist in cellular repair. They promote the reconstruction of damaged tissues. Thanks to their immunoregulatory content, exosomes help regulate the immune system, ensuring a balanced defense. Their nano-sized structure grants them the ability to transfer into cells, enabling exosomes to be easily internalized and support healthy cells.

Exosome in Dry Eye
Potential Benefits of Its Use

- 1. Reduction of Inflammation: Dry eye is often associated with inflammation on the ocular surface. The anti-inflammatory effects of exosomes contribute to treatment by reducing inflammation.
- 2. Tissue Repair and Regeneration: Dry eye can cause cellular damage to the ocular surface, including the cornea and conjunctiva. Exosomes accelerate cellular repair and regeneration processes, aiding in the healing of damaged cells on the ocular surface.
- 3. Improvement of Lacrimal Gland Function: Mesenchymal stem cell-derived exosomes enhance the function of lacrimal glands, contributing to increased tear production. In regulating lacrimal gland function, exosomes improve cellular communication within the glands and promote cell regeneration. Since lacrimal gland function is also linked to neural stimulation, exosomes may support neuronal healing and healthy functioning, ultimately aiding in the efficient operation of the lacrimal glands.
- 4. Intercellular Communication and Regulation: Exosomes support intercellular communication, ensuring the coordinated functioning of cells on the ocular surface. This helps maintain the balance of healthy tissue on the ocular surface.
- 5. Pain Reduction: Dry eye disease can cause discomfort and pain. Exosomes modulate pain-related processes, helping to alleviate



Wu, K. Y., Ahmad, H., Lin, G., Carbonneau, M., & Tran, S. (2023). Mesenchymal Stem Cell-Derived Exosomes in Ophthalmology: A Comprehensive Review. *Pharmaceutics*, 15.

Mead, B., & Tomarev, S. (2017). Bone Marrow-Derived Mesenchymal Stem Cells-Derived Exosomes Promote Survival of Retinal Ganglion Cells Through miRNA-Dependent Mechanisms. *Stem Cells Translational Medicine*.

Joo, H. S., Suh, J., Lee, H. J., Bang, E. S., & Lee, J. M. (2020). Current Knowledge and Future Perspectives on Mesenchymal Stem Cell-Derived Exosomes as a New Therapeutic Agent. *International Journal of Molecular Sciences*, 21.

Nikfarjam, S., Rezaie, J., Zolbanin, N. M., & Jafari, R. (2020). Mesenchymal stem cell-derived exosomes: a modern approach in translational medicine. *Journal of Translational Medicine*, 18.

How Are Exosomes Produced?

Exosomes are obtained from the umbilical cord, which is accepted at the Stembio Laboratory after undergoing all quality control processes in accordance with cGMP conditions. Mesenchymal stem cells, separated from the tissue, are cultured in special culture vessels using a cell-specific medium. Dead cell debris is removed from the culture medium. Following the preliminary processing steps, exosomes are isolated by ultracentrifugation at high speed. The obtained exosomes become ready for use after passing quality control tests and are stored under appropriate conditions



Growth Factor / miRNAs

Growth Factor miRNA	Pathway	Explanation
HGF	c-Met, PI3K/Akt	Protection of retinal ganglion cells, inhibition of apoptosis.
EGF	EGFR	Accelerates corneal epithelial regeneration, supports wound healing.
NGF	TrkA	Provides neurotrophic support, effective in corneal wound healing.
miR-21	PTEN/PI3K/Akt	Retinal cell proliferation, reduction of inflammation.
miR-124	STAT3	Neuroprotection.
miR-146a	NF-κB	Suppression of autoimmune processes, immunomodulatory effect.
miR-29b	Wnt/β-catenin	Reduction of fibrosis in corneal stromal tissue, wound healing.

