

How is Exosome Applied?

The route and frequency of application of exosomes which become ready-to-use end products after production, vary according to the indications, but can be realized according to the physician's preference.



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CARDIOLOGY



Mesenchymal Stem Cell Derived EXOSOME

What is an Exosome?

Exosomes are protein-containing lipid vesicles obtained by special processes from the culture medium of cells containing many growth factors, which have the capacity to regulate cellular and biochemical events that play a role in cell renewal and tissue repair. ExoPulse contributes to the repair of cardiac tissues and blood vessels with the support of growth factors and miRNAs. Basically, treatment efficacy is supported through immune modulation and cellular communication mechanisms. Exosomes contain miRNAs such as miR-125, miR-19, miR-21 and miR-210 and factors such as Wnt, TGF-β, Hsp-20, PDGF, VEGF and IL-10, which are thought to act through PI3K/Akt, Wnt/β-catenin and AMPK/mTOR signaling pathways¹⁻⁴.

- Stimulates cell proliferation and migration.
- Restores the extracellular matrix.
- Increases angiogenesis.
- Regulates the immune system, inflammation, and immune response.
- Promotes tissue regeneration.

ExoPulse Exosome Potential Fields of Use

Exosomes are used in cardiology and cardiovascular surgery, targeting the repair of cardiac tissues and blood vessels, regulation of the immune system and cell regeneration;

- Acute Myocardial Infarction
- Heart Failure
- Ischemic Heart Disease
- Cardiomyopathy
- Peripheral Arterial Disease & Buerger's Disease

How are Exosomes Produced?

Exosomes are obtained from umbilical cord accepted to Stembio Laboratory after undergoing all quality control processes in accordance with cGMP conditions. Mesenchymal stem cells separated from the tissue are multiplied in special culture dishes with cell-specific medium. Dead cell debris is removed from the culture medium. After the pre-treatment steps, exosomes are isolated by high-speed spinning using ultracentrifugation method. After the obtained exosomes pass quality control tests, the product is ready for use and stored under appropriate conditions.



GROWTH FACTORS AND THEIR EFFECTS

Growth Factor	Function
TGF-β (Transforming Growth Factor- β)	Regulates cell development, stimulates tissue repair.
VEGF (Vascular Endothelial Growth Factor)	Stimulates the process of angiogenesis.
HB-EGF (Heparin-binding EGF-like growth factor)	Promotes cardiac development, wound healing.
PDGF (Platelet-Derived Growth Factor)	Accelerates repair and healing in cardiac tissues.

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