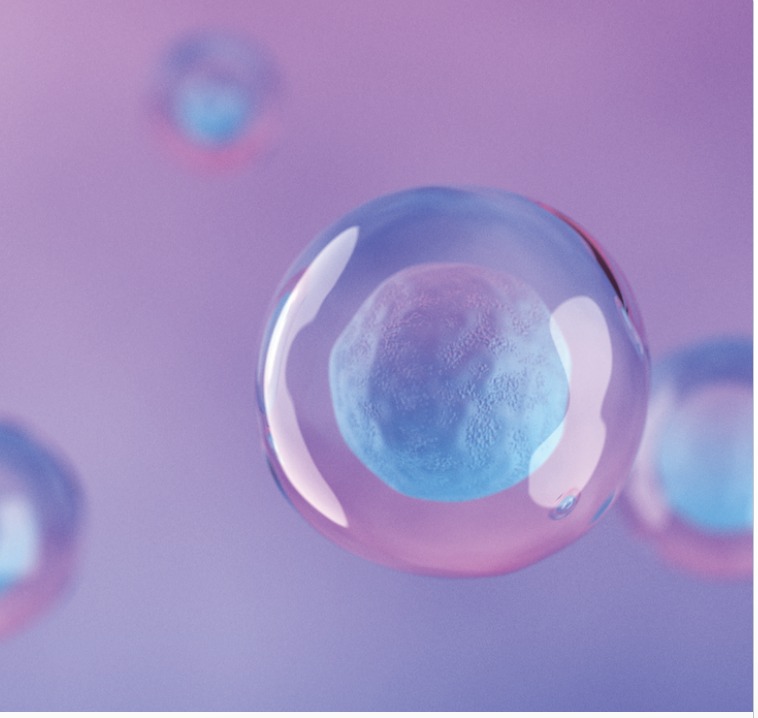


EXOSOMES

Multiple studies have shown that exosomes derived from mesenchymal stem cells (MSCs) can modulate the inflammatory response of wounds by promoting the polarization of macrophages towards the M2 phenotype and enhancing the secretion of antiinflammatory factors, thereby facilitating wound healing.

Exosomes are extracellular vesicles secreted from cells. They have a diameter of almost 30–150 nm and miRNAs, mRNAs, and proteins that are possibly different from the source cell are included in exosomal contents. Such nanovesicles have a key role in the intercellular communication of pathological and physiological procedures.

Human Umbilical Cord
Mesenchymal Stem Cells

EXOSOMES

MoleculeMed

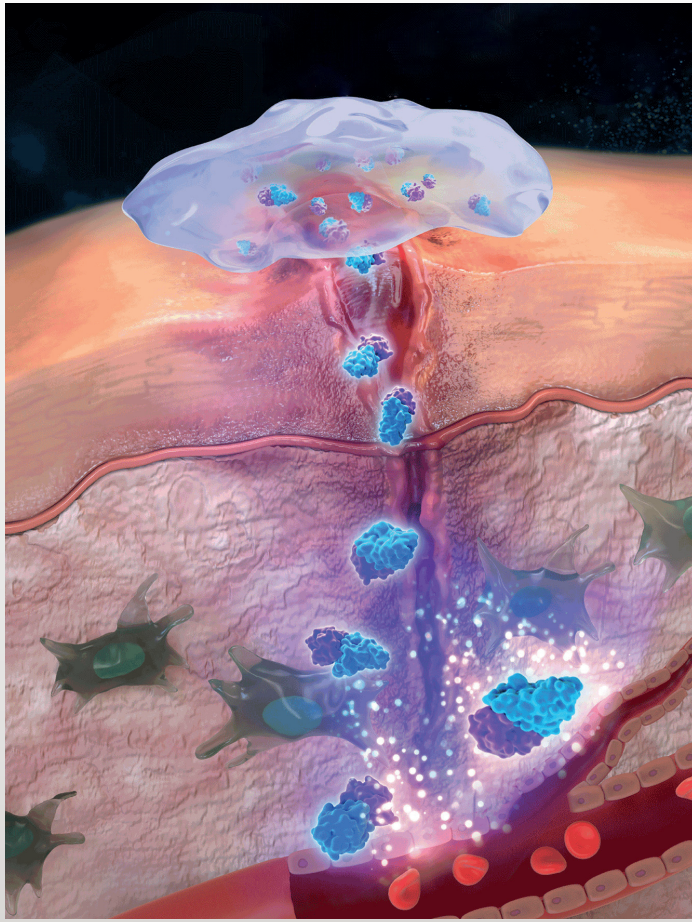
Molecule Med Sdn Bhd (202001014785(1371105M)
100.3.041, Level 3 Block J
72A, Jalan Universiti, Seksyen 13,
46200 Petaling Jaya, Selangor
Tel : +6012 646 1617

MoleculeMed

Human Umbilical Cord
Mesenchymal Stem Cells

EXOSOMES

For Acceleration Of Wound Healing



HOW EXOSOME THERAPY WORKS

Mechanism: Exosome therapy capitalizes on the body's inherent regenerative capabilities. When applied to wounds, exosomes deliver their cargo of growth factors, cytokines, and nucleic acids directly to the damaged tissue. The intravesicular compartment of an exosome is enriched with signaling molecules, including nucleic acids (mRNA, miRNA, lncRNA), lipids, and proteins, while the outer membrane is composed of anchoring molecules, immune eliciting molecules, and lipid rafts. These components facilitate targeted delivery, accelerating cellular repair processes, enhancing tissue regeneration, and modulating inflammation. This multifaceted approach leads to more effective and faster wound healing.

- **Encourage Cellular Activities**
  Cell Proliferation and Migration
- **Anti- Inflammatory Effect**
- **Tissue Regeneration**
- **Immunomodulation**
- **Stimulation of Angiogenesis**
- **Intravesicular and Membrane Components**
- **Regulate Collagen Production & Organization**
  Extracellular Matrix Remodeling



4 Years Non- Healing Chronic Wound

DAY 0 DAY 13 DAY 165



Over the 11-week treatment period, noticeable improvements were seen in the patient's wound healing. Within the first 4 weeks of exosome therapy, the wound area reduced by 35%, indicating steady progress in recovery. Wound progression monitored up to 3 months after last exosome injection.

Ref: GWC24- AB-27 Hamishatul Shamsiah, AM., Nurul Hamizah, A., Syafiqah, MS., Shukur, A. , 1 Wound Care Unit, Hospital Teluk Intan - "The Role of Exosomes in Accelerating Wound Healing: A Case Study

Chronic Venous Ulcer

DAY 0 DAY 7 DAY 14 DAY 32

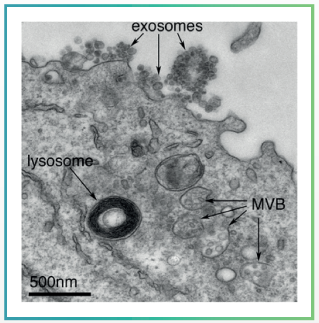


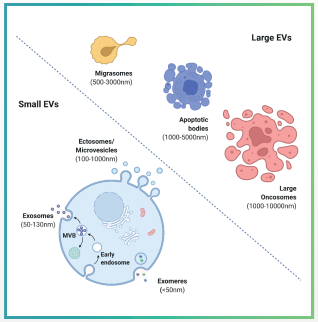
The patient, suffering from a chronic venous ulcer for 6 months, showed no improvement despite multiple treatments. At the start (Day 0), the wound was covered in slough and necrotic tissue. After just one week of exosome therapy (Day 7), significant improvement was observed with healthy granulation tissue and no necrosis. By Day 14, the epithelization process had accelerated, and by Day 32, the wound had fully healed, marking a complete recovery in under five weeks.

Chronic wounds remain a persistent challenge in wound care, often defying conventional treatments. Exosomes offer a groundbreaking therapy, enhancing cellular communication and accelerating tissue regeneration with their bioactive molecules.

Forms & Functions of Exosomes (EVs):

EVs are broadly categorized into small (exomeres (<50 mm), exosomes (<100 or 200 nm), and ectosomes (>200 nm). Exosomes evolve by sprouting as intraluminal vesicles (ILVs) within the luminal space of late endosomes or so-called multivesicular bodies (MVBs).





Exo+ are involved in cell-to-cell interaction pathways with physiological and pathological function, possess immunomodulatory and immunosuppressive effects and activate angiogenesis, the proliferative phase, and epithelialization. Several studies have shown that stem cells and their exosomes can benefit wound healing. In addition to promoting cell proliferation and tissue regeneration, exosomes also reduce scarring, complications, and immune responses to graft materials.

