



**BOOK
APPOINTMENT**



Stem Cell Care
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EXOSOMES TREATMENT FOR SYSTEMIC LUPUS

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Exosomes Treatment for Systemic Lupus

Exosome treatment for systemic lupus is an emerging therapeutic approach that leverages the immunomodulatory and regenerative properties of exosomes.

❖ Advantages of Exosome Treatment

Exosome treatment for systemic lupus gives a number of advantages for its unique immunomodulatory and regenerative properties.

Targeted Immune Modulation:

- Exosomes specifically modulate immune cells, reducing the activity of autoreactive immune cells and promoting regulatory T cells. This targeted action helps alleviate the autoimmune attack characteristic of SLE without broadly suppressing the immune system.

Anti-inflammatory Effects:

- Exosomes carry anti-inflammatory cytokines and microRNAs that can reduce chronic inflammation, a hallmark of SLE. Lowering inflammation helps manage symptoms and prevents further tissue damage.

Tissue Repair and Regeneration:

- Exosomes contain growth factors and other bioactive molecules that promote the repair and regeneration of damaged tissues. This is particularly beneficial in SLE, where organs such as the kidneys, skin, and joints can be severely affected.

Reduced Side Effects:

- Compared to traditional immunosuppressive drugs, exosome therapy may have fewer side effects. This is because exosomes can deliver their therapeutic payloads directly to target cells, minimizing systemic exposure and potential adverse effects.

Minimally Invasive:

- The administration of exosomes, typically via intravenous infusion, is less invasive than other cellular therapies. This reduces the risks and recovery time associated with more invasive procedures.

Potential for Long-term Remission:

- By effectively modulating the immune response and promoting tissue repair, exosome therapy has the potential to achieve long-term remission in SLE patients, improving their overall prognosis.

❖ Mode of Action in Systemic Lupus

Exosome treatment for systemic lupus erythematosus (SLE) works through multiple mechanisms to modulate the immune system, reduce inflammation, and promote tissue repair.

Immunomodulation:

- **Regulation of Immune Cells:** Exosomes derived from mesenchymal stem cells (MSCs) contain bioactive molecules like cytokines, proteins, and microRNAs that can modulate immune cell activity. They promote the activity of regulatory T cells (Tregs), which help control autoimmune responses, and suppress the activity of autoreactive T cells and B cells that drive the autoimmune attack in SLE.
- **Reduction of Autoantibodies:** Exosomes can influence B cells to reduce the production of autoantibodies, such as anti-dsDNA antibodies, which are characteristic of SLE and contribute to tissue damage.

Anti-inflammatory Effects:

- **Cytokine Regulation:** Exosomes carry anti-inflammatory cytokines and microRNAs that reduce the production of pro-inflammatory cytokines like TNF- α , IL-6, and IL-1 β . This helps-

decrease systemic inflammation, which is a key feature of SLE.

- **Inflammatory Pathway Inhibition:** Exosomes can inhibit inflammatory signaling pathways, such as the NF- κ B pathway, further reducing the inflammatory response.

Tissue Repair and Regeneration:

- **Promotion of Healing:** Exosomes contain growth factors and other molecules that promote tissue repair and regeneration. They stimulate the proliferation and differentiation of cells involved in repairing damaged tissues, such as fibroblasts and endothelial cells.
- **Angiogenesis:** Exosomes promote the formation of new blood vessels (angiogenesis), improving blood supply to damaged tissues and supporting their repair and regeneration.



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