

Effect of Stem Cell on Allergic Rhinitis

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Allergic rhinitis and asthma are inflammatory allergic airway diseases characterized by Th2-skewed eosinophilic inflammation, mucus hypersecretion, and airway hyperresponsiveness. The excessive activation of Th2 cells due to insufficient suppression of regulatory T cells (Tregs) is thought to play a major role in the initiation and development of allergic airway diseases. Several studies have shown that stem cells provide a significant reduction in allergic airway inflammation and improve lung function in animal models. The immunomodulatory effects of stem cells in allergic airway diseases may be mediated by the upregulation of Tregs and increases in several soluble factors such as prostaglandin E₂, transforming growth factor- β , interleukin-10, and indoleamine 2, 3-dioxygenase.

Recently, it has been reported that culture supernatant of mesenchymal stem cells (MSCs) and MSC-derived extracellular vesicles also ameliorate allergic airway inflammation. In the chronic asthma model, the soluble factors prevented airway smooth muscle thickening and peribronchial inflammation. These supernatant and extracellular vesicles derived MSCs has many advantages, including safety, ease of handling, ability to be stored for long periods, and usage in patients. Although we need more information about supernatant and extracellular vesicles derived MSCs before use in therapy, this strategy could be used to treat many immunological diseases in the near future.

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