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Immunomodulation by mesenchymal stem cells: Interplay between MSCs and regulatory lymphocytes

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Abstract

Mesenchymal stem cells (MSCs) possess immunomodulatory properties, which confer enormous potential for clinical application. Considerable evidence revealed their efficacy on various animal models of autoimmune diseases, such as multiple sclerosis, systemic lupus erythematosus and uveitis. MSCs elicit their immunomodulatory effects by inhibiting lymphocyte activation and proliferation, forbidding the secretion of proinflammatory cytokines, limiting the function of antigen presenting cells, and inducing regulatory T (T<sub>reg</sub>) and B (B<sub>reg</sub>) cells. The induction of T<sub>reg</sub> and B<sub>reg</sub> cells is of particular interest since T<sub>reg</sub> and B<sub>reg</sub> cells have significant roles in maintaining immune tolerance. Several mechanisms have been proposed regarding to the MSCs-mediated induction of T<sub>reg</sub> and B<sub>reg</sub> cells. Accordingly, MSCs induce regulatory lymphocytes through secretion of multiple pleiotropic cytokines, cell-to-cell contact with target cells and modulation of

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