**Table 1** The molecules secreted by the MSCs and their functions

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| Molecules | Function |
| TGF-β  | T-reg activation, therefore promote systemic immune tolerance |
| Inhibition effector T-cell proliferation and function |
| Reduction of cytolytic activity and cytokine production of NK cells |
| Suppression of DCs, B cells, and macrophages |
| PGE2 | Immunosuppressive factor, its cellular target particularly are NK cells, PBMCs, monocytes, macrophages and transitional processes of monocyte differentiation into mature DCs |
| VEGF | Stimulates angiogenesis |
| Pro-inflammatory function by recruiting mononuclear cells, upregulate Th1 and Th17 |
| Immunosuppressive function by down-regulate the transcription factor NF-κB, resulting in an inhibition of DCs maturation |
| IDO | Immunosuppressive and anti-microbial effects |
| CCL2/MCP-1 | Regulating recruitment and migration of monocyte |
| Inhibition of Th17 |
| Pro-apoptotic or anti-apoptotic activity depends on the microenvironment and cytokine profile |
| IL-6 | Neutrophil apoptosis suppression and induce CD8+FoxP3+ cells’ formation |
| TSG6 | Inhibit disease progression and induce corneal regeneration |
| HGF-1 | Angiogenesis, immunomodulation, and anti-apoptotic activity |
| NGF | Neuroprotective effect |
| GDNF | Neurotrophic effect |
| Gal-1 | Inhibits proliferation of CD4+ and CD8+ T cells |
| Gal-9 | Induces T cells death |

Abbreviations: Transforming growth factor beta (TGF-β), natural killer cells (NK), dendritic cells (DCs), prostaglandin E2 (PGE2), peripheral blood mononuclear cells (PBMCs), vascular endothelial growth factor (VEGF), T helper 1 cells (Th1), T helper 17 cells (Th17), Indoleamine-2,3-dioxygenase (IDO), monocyte chemoattractant protein-1 (CCL2/MCP-1), interleukin-6 (IL-6), tumor necrosis factor-inducible gene 6 protein (TSG6), hepatocyte growth factor-1 (HGF-1), nerve growth factor (NGF), glial cell-derived neurotrophic factor (GDNF), galectin-1 (Gal-1), galectin-9 (Gal-9) (Y.-S. Kim et al. 2009; Rafei et al. 2009; Gieseke et al. 2010; Ben-Ami et al. 2011; Van Elssen et al. 2011; Yoshimura en Muto 2011; Fisher-Shoval et al. 2012; Gieseke et al. 2013; Kyurkchiev et al. 2014; Madrigal et al. 2014; Marti et al. 2014; Di et al. 2017; Fornaro et al. 2020)a