

MESENCHYMAL STEM CELL (MSC) THERAPY FOR COVID-19 and ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

LITERATURE REVIEW

ARE MESENCHYMAL STEM CELLS SAFE?

Based on several systematic reviews and meta-analyses, MSC therapy in humans appears to be safe

Lalu MM, McIntyre L, Pugliese C, et al. Safety of cell therapy with mesenchymal stromal cells (SafeCell): a systematic review and meta-analysis of clinical trials. *PloS one*. 2012;7(10):e47559.

Perlee D, van Vught LA, Scicluna BP, et al. Intravenous Infusion of Human Adipose Mesenchymal Stem Cells Modifies the Host Response to Lipopolysaccharide in Humans: A Randomized, Single-Blind, Parallel Group, Placebo Controlled Trial. *Stem cells*. 2018;36(11) 1778-1788.

Toyserkani NM, Jørgensen MG, Tabatabaeifar S, et al. Concise Review: A Safety Assessment of Adipose-Derived Cell Therapy in Clinical Trials: A Systematic Review of Reported Adverse Events. *Stem cells translational medicine*. 2017;6(9):1786-1794.

DO MESENCHYMAL STEM CELLS WORK FOR RESPIRATORY DISTRESS?

Based on several small studies, MSC therapy in humans shows promise

Gao P, Yang X, Mungur L et al. Adipose Tissue-Derived Stem Cells Attenuate Acute Lung Injury Through eNOS and eNOS-Derived NO. *International journal of molecular medicine*. 2013;31(6):1313-1328

MSCs were able to reduce the severity of acute lung injury and lung edema. The results suggest MSCs may be a promising candidate for acute lung injury.

<https://www.spandidos-publications.com/ijmm/31/6/1313>

Chen J, Hu C, Chen L et al. Clinical Study of Mesenchymal Stem Cell Treating Acute Respiratory Distress Syndrome Induced by Epidemic Influenza A (H7N9) Infection: A Hint for COVID-19 Treatment. *Engineering*. 2020;doi:10.1016/j.eng.2020.02.006

Mortality rate was significantly lower in the MSC treated group (17.6%) when compared with control group (54.5%).

<https://www.sciencedirect.com/science/article/pii/S2095809920300370>

Leng Z, Zhu R, Hou W et al. Transplantation of ACE2- Mesenchymal Stem Cells Improves the Outcome of Patients With COVID-19 Pneumonia. *Aging Diseases*. 2020;11(2):216-228

MSCs significantly improved the functional outcomes of seven patients without observed adverse effects.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7069465/pdf/ad-11-2-216.pdf>