# Mesenchymal Stem Cells Secretome as a prospective therapeutic option for COVID-19 patients

Avinash Sanap[a], Ramesh Bhonde[b,*], Avinash Kharat[a], Supriya Kheur[c]

a. Regenerative Medicine Laboratory, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune-411018, India
b. Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune-411018, India
c. Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune-411018, India

***Corresponding Author:**

Dr. Ramesh Bhonde
Director (Research)
Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune-411018, India
Email: rrbhonde@gmail.com
Tel: 020 6711 6412

**Letter:**

From an outbreak to an epidemic, World Health Organization (WHO) declared the global spread of the COVID-19 as pandemic warranting co-ordinated efforts for research and development into Diagnostics, Novel Therapeutics and Repurposing of drugs for the control of COVID-19[1]. Respiratory failure caused by acute respiratory distress syndrome (ARDS) is the leading cause of mortality. One of the root causes for the ARDS is the cytokine storm which is acquired by uncontrolled release of pro-inflammatory cytokine such as (IFN-α, IFN-γ, IL-1β, IL-6, IL-12, IL-18, IL-33, TNF-α, TGFβ, etc.) and chemokines (CCL2, CCL3, CCL5, CXCL8, CXCL9, CXCL10, etc.) by immune cells[2].

Interestingly, recent report suggest that intravenous transplantation of MSCs decreased the over activated cytokine secreting immune cells such as CXCR3+CD4+ T cells, CXCR3+CD8+ T cells with concomitant decrease in C-reactive protein (CRP), Tumor Necrosis Factor-α (TNF- α) and increase in the immunosuppressive cytokine IL-10[3]. To everyone's surprise, transplanted MSCs found to be resistant to the COVID-19 infection and exhibited higher expression of anti- inflammatory and trophic factors such as TGF-β, HGF, LIF, GAL, NOA1, FGF, VEGF, EGF, BDNF[3].

In search of a definitive viable solution to the dreadful COVID-19 infection, we propose stem cell Secretome as a promising therapeutic option devoid of side effects. Secretome of MSCs which possess potent immunomodulatory effects which can counterbalance the pro-inflammatory cytokines driven cytokine storm. Conditioned medium of MSCs which can be easily obtained by in-vitro cell culture and can be locally administered through assisted nebulizer mask by inhalation as initially proposed by us for the treatment of chronic obstructive pulmonary disease (COPD)[4]. Local administration of Secretome gives upper hand over transplantation as it's a cell free therapy employing rapid action necessary as in the case of COVID-19 driven ARDS. Local and assisted administration of MSCs Secretome will not only help counter balance the cytokine storm driven by immunomodulatory properties but also promote the cell survival, wound healing and anginogenic potential of resident cells by its paracrine effect mediated by VEGF, EGF, HGF, FGF, CNTF, and various interleukins[5]. Combinatorial strategy of antiviral drugs along with immunomodulatory, tissue protective and healing potential of Secretome may reduce the severity of the COVID-19. An urgent development is warranted on the MSCs Secretome

based therapeutics specifically targeted towards ARDS to ensure the health and survival of human being.

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