

## In Continuously Battling COVID-19 with Innovative Perspectives

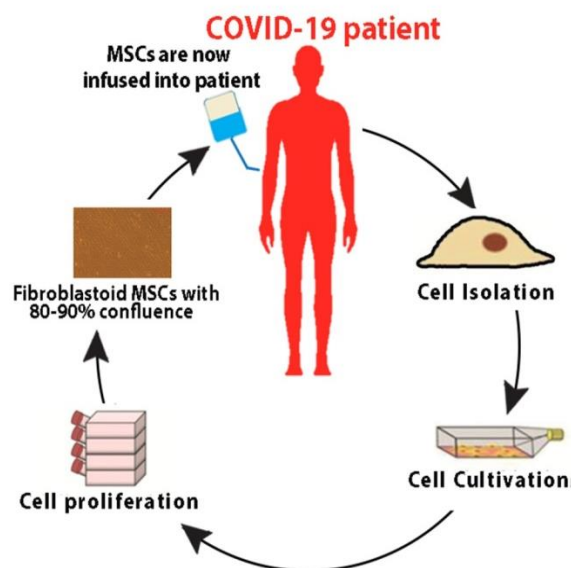
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### Abstract

In commentary to a paper issued in J Chem Edu Res Prac 2020, 4(2), 1-4 by Laila Mahmoud Montaser2020 entitled “Could putting the mesenchymal stem cells technology into practice be an optimistic therapy for the critically ill COVID-19?”, the author gifted a perfect experimenter way in equipping mesenchymal stem cells (MSCs) that may be an ideal chosen till recuperation the sorely ill new corona patients. The author presumed with a view to mesenchymal stem cells obtained from blood produced from the crucially sick corona case himself proposed accordingly a curative with regard to him.

**Keywords:** Coronavirus, COVID-19, Stem cell, MSCs, Pneumonia.

### Graphical Abstract



**Figure 1:** Diagrammatic design the sequence of Proposal (Graphic Design by Sherin Design)

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## Introduction

In ultimate 2019, the modern Covid-19 utilizes top-uncontrollable entry into angiotensin-converting enzyme 2 (ACE2) - appearing cells. A great number of sick cases meeting heavy illness qualified by

## Statement of the Problem

Modern COVID-19 is propagating swiftly globally and has been proclaimed pandemic by the World Health Organization and so calls for insistent, offensive works to battle the virus. At present, no curative influence for COVID-19 is ready in the form of antiviral drugs. Therefore, the proposition of a remedy with accessible, rational and applicable mechanisms is immediately required for COVID-19 polluted cases, in particular the critical cases. Modern alternative remedies may decrease the mortality rate. Recent use of stem cells for critically ill COVID-19 patients in a small group of patients in China and subsequent Emergency Use Authorization of stem cells by Food and Drug Administration to Global Institute of Stem Cell Therapy and Research and Athersys has produced agitation among the medical folk. The stem cell founder-remedy affected via bearing the trunk's early tenacious answer within a trend can purpose the COVID-19. The commonness of the defunct ill patients is generated through grave reactions, such as in the extreme challenging to improve efficacious medicinal agents and designs for those cases [3].

## Goals

The objective of the author was to offer a perfect and precise experimenter way upon equipping MSCs that could become a

mortal acute respiratory distress syndrome (ARDS), severe lung injury and death [1]. The transition of the fresh virus is thought to take place via respiratory droplets and fumes. In the human lung, ACE2 is extracted fundamentally in alveolar epithelial type II cells and ciliated cells [2].

model selection towards handling the sorely ill modern coronavirus patients. Therefore, the author assumed such MSCs founded from blood if created of the crucially sick new coronavirus case itself could inspire accordingly a medicament for himself. So, this is a point of view to a novel medicinal delineation. The author was favorable that her future had modulations for the emergence of a modern drug for the curing of this unmatched pandemic [3].

## Methodology and theoretical orientation

The author presented a MSC-making ready schedule where stem cells are segregated beneath realized cultivation conditions according to the agenda integrated and improved in the laboratory.

## Mesenchymal stem cell equipage plan

Mesenchymal stem cells (MSCs) are separated below realized cultivation situations according to the enrollment inserted in her laboratory. Acquainted approval is possessed from the patients before sampling. MSCs are produced by drawing 100ml of blood (up to five doubled) from the sick person in sterilized heparinized 10 ml vacutainer tubes to be processed for 6 hours. Beneath full aseptic situations, the blood in every pipe is

mingled with disinfected Calcium- and Magnesium-Free Phosphate-Buffered Saline (PBS) (Dulbecco's from Invitrogen) in the propulsion of 1:1 and are mixed actively thereafter coated as two sizes of blood to one size of ficoll-hypaque (Bichrom AG, Leonorenstr, Berlin) in 15 ml conical centrifuge pipes to be centrifuged for 20 minutes at 1800 rpm. Summation of the mononuclear cells (MNCs) part is carried out utilizing a Pasteur pipette to be washed twice in antiseptic PBS and cell spherule is a pendant in 1 ml DMEM-media (Thermo Scientific, Fermont, USA). Cell counting and viability are evaluated by the vital stain trypan blue dye 0.4% (Sigma Aldrich) harnessing a hemocytometer. MNCs hangs of  $1 \times 10^6$  cells/ml concentration are coated and pliable to tie up to tissue culture plastic flasks 25 cm<sup>2</sup>. For suitable cohesion of the cells, the vials are incubated in a straight posture in a humidified incubator at 37°C and 5% CO<sub>2</sub>. The utilized sustaining media is designated of: low glucose DMEM (DMEM-LG) with L-glutamine (2mmol/L) (Lonza (, 10 % FBS (Lonza), 2 % penicillin-streptomycin (10,000 U/ml and 10,000 µg/ml) (Sigma Aldrich) and 1 % Fungizone (250 mg/ml) (Bioscience). The media are inspected by a vision to seek for indications of bacterial dirtiness, and then studied under the inverted microscope (100-400X) for rating of the cell morphology (fibroblast-like appearance, viability of cells, and bacterial dirtiness). The premier shift of the media is carried out on the third to fifth day to expel non-adhesive cells; the adhesive cells are preserved in the flasks and are supplied by novel integral nutritive media. The media is varied two times per week until expansion reaches nearly 90% concourses which are appreciated by inspection under

the inverted microscope and then the cells are discrete using trypsin-EDTA 0.25% liquid. For trypsinization: one to three ml of trypsin-EDTA secession liquid is poured into each vial. The sealed vials are sweetly jolting and fixed on the directions to entirely flood the cells. Next whole, DMEM holding 1% serum is combined at the identical volume as the volume of trypsin applied. The cells are shifted to centrifuge 15 ml falcon tubes and centrifuged at 1800 rpm for ten minutes. The supernatant is taken away and the cells are pending in the entire media as a monocular cell hangs. The cropped MSCs from prime culture are rated by flow cytometric depiction of MSCs according to the worldwide recommendations for stem cell recognition. MSCs become clear full of hope cell-based therapy for improving the immune dysregulation following acute pneumonia to recapture pulmonary vigor. The stem cell-founder-remedy works through bearing the trunk's early obstinate answer within a trend to target the COVID-19. The key about the medication of such squeeze traps within the judgment of the cytokine tempest in the lungs, stem cells are entirely-appropriate according to their leading operation of the task be through their immunomodulatory and anti-inflammatory outcomes[4].

## Findings and Discussion

The reliability and fineness of the laboratory quality on making stem cells are fundamentally radical about coronavirus curatives concerning superior findings for curing patients.

Outcomes of two modern studies from China offer that the transmit remedy of human umbilical cord MSCs (hUCMSCs)

might be a typical selection to be utilized or planned with else immune altering operators to restoration the crucial sickness COVID-19 sick cases [5,6].

The opinion of the author matched with both the view of Chrzanowski et al [7] and the point of view of Golchin and colleagues [8], where the 1st substantiated those MSCs could be the too great sanguine choice for the remediation of COVID-19 zymosis, while the 2nd one stated that subsequent IV inject of stem cells, a massive numeral of cells assembled within the lung, to alongside immunomodulatory influence may limit thickening and scarring of connective tissue of the lung, and recuperate its damage mission. Within her paper, she hypothesized such a modern approach for recovering patients' immunological answers to coronavirus employing cell therapy. She notified that with a view to cell therapy particularly Mesenchymal cells could probably be the best fundamental model curatives to process recent COVID-19 patients.

Fenggang and colleagues informed that stem cells in the pulmonary tract and parenchyma are displaying to implement a vast aspect by interacting with the virus to deal with access contagion, lung injury, and mend [1].

Hence, the opinion of a cure with hypothesis, dialectics and proper tactic is severely in demand. Under this style and in the opinion and profound expertise of the author [9-20] in the domain of regenerative medicine and tissue engineering she

assumed that MSCs created of the crucially sick new coronavirus case offered accordingly a curative about him. Wherefore, the author's standpoint marks of the balsamic venture. So transplantation of stem cells may proceed to pulmonary redress and renovation.

## Conclusion

Within a pandemic, it's sensible to implement some testing of unsettled interventions such as MSCs in teeny scientific doings, however, their findings have to remain searched within a planned, reasonable method up to there is furthermore index. With life-minatory patients, the author considers it substantial to harness stem cell remedy insomuch as another drug is not ready. Seek the stem cell remedy accordingly a good idea however the only path is upon trial and view. The author will go on to create precious research, studies research, and rational observations. MSCs isolated from the blood are theorized to be the gold norm for MSC achievements. Since the United States, Food and Drug Administration confirmed Mesenchymal Stem Cell treatment in connection with harness within the robustly ill coronavirus patients down which is deemed similar is a widened gracious employ. The author has to extrude a firm glimpse respecting scientific innovations, search engendering experimenter programs about coronavirus processing. The author displays emerging views on the technologies command could progress to an uprising in humane healthiness.

## References

1. Fenggang Yu, Rufu Jia, Yongyong Tang, Jin Liu, Benjie Wei. SARS-CoV-2 infection and stem cells: interaction and intervention. *Stem Cell Res* 2020, 46,101859.

2. Lamers MM, Beumer J, Vaart JV et al. SARS-CoV-2 productively infects human gut enterocytes. *Science* 2020, 369(6499), 50-54.
3. Montaser LM. Could putting the mesenchymal stem cells technology into practice be an optimistic therapy for the critically ill COVID 19? *J Chem Edu Res Prac* 2020, 4(2), 1-4.
4. Fatima F, Ekstrom K, Nazarenko I, Maugeri M, Valadi H, et al. Non-coding RNAs in mesenchymal stem cell-derived extracellular vesicles: deciphering regulatory roles in stem cell potency, inflammatory resolve, and tissue regeneration. *Front Genet* 2017, 8, 1-13.
5. Leng Z, Zhu R, Hou W et al. Transplantation of ACE2- Mesenchymal Stem Cells Improves the Outcome of Patients with COVID-19 Pneumonia. *Aging and disease* 2020, 11 (2), 216-228.
6. Liang B, Chen J, Li T, Wu H, Yang W, Li Y, Li J, Yu C, Nie F, Ma Z, Yang M, Xiao M, Nie P, Gao Y, Qian C, Hu M. Clinical remission of a critically ill COVID-19 patient treated by human umbilical cord mesenchymal stem cells: A case report. *Medicine* 2020, 99, 31(e21429).
7. Chrzanowski W, Kim SY, McClements L. Can Stem Cells Beat COVID-19: Advancing Stem Cells and Extracellular Vesicles Toward Mainstream Medicine for Lung Injuries Associated with SARS-CoV-2 Infections? *Front Bioeng Biotechnol* 2020, 8, 1-8.
8. Golchin A, Seyedjafari E, Ardeshirylajimi A. Mesenchymal Stem Cell Therapy for COVID-19: Present or Future. *Stem Cell Rev Rep* 2020, 13, 1-7.
9. Montaser LM, Fawzy SM. Innovative patterning of electrospinning fabrication Nano scaffolds with cell culturing for liver tissue engineering. *Proc. SPIE 11467, Nanoengineering: Fabrication, Properties, Optics, Thin Films, and Devices XVII, 114671I (21 August 2020), CA, USA.*
10. Montaser LM. Innovative outlook for COVID-19. *World J Pharmacol Toxicol* 2020, 3(2), 1-2.
11. Montaser LM (2020). Editorial A Therapeutic Approach from Lab to Clinic in the Domain of the Disease Caused by the Novel Coronavirus from the Perspective of an Egyptian Scientist". *CPQ Medicine*; 8(6): 1-7.
12. Montaser LM, El-Azab DS, Kotb EAZ. Mesenchymal stem cell applications on the chronic liver disease. *Men Med J* 2020, 3 (1), 236-242.
13. Montaser LM, El-Azab DS, Tawfeek GA, Saied SA. Applications of bone marrow-derived cells in acute liver disease. *Men Med J* 2019, 32 (4), 1496-1500.
14. Montaser, LM; El-Azab, DS; Tawfeek, GA, Saied, SA. The Role of stem cells in a model of hepatic regeneration. *Int J Lab Hematol.* 2019, 41(S2), 122.
15. Montaser LM, Fawzy SM. Novelities in Cartilage Tissue Regeneration using Nano Scaffolds. *Int J Mater Sci Res.* 2019, 2, 22-22.
16. Montaser, LM, El-Azab, DS, Tawfeek, GA, Saied, SA. The Role of stem cells in a model of hepatic regeneration. *Int J Lab Hematol.* 2019, 41 issue S2, 122-122.
17. Montaser LM. Nano-approach in articular cartilage tissue regeneration. *J Chem Appl Chem Eng* 2019, 3, 41-41.
18. Montaser LM. Hepatic Tissue Engineering and Regenerative Medicine. *J Med Biotechnol* 2018, 2, 16-16.
19. Montaser LM, Fawzy SM. NANO scaffolds and stem cell therapy in liver tissue engineering. *Proc. SPIE* 2015, vol. 9550 9550M-1.
20. Montaser LM, Abbassy HA, Fawzy SM. Articular cartilage tissue engineering with plasma-rich in growth factors and stem cells with Nano scaffolds. *Proc. SPIE* 2016, 9930, Biosensing and Nanomedicine IX, 99300V.