Mesenchymal stem cell therapy drives innovation in Ophthalmology

Laila M. Montaser, MD, Menoufia University, Egypt

Abstract

Statement of the Problem: At present a wide variety of methods have been proposed to treat eye disorders, drug therapies are most commonly used. It should be noted that effective treatment modalities especially for degeneration of the retina and optic nerve are lacking. In the last few years stem cell transplantation has been proposed as an alternative method. The purpose is to highlight the potential application of stem cell therapy in Ophthalmology. Methodology & theoretical orientation: The diversity of approaches to isolate, culture and administer stem cells determines the development of cell-based technologies for the treatment of numerous eye disorders depending upon the pathology. These cells are applied to treat various traumatic and degenerative disorders due to their unique biologic properties. Stem cells have high proliferative capabilities and are a self-maintained population of cells capable of differentiating into different cell types. Findings: Regenerative medicine cell therapies, particularly mesenchymal stem cells (MSCs), could show great promise for immunosuppression and disease amelioration across multiple tissues, including the cornea and also in the treatment of retina endothelial defects. When treating degenerative eye disorders, MSCs are known to have a protective effect on ganglion cells of the retina and to stimulate regeneration of their axons in the optic nerve with paracrine factors they secrete. The administration of MSCs is also one of modern methods to treat diabetic retinopathy. Conclusion & significance: Cell-based therapy with MSCs is one attractive new therapeutic approach. MSCs have the capacity to secrete multiple paracrine factors that can regulate endothelial and epithelial permeability, decrease inflammation, enhance tissue repair, and inhibit bacterial growth.

Recent Publications (minimum 5)

1. **Montaser LM** (2021-e). *Editorial*: Could Stem Cells Drive Research and Entrepreneurship in Egypt? Journal of Embryology & Stem Cell Research, *5*(2): 1-7. DOI:10.23880/jes16000155https://medwinpublishers.com/JES/articles-in-press.php
2. **Montaser** LM (2021-b). In Continuously Battling COVID-19 with Innovative Perspectives. Reg biol Med. 2021; 3 (2): 1-5. https://www.researchgate.net/publication/350996921_In_Continuously_Battling_COVID-19_with_Innovative_Perspectives
3. **Montaser** LM (2020-d). - Could putting the mesenchymal stem cells technology into practice be an optimistic therapy for the critically ill COVID 19? J Chem Edu Res Prac; *4*(2): 1-4. (Publisher: the Royal Society of Chemistry)
4. **Montaser** LM (2020-c). Innovative outlook for containing COVID-19. World J Pharmacol Toxicol; 3(2): 1-2. https://www.omicsonline.org/open-access/innovative-outlook-for-containing-covid19.pdf
5. **Montaser LM, El-Azab DS, Kotb EAZ** (2020). Mesenchymal stem cell applications on the chronic liver disease. Men Med J; 3 (1): 236-242.
6. **Montaser LM, Fawzy SM** (2020). Innovative patterning of electrospinning fabrication Nano *scaffolds* with cell culturing for liver tissue engineering. Proc. of the SPIE, Volume 11467, id. 1146711 6 pp. (2020). https://doi.org/10.1117/12.256918
7. **Montaser LM, El-Azab DS, Tawfeek GA, Saied SA** (2019).Applications of bone marrow-derived cells in acute liver disease. MMJ; 32 (4): 1496-1500.



Biography

Laila M. Montaser MD is a distinguished Prof. of Clinical Pathology. Chair Stem Cell, Regenerative Medicine, Nanotechnology and Tissue Engineering (SRNT) Research Group. She served as the Chair, Founder leader of Clinical Pathology Department, Faculty of Medicine, Menoufia University, Egypt. Prof. Montaser an internationally recognized stem cell technology and regenerative medicine professional is a transformational leader and original thinker who is responsive to change. She has key competence in stem cell technology and regenerative medicine policy reinforced by global level and international experience in research, formulation and capacity building. She gained three Awards: Medal of Merit for the ideal Doctor from Egyptian Medical Syndicate in 1986, 1998, and 2002. In 2020-2021, she was awarded nineteen certificates of appreciation for successfully presenting thirty five Global Webinars (54.5%) for outstanding contribution to the commitment to provide continuing education to the international community from her home office amid the lock-down of COVID-19 crisis.

Email: lailamontaser@gmail.com