World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:17, No:02, 2023

Wound Healing Potential and Comparison of Mummy Substance Effect on Adipose and Wharton's Jelly-Derived Mesenchymal Stem Cells Co-Cultured with Human Fibroblast

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Abstract : Background/Objectives: The purpose of this study is to evaluate the effect of mummy substances on two issues of proliferation and production of matrix protein synthesis in wound healing. Methods: The methodology used for this aim involves isolating mesenchymal stem cells and human fibroblasts procured at Pastor Institute, Iran. The cells were treated with mummy substances separately and co-cultured between ASCs and WJSCs, and fibroblasts. Proliferation was assessed by Ki67 method in monolayer conditions. Synthesis of components of extracellular matrix (ECM) such as collagen type I, type III, and fibronectin 1 (FN1) was determined by qPCR. Results: The effects of adipocyte stem cells (ASCs), Wharton Jelly Stem Cells (WJSCs), and Mummy material on fibroblast proliferation and migration were evaluated. The present finding underlined the importance of Mummy material, ASCs, and WJSCs in the proliferation and migration of fibroblast cells. Furthermore, the expression of collagen I, III, and FN1 was increased in the presence of the above material and cells. Conclusion: This study presented an effective in vitro method for the healing process. Hence, the prospect of utilizing Mummy material and stem cell-based therapies in wound healing as a therapeutic approach is promising.

Keywords : mummy material, wound healing, adipose tissue, Wharton's jelly
Conference Title : ICMMA 2023 : International Conference on Microscopic and Macroscopic Anatomy
Conference Location : Barcelona, Spain
Conference Dates : February 16-17, 2023