Comparative Effects of Silver Sulfadiazin Ointment and Stimulated Mesenchymal Stem Cell with LPS and Poly-I-c on Burn Healing

Leyla Soleymani [1], Rahim Hobbenaghi [2], Samad Zare [1], Nowruz Delirezh [3], Kiavash Hushmandi [4]

1. Department of Biology, Faculty of Science, Urmia University, Urmia, Iran
2. Department of Pathobiology, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran.
3. Department of Microbiology, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran
4. Department of Veterinary Science, Shahid Chamran University, Ahvaze, Iran.

Corresponding Author: Leyla Soleymani, E-mail: lsoleimany@yahoo.com

ABSTRACT

Background: Burns injuries, specially sever ones, have an adverse effect on people`s personal and social life. increasing evidence demonstrate that Bone marrow mesenchymal stem cells are useful for accelerate burn healing . In these study effects of stimulated Bone marrow mesenchymal stem cells with LPS and Poly-I-C were assessed on burn healing and compared with control group.

Mateial and Methods: In an experimental study that was performed in Urmia University, The thired-degree skin burn was induced on the shaved back of healthy 7-8 week old with a metal rods heated in boiling water. Bone marrow mesenchymal stem cells were separated and stimulated with LPS (10ngr/lit) and Poly-I-C (5µg/lit) at the same time for 1 hour. base on equal physical condition, mic were divided into 2 separate groups and the subcutaneously admininistred with phosphate buffer salin and applied daily Silver sulfadiazine ointment in control group and stimulated Bone marrow mesenchymal stem cells with LPS and Poly-I-C (106 cell in 400 µl) In treatment group. 7, 14 and 21 days after induction of burn injury, biopsies were taken from burn wound and then the section were prepared. Subsequently the prepared section were stained with hematoxylin eosin and masons trichrome to explore histopathological change avoke by administration of stimulated Bone marrow mesenchymal stem cells with LPS and Poly-I-C incomparision with control subject.

Results: The study of wound healing parameters including formation of granulation tissue (Respectively on day 21 $p \leq .005$), angiogenesis (on day 21 $p \leq .002$) and collagen deposition demonstrate treat with stimulated Bone marrow mesenchymal stem cells with LPS and Poly-I-C accelerate the rate of healing

Conclusion: our study suggest that subcutaneously injection of stimulated Bone marrow mesenchymal stem cells with LPS and Poly-I-C in burn area has positive effect on healing of burn wound through stimulation of granulation tissue, angiogenesis, fibroblast proliferation and collagen deposition.