

# Comparative Effects of Stimulated Mesenchymal Stem Cell with LPS and Poly-I-c and Stimulated Mesenchymal Stem Cell with LPS in Burn Wound Healing

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## ABSTRACT

**Background:** Burn injuries result in loss of its protective function that leading to a high risk of infection. Results derived from several studies indicate that Bone Marrow mesenchymal stem cells (BMSc) may contribute to tissue regeneration whether through producing variety of bioactive growth factors and/or by differentiation into mesoderm lineage useful for accelerate burn healing. As well as several study demonstrate that stimulated Bone Marrow mesenchymal stem cells (SBMSc) with LPS can gain an inflammatory phenotype. Several studies show that wound healing process. Several study demonstrate the positive effect of SBMSc with LPS on accelerate wound healing through more collagen deposition and neoangiogenesis. The aim of this study was to investigated the effects of stimulated Bone marrow mesenchymal stem cells with compound of LPS and Poly-I-C at the same time and just with LPS on burn healing.

**Material and Methods:** This study was experimental and was performed in Urmia University. Eighty healthy 7-8 week old mics randomly divided into two groups. All of eighty mics was burned on the shaved back with heated rod for 9 second. BMSc were separated and stimulated with LPS (10ngr/lit) and Poly-I-C (5µg/lit) at the same time in first burned group and SBMSc just with LPS in second burned group. Respectively in first and second burned groups of animal, subcutaneously injection of SBMSc with compound LPS and Poly-I-C (106 cell in 400 µl) and SBMSc just with LPS (106 cell in 400 µl) was performed around of burn area. 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

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histopathological effect of SBMSc with compound LPS and Poly-I-C in comparison with stimulated cell just with LPS in burn wound healing.

**Results:** In this study some parameters of wound healing such as formation of granulation tissue (Respectively on day 7  $p \leq .000$ ) and collagen deposition were evaluated. As well as reduction in thickness of granulation tissue, number of fibroblast and blood vessel in last days of healing versus early days as main factors to measurement speed of burn wound healing were calculated. Result demonstrate that treat group with SBMSc with compound of LPS and Poly-I-C at the same time has no acceptable regenerative effect on wound healing in comparison stimulated mesenchymal stem cells with just LPS.

**Conclusion:** our study suggest that separated level of LPS or Poly-I-C to stimulate mesenchymal stem cells offers more regenerative effect than the compound of LPS and Poly-I-C at same time in accelerate of burn wound healing.

**Keywords:** Burn, Healing, Stimulated Bone Marrow-Derived Mesenchymal, Stem Cell, LPS, Poly-I-C