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# Ascorbic acid pretreatment improves the potential of adipose derived mesenchymal stem cells (ADMSCs) for the repair of acid burnt skin

**Azra Mehmood[1], Ghulam Muhammad[1], Shaheen N. Khan[1] and Sheikh Riazuddin[1,2]**
[1]University of the Punjab, Pakistan
[2]University of Health Sciences, Pakistan

Adipose tissue-derived mesenchymal stem cells (ADMSCs) have shown abundant potential for the repair of skin wounds. However, their effect in the repair of acid burn wounds has not been reported. Ascorbic acid (AA) is known to enhance the proliferation of ADMSCs *in-vitro* (1). Hence, this study evaluated the role of AA preconditioning of ADMSCs in counteracting in-vitro acidosis and in treating acid burnt skin wounds in rats. ADMSCs were treated with 250 µM AA starting from Passage1 until Passage3. Both the AA treated and untreated cells were then subjected to in-vitro acidosis induced by adjusting pH of culture media to 6.32 by hydrochloric acid (HCl), and further evaluated using various in-vitro assays. For *in-vivo* experiments, these cells were transplanted in rat model (n=6 each group) of acid burn wounds induced by keeping 2x2cm2 HCl soaked filter paper in contact with rat skin for 30seconds. Results showed that AA treated ADMSCs demonstrated significantly improved viability, scratch wound healing ability and paracrine release of HGF, VEGF, SDF and IGF in comparison to untreated ADMSCs *in-vitro*. Moreover, AA preconditioned ADMSCs transplanted wounds showed enhanced rate of wound healing and markedly less re-epithelialization time. Significant increase in homing of ADMSCs and the expression of dermal and epidermal markers COL1, COL2, COL3, DES and CDH1, was observed (by immuno-histochemistry and semi-quantitative PCR) in group transplanted with AA pretreated ADMSCs as compared to untreated ADMSCs group. In conclusion, preconditioning of ADMSCs with AA enhances their potential for the repair of acid burnt skin.

## Biography

Azra Mehmood did her PhD from Centre of Excellence in Molecular Biology (CEMB), University of Punjab, Lahore. Currently she is working as Assistant Professor in Stem Cells lab at the same institute. She has seven research publications. She is working to exploit stem cells for treatment of various damaged tissues like myocardial infarction, skin burns, and diabetes. She is mentoring various M.Phil and PhD students as well.

azra_mehmood@hotmail.com