Validation of a surgical wound healing model in Sprague-Dawley rats

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Abstract

Histopathology

Materials and Methods

Development of new drugs including neovascularization inhibitors (e.g. VEGF) require non-clinical demonstration of the absence of adverse effects on wound healing. Drug induced delayed wound healing has been reported in the rats and TGF-β1 and IGF-I have been suggested as potential cellular mediators for the negative effects of steroids. This study was undertaken to validate a non-clinical model allowing identification of delayed wound healing resulting from drug administration.

Results and Discussion

Histopathological changes at wound edges were considered adequate and expected sequela corresponding to the well-known inflammatory/exudative phase of wound healing. Wound evaluations also revealed efficient wound healing by first intention in saline treated animals. As illustrated above, epithelial migration was adequate in the saline treated group while dexamethasone treated animals presented evidences of delayed wound healing.

Both evaluation modalities (tensile strength and histopathology) were useful for assessment of wound healing. Tensile strength provides a quantitative evaluation of the healing process which can be included with study results for regulatory submission.

Conclusion

This surgical rat model using tensile strength measurements and histopathological evaluations is considered valid to identify drug induced delayed wound healing.

References


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