

AN IN VITRO STUDY HAS SHOWN THAT ACCEL-HEAL INCREASES THE RATE OF RE-EPITHELIALISATION

Although **electrical stimulation** has been shown to improve the rate of wound-healing, the way in which it works is not fully understood. This benchtop study was conducted to support a deeper understanding of the mode of action.

Objective:

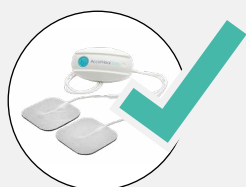
To evaluate the effect of Accel-Heal on epidermal repair using an in vitro human skin wound model.

1. Human skin wound model: de-epidermised human donor skin was seeded with cultured human-derived keratinocytes to make multi-layer de-epidermised dermis human skin equivalents (DED-HSEs).

2. The DED-HSEs were wounded with a 4mm punch biopsy



3. Half were treated with Accel-Heal and half were treated with an inactivated device



Group 1

Active device



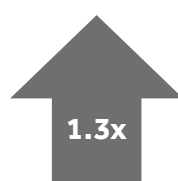
Group 2

Device off

4. Cellular responses were assessed by a variety of histological assessments



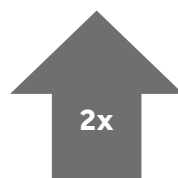
Results:



Wound size reduction

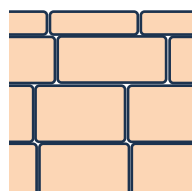
1.3-times greater wound size reduction was seen in Accel-Heal treated wounds after 4-days, compared with the inactive device. This was statistically significant (<0.05)

Microcurrent EST improves the quantity and quality of re-epithelialization



Re-epithelialized wound area

In wounds treated with Accel-Heal, 50.3% were covered in keratinocytes after 4 days vs 26.2% of control wounds ($p<0.001$)



Faster keratinocyte differentiation in Accel-Heal treated wounds resulted in more mature epithelium compared with control

Conclusion and interpretation: In an in vitro model, Accel-Heal maintained good cell viability & metabolic activity, improved keratinocyte migration & re-epithelialization of the wound and enhanced epidermal proliferation, differentiation and attachment to dermis. This mode of action study supports clinical findings and strongly supports the use of Accel-Heal devices in patients with hard-to-heal wounds.

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