Influence of sodium hyaluronate - iodine complex on human keratinocytes and leukocytes

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INTRODUCTION
The complex of sodium hyaluronate with iodine (Kryoderm) exhibits excellent healing properties, especially in the healing of large and infected wounds. In this study we are assessing the effect of hyaluronic acid (HA) on the cells that play an important role in wound healing, such as epidermal cells (keratinocytes) and immune cells (lymphocytes, monocytes and PMNs).

MATERIALS AND METHODS
Primary human keratinocytes were isolated from donors after plastic surgery and cultured according to Kneifel and Green (1997). Immunopurified blood samples were obtained from healthy volunteers. Immune cells were reconstituted in RPMI 1640 supplemented with 10% heat-inactivated fetal bovine serum after the expiration.

RESULTS

- Hyaluronic acid (HA) at concentration 100 and 500 mg increased LDF release from keratinocytes (KCN) and at concentration 500 mg HA (p < 0.05).
- Hyaluronic acid (HA) increased keratinocyte viability (decreased their growth rate) particularly if they are in proinflammatory contact with HA.
- Platelet-derivated growth factor (PDGF) and TGFbeta-1 by keratinocytes is affected by HA (mainly in early intervals (after 24 hours) in contrast to EGF and HGF which are influenced mainly in the later intervals (48 and 72 hours).
- Signaling of PDGF (adhesion molecule, a key role in cell interaction) and CD45 (play a primary role in mediating initial leukocyte interactions with activated vascular endothelium) on keratinocytes, monocytes and PMNs is not increased further by HA at both concentrations and nor by HA after 72 hours as well.
- HA increased production of IL-10, IL-1β and TNFα by isolated lymphocytes after 24 hours incubation with HA by both concentration in higher quantity than without HA after 72 hours incubation with HA.

CONCLUSION
- HA is a non-cytotoxic product. (The increase of LDF release in both cell lines is no statistically significant).
- HA increases keratinocytes viability.
- HA increases keratinocytes proliferation.
- HA increases keratinocytes production.
- HA increases keratinocytes viability.

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