



WOUND HEALING

## SIDE EFFECTS OF FREQUENTLY USED ORAL ANTIDIABETICS AND ANTIHYPERTENSIVE DRUGS ON WOUND HEALING IN-VITRO

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**Introduction:** Due to increasing prevalence of so-called "life style diseases", such as diabetes, obesity or hypertension, the number of wound healing disorders resulting from associated vascular and nerve damage, is also increasing. While a negative effect on wound healing is postulated for drugs such as cortisone or NSAIDs, the "side effects" of antihypertensives (AHs) and oral antidiabetics (ADs) on wound healing are largely unknown.

**Objectives:** Possible (side) effects of the most prescribed AHs and ADs on the skin and the wound healing process should be identified.

**Methods:** A literature search on "Wound healing + AH" and "Wound healing + AD" was carried out. Effects of the top five AH and AD on human skin cells were analyzed histologically and immunohistochemically in a 3D wound model regarding promotion of cell metabolism, activity, migration and apoptosis of fibroblasts and keratinocytes.

**Results:** There are only few studies about effects of AH and AD on wound healing. Calcium channel blockers improve the tensile strength, but not the epithelialization of the skin.  $\beta$ -blockers have a rather positive effect on wound closure due to keratinocyte activation. ACE inhibitors have a negative effect on cell growth and inhibit collagen biosynthesis. Biguanides cause a qualitative and quantitative deterioration of wound healing in-vivo and in-vitro. Dipeptidyl peptidase inhibitors show positive effects on wounds and their blood circulation. Sulfonylureas do not appear to have a positive or negative effect.

**Conclusion:** Antihypertensive and antidiabetic drugs are not uninfluential but have an impact on the key players of wound healing: keratinocytes and fibroblasts. Antidiabetics tend to have a negative effect on wound healing, although there are clear differences between the substance classes. Based on these preliminary in-vitro results no patient's therapy should be replaced, but the possibility that a drug could be the cause of the healing disorder should not be ignored.

