

## THE SAFETY AND EFFICACY OF DRESSINGS WITH SILVER – ADDRESSING CLINICAL CONCERNS

Dear Sirs

The authors (1) are to be commended for drawing the attention of the readers the very important topic of reducing wound bioburden with topical silver compounds and silver-impregnated dressings. As rightly stated, silver is ideally suited as a topical antibacterial and antifungal agent. In fact, silver compounds have been exploited for their medicinal properties for centuries, and at present, silver has re-emerged as a viable treatment option for infections encountered in burns, open wounds and chronic ulcers.

The challenges were and still are, however, how to deliver the optimal concentration of ionic silver Ag<sup>+</sup> (the active form) and how to maintain this concentration for the longest period of time after application (2). As the industry continues to struggle to resolve these issues, clinicians seem to remain concentrated at the valuable antibac-

terial and antifungal effect of the silver products and dressings or by the way of any other topical agent, without much concern about their possible toxicity and in particular their negative effect on wound healing.

Silver products, by controlling wound bioburden, would definitely secondarily promote wound healing; however, it must be stressed that their recently demonstrated primary cytotoxic effect on fibroblasts and keratinocytes is a clear indication of their negative impact on wound healing (2). Irrespective of the source of silver, whether released from solutions, creams and ointments or nanocrystalline silver released from commercially available new dressings, silver is highly toxic to both keratinocytes and fibroblasts (2). Moreover, in addition to this definite cytotoxicity, we have recently demonstrated in an experimental study (3) that topical application of silver sulphadiazine modulates various wound healing cytokines in a way affecting negatively the mechanisms of wound healing.

As stressed by the authors, there are still numerous questions to be answered in respect of silver in wound care. Silver dressings, as antimicrobial therapies, must be dictated by clear criteria of wound sepsis and are not indicated for long-term use. Regular wound assessment should guide the further use of the dressings and duration of treatment should be according to clinical needs and guided by treatment targets (1). Although the effects of the available various silver products on wound infection and wound healing are variable, ultimately, no matter how sophisticated the delivery system, the agent silver cannot be expected to make a selective kill (2). The dilemma in product development is to produce an agent and system of delivery, which maximises the lethal effect for bacteria and minimises the damage to human cells, and the ultimate goal remains the choice of a product with a superior profile of antimicrobial activity over cellular toxicity (2).

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- 3 Jurjus A, Atiyeh BS, Abdallah IM, Jurjus RA, Hayek SN, et al. Pharmacological modulation of wound healing in experimental burns. *Burns* 2007;21:[Epub ahead of print].

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