Research Compact

Tags Octenidine, chronic wound

Title ## Dual role of iodine, silver, chlorhexidine and octenidine as antimicrobial and antiprotease agents

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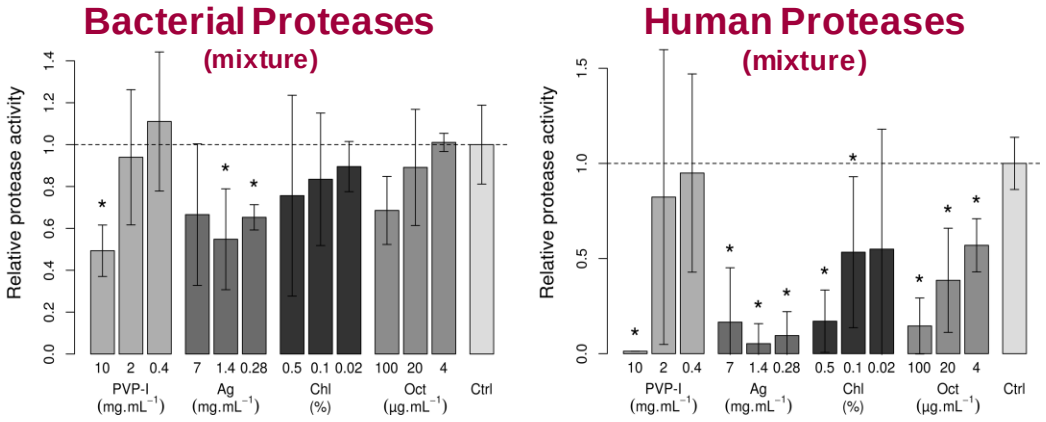
Aim of the study The majority of chronic wounds contains biofilms, which retard the wound healing among others through secretion of proteases. A chronic wound towards closure shows a reduced protease activity. Hence, modulation of protease activity might be beneficial for a faster healing. This study investigates antimicrobial substances for their potential to inhibit bacterial and human proteases.

Methods Protease inhibition capacity of Octenidine, Chlorhexidine, PVP-iodine and Silverlactate was tested via *in-vitro* zymography on bacterial proteases *(P. aeruginosa*, *S. aureus*, *S. marcescens*, *S. liquefaciens)* and human proteases. *In-situ* zymography on porcine skin was used to determine skin penetration and inhibition of skin proteases

Results All tested antimicrobials were able to inhibit both bacterial and human proteases in a dose-dependent manner. Octenidine and PVP-iodine inhibited bacterial proteases significantly ($p<0.05$) in the highest tested concentration. Human proteases were inhibited even stronger. Octenidine and silver achieved significant inhibition in all tested concentrations. Fluorogenic zymography assays with pure proteases (e.g. trypsin) verified the dose-dependent inhibition for Octenidine (IC50 of trypsin 0.0003%), Silver (0.01 %) and Chlorhexidine (0.07%). On porcine skin all tested substances were able to inhibit skin proteases significantly.



Conclusion **Besides their antimicrobial effect classical antiseptics like Octenidine, Chlorhexidine, PVP-iodine and silver could contribute to chronic wound healing by reduction od protease activity.**