

**TREATMENT OF STAPHYLOCOCCUS AUREUS WITH OCTENIDINE ENHANCES PHAGOCYTOSIS BY HUMAN NEUTROPHILS IN VITRO**

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**Aim:** It was the aim of this study to investigate whether the treatment of staphylococcal cells with octenidine, the active ingredient in a wound antiseptic, has an impact on the phagocytosis of staphylococci by human neutrophils.

**Methods:** Cells of *S. aureus* ATCC 6538 were grown in buffered TSB at pH 5 and 36°C for 18 h. Centrifuged cells were resuspended in solutions containing 0.2 mM, 0.4 mM and 0.8 mM octenidine. After 1 min contact time the cells were centrifuged again and resuspended in saline for using them in phagocytic assays. Cells treated with saline instead of octenidine and inactivated by heat (100°C, 15 min) were used as a control. The test mixture of a phagocytic assay consisted of 450 µl of fresh heparinised human blood and 50 µl of the different bacterial suspensions. The number of staphylococci associated with polymorphonuclear neutrophils (20 PMN/smear) was determined microscopically from smears prepared after rotation of the mixture at 37°C for 0, 2.5, 5 and 10 min.

**Results:** The highest number of staphylococcal cells associated with PMNs of all three blood donors were obtained after treating the microorganisms with octenidine. In contrast, the lowest number of staphylococcal cells adhering to PMNs were counted when the cells had been treated with saline. The number of PMN-associated cells inactivated by heat were between the above values. All differences in the means of PMN-associated staphylococcal cells treated with saline and octenidine were significant ( $p=0.001$ ). Furthermore, the differences in the means of PMN-associated cells inactivated by heat and treated with octenidine were also significant ( $p=0.001$  and  $p=0.02$ ) except for one donor.

**Conclusions:** Our data demonstrate that treatment of staphylococcal cells with octenidine enhances the phagocytosis by PMNs in vitro and therefore might have a positive impact on the elimination of pathogens from wounds.