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ANTIMICROBIAL ACTIVITY OF MISWAK

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Abstract. In the Middle East people use Miswak which is a teeth cleaning twig from the *Salvadora persica* tree. The bristles of the miswak contain a high concentration of fluoride, antimicrobial, anti-plaque and anticariogenic properties. The components included in the miswak are used for several reasons. For example, the element sulfur has a bactericidal effect which implies that bacteria are prevented from growing, therefore lower risks of acquiring tooth decay, or that silica removes stains that are visible on tooth surfaces. Having said that, overall miswak is used to prevent tooth decay, protect the gingiva, reduce the accumulation of plaque, have a pleasant and refreshing breathe, and stimulate the flow of saliva. The presence of biologically active substances and minerals in the chemical composition of miswak, which have properties related to the health of the oral cavity and teeth, makes it an excellent tool for the prevention of dental diseases and for oral hygiene.

Aim: to determine the potential antimicrobial activity of miswak.

Materials and methods. Miswak's antimicrobial activity was evaluated using the quantitative suspension method. The antibacterial effect *in vitro* was assessed against staphylococci (*Staphylococcus aureus* ATCC 6538) by counting colonies after 24-hour incubation of a suspension of microorganisms in a liquid nutrient medium (trypticase-soy broth – TSB) with a piece of miswak (experiment). A suspension with the same concentration of test microorganisms in TSB ($1,0 \cdot 10^5$ CFU/ml) was used as a control. After incubation, aliquots of the experimental and control suspensions were inoculated onto meat-peptone agar. The size of the inoculum was 0.1 ml, inoculation was carried out after the preparation of 10-fold serial dilutions (10^{-1} , 10^{-2} , 10^{-3}). Colonies were counted on the next day. The experiment was carried out in three repetitions. A comparison was made of the average number of bacterial colonies after incubation in the presence of miswak and without it.

Results and discussions. As a result of the experiment, it was found that the presence of miswak in the nutrient medium inhibited the growth of bacteria. The average number of staphylococcus colonies after incubation with miswak was 103.7. The number of colonies in the control (without miswak) was 350.

Conclusion. Thus, in our experiment, it was found that miswak has bacteriostatic activity against gram-positive bacteria (staphylococci). Further research is needed on the antimicrobial effect of miswak against gram-negative bacteria and fungi. In addition, the potential microbicidal activity of miswak needs to be studied.