DISINFECTANT PREPARAIONS (DIPPING) FOR DAIRY COWS WITH SILVER AND COPPER NANOPARTICLES ADDITION*

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Udder inflammations, usually called mastitis, are one of the most crucial issues in dairy herds. Pathogens involved in inflammation process in cows udder are often resistant for conventional antibiotics. Therefore, scientists are looking for new and innovative solutions in mastitis treatment and prevention. Nanoparticles are becoming one of the most promising agents. Their unique properties and lack of possibility of occurring resistant strains are only some of their best advantages.

The aim of the study was preliminary *in vitro* evaluation of *Staphylococcus aureus* and *Escherichia coli* viability using dipping mixture of commercially available cosmetic substrates and silver (Ag), copper (Cu) nanoparticles addition.

Two experimental mixtures containing common cosmetic substrates and silver and copper nanoparticles addition were prepared. Glass flasks containing nutrient broth (Biomaxima, Poland) were prepared for control group (C), experimental groups with 1 ppm nanoparticles addition (Ag, Cu, AgCu), and experimental groups containing mixture of cosmetic substrates and nanoparticles (D1, D2). Two bacteria species: *S. aureus* and *E. coli* isolated from cow's milk were used in the study to estimate pathogens viability, according to control group. Flasks were incubated for 24 hours in 37°C and 5% CO_2. Each group for each pathogen was prepared in three repetitions. Bacteria viability were calculated using absorbance measurement (570 nm) in PrestoBlue test (ThermoFisher, Poland).

Obtained results revealed that viability of *S. aureus* in D1 and D2 was 47,23% and 44,31%. Similar results were obtained for *E. coli* group (D1=51,43% and D2=57,86%). Viability of bacteria cells in flasks with only nanoparticles addition were: 67,35%, 57,38%, 49,90%, respectively for Ag, Cu, AgCu.

Observed changes in *in vitro* experiment suggest that prepared mixtures could be useful in mastitis pathogens prevention. However, nanoparticles influence on bacteria viability require further analysis.

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