CASE OF *SERRATIA MARCESCENS* DETECTION IN SEALED QUATERNARY AMMONIUM COMPOUND-BASED DISINFECTANT

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Serratia marcescens is a Gram-negative bacteria, known as an opportunistic pathogen of the respiratory and urinary systems and a common cause of hospital-acquired infections. Besides the growing number of multi-drug resistant (MDR) isolates reported, *S. marcescens* is also known to gain resistance against surface disinfectant cleaners, such as chlorhexidine, triclosan, and quaternary ammonium compounds (QAC) solutions. The proper monitoring of disinfectants contaminations in the healthcare-associated facilities and in domestic use is needed to prevent MDR strains from uncontrolled spreading.

The pathogen was isolated from QAC-based disinfectant using the Bacteriological Culture Method and cultivated on Mueller-Hinton agar for 24 hours under 37°C. Identification was performed using the MIKRO-LA-TEST ENTERO kit (ErbaLachema) in five technical repetitions, and confirmed on MALDI Biotyper (Bruker Daltonics).

The presence of bacteria was detected during efficacy testing of commonly-available hand-sanitizers of the Ukrainian market. It is important to highlight that the bottle of studied sanitizer was never opened before and unsealed directly in the laboratory. The disinfectant specimen had N,N-dimethyl-N-Alkyl-(C6-18)-benzolmethane ammonium chloride as an active compound and was bought in a grocery store. It was effective against both reference strains and clinical isolates of Gram-negative bacteria and Fungi (*Escherichia coli* ATCC 25922; *Pseudomonas aeruginosa* ATCC 27853, *E. coli* №5; *Citrobacter sedlakii* №37; *P. aeruginosa* №13; *Candida albicans* ATCC 885/653, *C. albicans* №60), but ineffective against Gram-positive bacteria (*Staphylococcus aureus* ATCC 26923, *S. lentus* №19; *Enterococcus* spp. №161*; Aerococcus viridans* №26). At the studied bacteria growth inhibition zones, the secondary culture's growth, later identified as *Serratia marcescens*, was detected (ID score 2.20, very good identification).

This research shows that contamination risk exists not only while direct use of disinfectant but also on stages of its production, transportation, and/or storage. This point at the necessity of the reinforcement of the contamination prevention procedures by adding pre-use bacteriological expertise stage to already existing monitoring protocols.