

**TITLE:** RESISTANCE TO POTASSIUM TELLURITE AS AN INDICATOR OF PATHOGENICITY IN *Staphylococcus* spp. STRAINS ISOLATED FROM PEDIATRIC BLOOD CULTURES

**AUTHORS:** FONSECA, B.O.; GONÇALVES, V.D.; SANTOS, A.C.; HENRIQUES, M.V.; ALVES, G.S.; BELLO, A.R; PEREIRA, J.A.A.

**INSTITUTION:** UNIVERSIDADE DO ESTADO DO RIO DE JANEIRO, AV. PROFESSOR MANUEL DE ABREU, 444 / 3º ANDAR, CEP: 20550-170, RIO DE JANEIRO – RJ, BRAZIL.

**ABSTRACT:**

In the context of the serious global problem related to healthcare-associated infections (HAI), bloodstream infections (BSI) are susceptible to prevention and control. The identification of microorganisms is of utmost importance for the empirical treatment of BSI. The sensitivity of microbial detection in blood cultures is variable according to the methodology used and may be affected by the presence of antimicrobials. Scientific literature indicates the resistance to potassium tellurite (PT) as a bacterial resistance factor to intraphagocytic death. From August 2015 to August 2016, we analyzed the results of 659 blood cultures of 183 pediatric patients from a public hospital in Rio de Janeiro, Brazil. Bacterial identification and susceptibility testing to antimicrobial agents were performed by the automated Vitek® 2 system. We also conducted PT sensitivity tests (25 and 112 µg/mL) in Mueller Hinton Agar and Chocolate Agar. We obtained 16.23% (107/659) of positive blood cultures collected from 26.8% (49/183) of the patients, with 41.1% (44/107) corresponding to *Enterobacteriaceae* species, 39.2% (42/107) to *Staphylococcus* spp. — 27.1% (29/107) coagulase-negative staphylococci and 12.1% (13/107) *S. aureus* isolates — and 11.2% (12/107) of non-fermenting Gram-negative bacilli. In 61.7% (66/107) of the positive blood cultures, we isolated PT resistant strains (25 µg/mL) belonging to different species and with distinct antimicrobial sensitivity profiles. We found a high prevalence of *Staphylococcus* strains exhibiting PT resistance: 79.3% (23/29) oxacillin-resistant coagulase-negative staphylococci and 69.2% (9/13) oxacillin-resistant *S. aureus* strains. These species are related to the biofilm production in medical devices and may act as precursors of BSI by the formation of mixed biofilms in the catheter lumen. Finally, we consider the detection of PT resistance very important, since bacterial resistance to this salt has already been associated with resistance to oxidative stress and with biofilm formation, which are important mechanisms of bacterial pathogenicity in BSI agents.

**Keywords:** bloodstream infections, potassium tellurite, pathogenicity, biofilm.

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