TITLE: INTERACTION OF CONVENTIONAL ANTIMICROBIAL AGENTS WITH EXTRACTS FROM BRAZILIAN CERRADO PLANTS AGAINST METHICILLIN-RESISTANT *Staphylococcus aureus* CLINICAL ISOLATES

AUTHORS: CAMPOS, L.A.A.[1,2]; FLORENÇO, A.M.A.[1,2]; DA SILVA, T.S.[2]; DE MENEZES, Y.K.T.[2]; ARAÚJO, T.A.S.[3]; DE AMORIM, E.L.C.[3]; CAVALCANTI, I.M.F.[1,2]

INSTITUTION:
[1]LABORATÓRIO DE IMUNOPATOLOGIA KEIZO ASAMI – UNIVERSIDADE FEDERAL DE PERNAMBUCO (AV. PROF. MORAES REGO, 1235, S/N, CEP 50670-901, RECIFE - PE, BRAZIL); [2]LABORATÓRIO DE MICROBIOLOGIA E IMUNOLOGIA – CENTRO ACADÊMICO DE VITÓRIA – UNIVERSIDADE FEDERAL DE PERNAMBUCO (RUA DO ALTO DO RESERVATÓRIO S/N, BELA VISTA. CEP: 55608-680, VITÓRIA DE SANTO ANTÃO - PE, BRAZ/IL); [3]LABORATÓRIO DE PRODUTOS NATURAIS – UNIVERSIDADE FEDERAL DE PERNAMBUCO (AV. PROF. MORAES REGO, 1235, SN, CEP 50670-901, RECIFE - PE, BRAZIL)

ABSTRACT:
Methicillin-resistant *Staphylococcus aureus* (MRSA) is involved in nosocomial and community-acquired infections, becoming a public health problem because of its high frequency of morbidity and mortality. In this scenario, the scientific community is engaged to propose options for the treatment of MRSA infections, such as the combined therapy. This therapy may prevent the emergence of resistant isolates and also increase the spectrum of action of conventional antimicrobials agents, owing to a synergic effect between the drugs. Thus, the aim of this study was to evaluate the *in vitro* interaction between conventional antimicrobial agents and extracts from Brazilian Cerrado plants against MRSA clinical isolates. The names of the plants were not cited because they are in process of patent. Initially, the bark and leaves of some plants of the Cerrado were collected, dried, pulverized and standardized in sieves. Next, the samples were macerated in ethanol, filtered and evaporated under reduced pressure. The *in vitro* interaction between the antimicrobial agents (ciprofloxacin, levofloxacin and erythromycin) and the extracts was performed by the Checkerboard method. Firstly, Müeller-Hinton broth was distributed in the microdilution plates. On the X-axis of the plates the antimicrobial agents were distributed and on the Y-axis the extracts were distributed. Finally, the bacterial suspensions were added into the microplates and incubated at 35 ± 2°C for 24 h. The combination was considered synergic when the Fractional Inhibitory Concentration Index (FICI) ≤ 0.5, additive to 0.5 < FICI ≤ 1, indifferent to 1 < FICI < 2 and antagonistic to FICI ≥ 2. The results demonstrated the *in vitro* interaction between all antimicrobial agents with the extracts, with an additive interact for ciprofloxacin (FICI = 0.52 and 1) and levofloxacin (FICI = 0.52) and synergistic interaction for erythromycin (FICI = 0.19, 0.27 and 0.38). Therefore, the extracts from Brazilian Cerrado plants showed therapeutic potential as modulators of the antimicrobial agents actions with the possibility of being used in combination with these drugs for the treatment of infections caused by bacteria with resistance profile, specially MRSA.

Keywords: antibacterial activity, Cerrado, extracts, interaction, Methicillin-resistant *Staphylococcus aureus*