Antimicrobial Activity of Venoms from Snakes of the Viperidae Family and Fractions of the Bothrops jararacussu

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The purpose was to select, among six venoms from snakes of the Viperidae family (Caudisona durissa terrificus, Bothropoides paulensis, Bothropoides jararaca, Bothrops moojeni; Rhinocerophis alternatus and Bothrops jararacussu), the one with the largest inhibition spectrum for gram-positive and gram-negative bacteria, as well as to determine what protein from such venom shows the best bactericidal activity. The Müller-Hinton Agar disc-diffusion and broth microdilution method was used in accordance with standard techniques. At 0.5 mg/mL, all venoms were able to inhibit the S. aureus, except for C. d. terrificus. In regards to proliferation of the S. enteritidis bacterium, only the B. jararacussu and R. alternatus species were able to inhibit it. And E. coli growth was inhibited only by B. jararacussu. At 1.0 mg/mL, all tested venoms showed bactericidal activity against S. aureus, while only C. d. terrificus was unable to prevent S. enteritidis growth. However, B. jararacussu was the only one to show any effect on E. coli. At 2.0 mg/mL, all venoms from the assayed species showed effects on S. aureus and S. enteritidis, and the B. jararacussu, R. alternatus and B. moojeni venoms were able to inhibit E. coli growth. None of the assayed venoms was able to prevent E. faecalis growth. Statistically, the B. jararacussu venom showed, on average, the best inhibition percentage against the tested bacteria, and underwent a chromatographic process aimed at determining what fraction or fractions of such venom show antimicrobial activity; its main toxin, the A2 lys49 BthTx-I phospholipase, presented the best performance.

Word Keys: Bothrops jararacussu; Gram-negative; Gram-positive; phospholipases A2, Snake venom
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