TITLE: DETECTION OF GENES ASSOCIATED TO RESISTANCE TO CARBAPENENS IN Salmonella spp. ISOLATED IN THE PERIOD 2014 TO 2017

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ABSTRACT

Salmonella spp. represents one of the most important pathogens associated with gastroenteritis. Its epidemiology is complex, considering its capacity to implant and disseminate in different ecological niches. The emergence of strains resistant to carbapenems is also a major problem in Public Health, considering its use as a therapeutic option in the treatment of resistant Salmonella spp. infections commonly used as 3rd generation cephalosporin and fluoroquinolones. The present study aimed to evaluate the profile of antimicrobial susceptibility to carbapenems in Salmonella spp. isolated from different sources (Environmental, Food, Animal and Human) and determine the genetic mechanism of resistance. A total of 46 strains with resistance or intermediate susceptibility to carbapenems isolated from the period 2014 to 2017 were selected and submitted to PCR methodology using the blaKPC, blalIMP, blavIM, blanDM and blaOXA48 genes. The susceptibility profile was confirmed by the disc diffusion method and minimum inhibitory concentration (CLSI), with resistance percentages equivalent to 67.3% (31/46) for Imipenem (IMP) and Meropenem (MEN) and 4.3% (2/46) for Ertapenem (ERT) and intermediate profile of 32.6% (15/46) for IMP; 17.3% (8/46) for men and 11.1% (4/46) for ERT. PCR detected that 93.4% (43/46) were positive for one or more genes with the highest values for the blavIM gene (82.6% - 38/46), in all years evaluated in different Salmonella spp. circulating in Brazil, including the most prevalents serovars: S. Typhimurium, S. Heidelberg, S. Saintpaul, S. Infantis and S. Hadar. The percentage to blaOxa48 was 6,5% (3/46) in S. Heidelberg isolated from 2015 and 2016. It is noteworthy that a strain of S. Mbandaka isolated in 2015 presented the genes blalIMP, blavIM and blaOXA48. The results confirm the importance of continuous monitoring of Salmonella spp., considering the capacity of implantation and environmental dispersion of microorganisms with multiple resistance between bacteria of different taxonomic and ecological groups, through mobile genetic elements determining a clinical and epidemiological impact for human medicine and veterinary.

Key-words: Salmonella spp., antimicrobial resistance, carbapenens