

TITLE: DETERMINATION OF ANTIMICROBIAL SUSCEPTIBILITY OF *LISTERIA MONOCYTOGENES* AND *LISTERIA INNOCUA* STRAINS OF HUMAN AND FOOD SOURCES

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ABSTRACT:

L. monocytogenes is a dangerous foodborne pathogen responsible for many outbreaks in different countries. Since there are reports of the emergence of antimicrobial resistant *L. monocytogenes* and *L. innocua* by the acquisition of resistance genes described in other Gram-positive bacteria, there is great concern about the presence of resistance to antimicrobials normally used in the treatment of listeriosis such as ampicillin, gentamicin and penicillin. Another problem regarding the antimicrobial susceptibility of *L. monocytogenes* is that most studies use the CLSI breakpoints for another pathogen, *Staphylococcus* spp., due the limited number of drugs with breakpoints available for *L. monocytogenes*. In this study, were selected 139 isolates of ready-to-eat foods and 58 isolates from human sources deposited in the Listeria Collection (CLIST) of the Laboratory of Bacterial Zoonoses - IOC / Fiocruz. The susceptibility tests were performed using the disk diffusion method (Kirby-Bauer) in Mueller Hinton Agar. For ampicillin, penicillin, erythromycin and trimethoprim / sulfamethoxazole we utilized the breakpoints of EUCAST (2015) specific for *L. monocytogenes*, while for the antimicrobials not covered by the CLSI for *L. monocytogenes* (norfloxacin, gentamicin, cefalotin, teicoplanin, tetracyclin, vancomycin, rifampicin and clorafenicol) we utilized the CLSI (2012) breakpoints for *Staphylococcus* spp. since is the method recommended by the literature. The analysis of the susceptibility profile by disk diffusion method revealed an isolate of *L. innocua* resistant to two antimicrobials (tetracycline, trimethoprim/sulfamethoxazole) and the same isolate also presented intermediate resistance to norfloxacin. In total, 47% of *L. monocytogenes* and 8% of *L. innocua* isolates showed resistance to trimethoprim /sulfamethoxazole. Some isolates had intermediate resistance to norfloxacin, 18% from food source and 7% from human source. It is important to note that most isolates classified as resistant to ampicillin or penicillin using the CLSI for *Staphylococcus* spp. were classified as susceptible using the EUCAST for *L. monocytogenes*, highlighting the importance of using the breakpoints for the right pathogen. Continuous monitoring of antimicrobial resistance in *L. monocytogenes* is emphasized in order to guarantee the effectiveness of the treatment of listeriosis.

Keywords: *Listeria monocytogenes*, *Listeria innocua*, Antimicrobial susceptibility, Foodborne pathogen, Disc diffusion.

Development Agency: CNPq, Fiocruz, Capes