

**TITLE: EVALUATION OF *SALMONELLA SP.* PRESENT IN SEWAGE TREATMENT PLANTS IN RIO DE JANEIRO CITY**

**AUTHORS:** COSTA, R.G.<sup>1</sup>; GONÇALVES, V.D.<sup>1</sup>; AMPARO, L.F.V.<sup>1</sup>; ARAUJO, M.S.<sup>1</sup>; IASBIK, L.F.<sup>1</sup>; RODRIGUES, M.S.<sup>1</sup>; PRIBUL, B.R.<sup>1</sup>; FESTIVO, M.L.<sup>1</sup>; RODRIGUES, E.C.P.<sup>1</sup>; ROGES, E.M.<sup>1</sup>; SILVA, T.C.R.<sup>2</sup>; MIRANDA, E.M.C.<sup>3</sup>; MAIA, M.P.<sup>4</sup>; PEREIRA, M.M.<sup>4</sup>; BERTO, L.H.<sup>5</sup>; QUEIROZ, F.B.<sup>5</sup>; RODRIGUES, D.P.<sup>1</sup>

**INSTITUTION:**

<sup>1</sup>LRNEB/IOC/ FIOCRUZ- Laboratório de Referência Nacional para Enteroinfecções Bacterianas/ Instituto Oswaldo Cruz/ Fundação Oswaldo Cruz (Av. Brasil 4365 – Manguinhos - Rio de Janeiro/RJ, Brasil)

<sup>2</sup>CEDAE – Companhia Estadual de Águas e Esgotos (Avenida Presidente Vargas, 2655 - Cidade Nova - Rio de Janeiro/RJ, Brasil)

<sup>3</sup>SMS/RJ - Secretaria Municipal de Saúde (Rua Afonso Cavalcanti, 455 – Cidade Nova - Rio de Janeiro/RJ, Brasil)

<sup>4</sup>LACEN/RJ- Laboratório Central de Saúde Pública(Rua do Resende 118, Centro - Rio de Janeiro/RJ, Brazil)

<sup>5</sup>SVS /MS - Secretaria de Vigilância em Saúde/ Ministério da Saúde (SRTVN Q701 BLD - Ed PO700, Brasília/DF, Brasil)

**ABSTRACT**

*Salmonella* are considered a potential pathogen, because of the complexity of its epidemiology and involvement in human infections. As a zoonotic microorganism, can survive for a long period in different environments. Their presence in sewage reflects the circulating microbiota and the introduction of emergent and exotic strains in the area. The aims of this study were to detect the presence of *Salmonella* in sewage and evaluate the antimicrobial resistance characteristics of strains. From May to December 2016, weekly collections were carried out at 5 Sewage Treatment Plant and Sewage Pumping located in Rio de Janeiro city (Jacarepagua, Leblon, Copacabana, Barra da Tijuca and Alegria) by Moore's swab methodology. The isolation and characterization of *Salmonella* followed the methodologies described by Costa & Hofer (1972) and Ewing (1986) and antimicrobial susceptibility to 12 drugs of seven classes by disk diffusion method, according CLSI (annually update). 59 strains of *Salmonella* were isolated, distributed among 12 distinct serovars. *S. Typhimurium* (28.9%) was the most prevalent serovar followed by *S. Anatum* (15.3%), *S. Derby* (15.3%), *S. Agona* (8.5%), *S. Enteritidis* (8.5%) and *S. Infantis* (6.8%). A total of 64.4% strains were resistant until 5 antimicrobials classes. 18 different profiles were detect, being the most prevalent STR, GEN, NIT in 39.5% found in *S. Typhimurium*, *Derby*, *Enteritidis* and *Agona* isolated from Leblon, Copacabana and Alegria. The resistance to cephalosporin of 3rd generation was 7.9% in *S.Nodollo* (Barra); *S. Anatum* (Copacabana) and carbapenems 2.6% in *S. Anatum* from Copacabana. High percentages of intermediate profile were obtained to quinolone, fluoroquinolones, aminoglycosides, nitrofurantoin and cephalosporins 3rd generation. This data represents an alert when considering the frequent use some of these antimicrobials in the treatment of humans infections. Recognize *Salmonella* serovars circulating in environmental sources and characteristics of antimicrobial susceptibility contribute to the understanding the dynamics of dissemination of this microorganisms to different ecological niches. Their relevance to public health requires a continuous monitoring, since resistance can be mediated by genes allocated to mobile genetic elements and can transferred into the environment to different microorganisms and sources, representing a potential risk to humans.

**KEY WORDS:** *Salmonella* serovars, Environmental, Sewage, Antimicrobial Resistance.