Sociedad Argentina de Microbiología General

XIX CONGRESO DE LA SOCIEDAD ARGENTINA DE MICROBIOLOGÍA GENERAL

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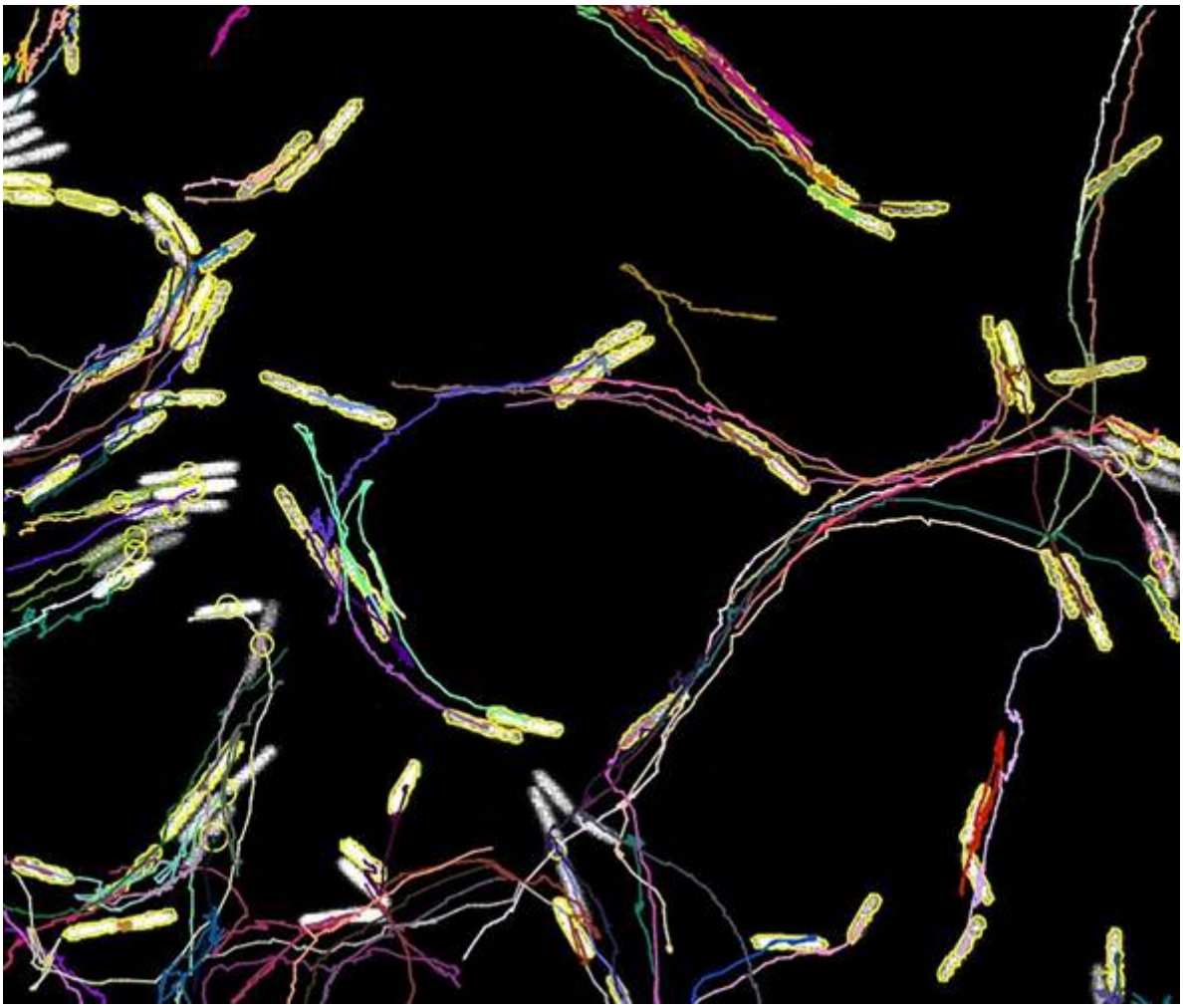

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

REVEALING?THE CAUSES OF Salmonella enterica subsp. enterica serovar Paratyphi B ENDEMICITY IN SALTA, ARGENTINA: A CLINICAL-ENVIRONMENTAL PERSPECTIVE

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Salmonella has been recognized as one of the most important infectious agents for humans. Many cases of salmonellosis have been reported in the city of Salta since 2017. *Salmonella enterica* subsp. *enterica Paratyphi B* (SPB) has been identified as the causal agent. Unlike zoonotic strains, SPB has humans as its only host and reservoir. The incidence of reported cases has increased over consecutive years, establishing Salta as the only endemic district in Argentina. Considering the estimated bacteremia rate and the number of positive blood cultures, it is estimated that approximately 55000 cases of *Salmonella* infection occur every year in Salta. The aim of this study was to investigate the potential source causing the endemicity of SPB in Salta. The study began with the design and validation of a duplex qPCR to detect and differentiate *Salmonella* spp. from SPB in clinical samples. These systems were subsequently used to evaluate water sources, including purification sources, the drinking water network, wastewater, river water (impacted by raw sewage discharge) used for irrigation, and leafy green vegetables (harvested from a horticultural belt situated downstream of the river, which is affected by untreated sewage and irrigated with water from that river). All blood cultures (N=200) were positive for the SPB serotype, evidencing the close association between this serovar and the most serious cases. Less than 1% of the 277 samples from aqueducts and chlorination tanks were positive for *Salmonella* spp., with a low bacterial load, as they could only be detected after enrichment. Considering these results along with the fact that the infective dose of SPB requires a load of over 106 bacteria, it is unlikely that tap water is a vehicle for the pathogen's dissemination in the city. In the 48 wastewater samples examined, Salmonella spp. was found at concentrations ranging from 107 to 108 genomic copies/L, while the concentrations of SPB were around one order of magnitude lower. No significant

variation in detection frequency and concentration was observed among the main wastewater collectors, indicating homogeneous distribution in excreta. *Salmonella* spp. was detected in all the samples analyzed from Arenales River (N=24); SPB was also detected in all but three samples. The pathogen concentrations in this river were approximately one order of magnitude lower than those in the wastewater, indicating that this river is continually receiving untreated raw sewage. A total of 216 leafy green vegetables were analyzed, containing equal proportions of lettuce, arugula, and celery. Among the 108 samples collected during the wet season, 69 were positive for Salmonella spp., with 39% identified as SPB. In the dry season, 47 out of 108 samples were positive for Salmonella, with 23% identified as SPB. These results indicate direct contamination of the vegetables with human feces and identify them as the main source of dissemination and maintenance of endemism in Salta

Palabras clave: Salmonellosis - Salmonella Paratyphi B – Endemicity – Irrigation water - Leafy greens