Isolation and Molecular Characterization of Salmonella Serovars Distributed in Benue State, Nigeria

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Abstract

Salmonella serovars distribution in Benue State was evaluated using standard microbiological techniques. Eighteen isolates of varying Salmonella species were obtained from four hundred and twenty stool samples collected from Patients in the three senatorial districts sampled. Four distinct serovars of S. enterica and one S. bongori, were identified. S. enterica Typhimurium was 6 (33.33%) and prevalence of 1.43%. S. enterica Typhi and S. enterica Heidelberg had 2 cases each, whereas S. enterica Agona, S. enterica Paratyphi B, S. enterica Huaian and S. bongori had a lone case each. Significant association was established between occurrence of Salmonella infection and causative serovars (χ² = 57.93, P < 0.05). Molecular characterization results showed that the dendrogram formed 2 main clusters with two divergent Salmonella strains. The first sub cluster had four strains isolated from different locations: S. enterica Heidelberg-MG663473.1 from Gboko; S. enterica Typhimurium-JQ228518.1 from Katsina-Ala; S. enterica Typhimurium-CP014981 from Makurdi and S. enterica Typhimurium-CP023166.1 from Kwande. Seventy-five percent (75%) of strains in this group were Typhimurium serovars. S. enterica Typhimurium-CP023166.1 isolated from Kwande was a unique strain that showed wider genetic variability but related to the check strain (S. bongori - KU060291.1). The second sub cluster consisted of S. enterica Paratyphi B-JQ694526.1; S. enterica Heidelberg-CP019176.1; S. enterica Typhimurium-CP024619.1 and S. bongori-FR877557.1. The second main cluster had 8 strains consisting of 4 enteritidis, 2 Typhi, 1 Huaian and 1 Typhimurium from all locations except Gboko. S. enterica Typhimurium-MH196335.1 was divergent from the main clusters of the check strain. S. enterica serovar Agona strain 392869-2 was unique and is related with enteritidis strain. It is established that diverse salmonella serovars exist and cause infections in Benue State.

Keywords: Salmonella Serovars Salmonellosis Endemic Symptomatic