Genetic and phenotypic evidence of the Salmonella enterica serotype Enteritidis human-animal interface in Chile

Retamal P.
Fresno M.
Dougnac C.
Gutierrez S.
Gornall V.
Vidal R.
Vernal R.
Pujol M.
Barreto M.
González-Acuña D.
Abalos P.

Salmonella enterica serotype Enteritidis is a worldwide zoonotic agent that has been recognized as a very important food-borne bacterial pathogen, mainly associated with consumption of poultry products. The aim of this work was to determine genotypic and phenotypic evidence of S. Enteritidis transmission among seabirds, poultry and humans in Chile. Genotyping was performed using PCR-based virulotyping, pulse-field gel electrophoresis (PFGE) and multi-locus sequence typing (MLST). Pathogenicity-associated phenotypes were determined with survival to free radicals, acidic pH, starvation, antimicrobial resistance, and survival within human dendritic cells. As result of PCR and PFGE assays, some isolates from the three hosts showed identical genotypic patterns, and through MLST it was determined that all of them belong to sequence type 11. Phenotypic assays show diversity of bacterial responses among isolates. When results were analyzed according to bacterial host, statistical differences were identified in starvation and dendritic cells survival assays. In addition, isolates from seabirds showed the highest rates of resistance to gentamycin, tetracycline, and ampicillin. Overall, the very close genetic and phenotypic traits shown by isolates
from humans, poultry, and seabirds suggest the inter-species transmission of S. Enteritidis bacteria between hosts, likely through anthropogenic environmental contamination that determines infection of seabirds with bacteria that are potentially pathogenic for other susceptible organism, including humans. © 2015 Retamal, Fresno, Dougnac, Gutierrez, Gornall, Vidal, Vernal, Pujol, Barreto, González-Acuña and Abalos.

Chile
Enteritidis
Humans
Poultry
Salmonella enterica
Seabirds
amoxicillin plus clavulanic acid
ampicillin
cefotaxime
cefradine
ceftiofur
ciprofloxacin
cotrimoxazole
enrofloxacin
free radical
gentamicin
tetracycline
antibiotic resistance
antibiotic sensitivity
Article
Chile
