



KEY WORDS

- ✓ Salmonella
- ✓ serovar
- ✓ Enteritidis
- ✓ Typhimurium
- ✓ broiler
- ✓ carcass
- ✓ edible internal organ

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TYPING OF BROILER CARCASS AND EDIBLE ORGAN SALMONELLA ISOLATES FOR THE PRESENCE OF SALMONELLA ENTERITIDIS AND SALMONELLA TYPHIMURIUM

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THESIS ABSTRACT

This study was conducted to determine the presence of *S. Enteritidis* and *S. Typhimurium* serovars within 161 total broiler *Salmonella* spp. isolates, originating from 104 carcasses and 57 edible internal organs, which were isolated and confirmed by ISO 6579-1:2017 method as *Salmonella* spp., and to evaluate the efficiency of real time PCR in comparison to Gold Standard conventional serotyping. Pure cultures and PCR products were used in conventional serotyping, and in *S. Enteritidis* and *S. Typhimurium* specific real time PCR (SE/ST-rPCR) analysis, respectively.

Overall, 6,83% and 6,21% of the isolates were determined as serovar *Enteritidis* by conventional serotyping, whereas no serovar *Typhimurium* was detected by either method. Conventional serotyping revealed serovars as *S. Virchow* (%81,99), *S. Schwarzengrund* (%9,32), *S. Enteritidis* (%6,83), *S. Bredeney* (%0,62), with 2 isolates untyped. There was almost perfect agreement between two methods (κ : 0,94), with a 99,37% relative accuracy, 90,91% sensitivity, and 100% specificity.

Study results indicated that broilers do not carry *S. Typhimurium*, one of the two serovars mandated to be absent by current legal regulations, and have low prevalence of *S. Enteritidis*, and contributed original and up to date data to literature by showing *S. Virchow* and *S. Schwarzengrund* as the first and the second dominant serovars in broilers, revealing current pathogen serovar carriage in broilers other than *S. Enteritidis* and *S. Typhimurium*. Additionally, SE/ST-rPCR was determined as an alternative to conventional serotyping for the detection of *Enteritidis* and *Typhimurium* serovars.

APPLICATION AREAS OF THE THESIS RESULTS

The results obtained in this study, in which *Salmonella* spp. isolates were typed in terms of *S. Enteritidis* and *S. Typhimurium* presence, determined the effectiveness of the SE/ST-R-PCR method according to the conventional serotyping. It has been determined that SE/ST-RPCR may be an alternative to conventional serotyping in determining enteritidis and Typhimurium serovar.

In addition, these concrete data have shown that poultry can be the asymptomatic carrier of different *Salmonella* serovars other than SE/ST.

ACADEMIC ACTIVITIES

Bursa Uludağ University General Research Project (GAP) was implemented within the scope of TGA-2021-398 project.

