Name **:** **Nayera Mahmoud M. M. El-Atfehy**

Faculty **:** **Veterinary Medicine**

Dept. **:** Microbiology

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Title of Thesis: Genomic Comparison and Characterization of Salmonella Enterica Serovars by the Use of Different Molecular Techniques

Supervisors : Dr. Kamelia Mahmoud Osman and Dr. Mona Mehrez Ali

Abstract :

Out of 557 samples of different sources the incidence was 11.66%, whereas the highest percentage was 14.42% among ducks followed by pigeon (11.33%) then chicken (9.47%) while the lowest percentage of Salmonella isolation was from turkey (6.25%). The Salmonella serovars showed100% of Congo red binding affinity with different combining intensities and gave a broad-spectrum of haemagglutination patterns also showed a wide range of percentage of survival in duck's and chicken's sera for 3 hours (85.7% - 57 %) and for 6 hr (83.3% - 28.6%).also produced cytopathic effect in different degrees or even death of the Vero cells and MDCK cells also Embryo lethality assay showed (100%). The findings from the present study showed that the InvA gene was expressed in all the Salmonella serotypes by PCR and the virulotyping analysis for 10 virulence genes (avrA, bcfC, gipA, mgtC, ssaQ, sopB, sodC1, sopE1, spvC, and spi4D) by conventional PCR which showed that the dominant gene was sopB (97.1%) of the examined serovars followed by bcfC (95.7%), ssaQ (68.6%), avrA (64.3%), mgtC (54.3%), spi4D (52.9%), sodC1 (35.7%), spvC (28.6%), sopE1 (10%) while the gipA gene was absent .the SDS-PAGE was used to establish the relationship between the related serovars. It was noticed that the band 36 KDa shared in all S. Enteritidis and S. Typhimurium isolates and other Salmonella isolates(30/70), followed by protein bands between 20 to 24 KDa (18/70) . 94.3% of the isolates demonstrated multiple-resistance for all antimicrobial agents. Resistance prevalence was significantly higher among the poultry isolates than human isolates. Resistance to colistin sulphate was detected only among pigeon and human isolates and at an intermediate frequency. Also, resistance to ciprofloxacin was detected among chicken at a high frequency (100%) and at a low frequency among ducks (3%). The results of the sopB sequencing revealed complete identity (100%) between five of our selected examined Salmonella serovar isolated from different sources (5/6) while The untypable Salmonella serovar that was isolated

from the imported chicken (isolate number 69) showed several points of mutations (3 true mutations) resulting in grouping with S. Agona str. SL483 with identity (99.5%). The sequencing of the bcfC gene revealed the same results except the detection of five points of mutations in the untypable Salmonella serovar isolated from the imported chicken (isolate number 69 in this study) in, resulting in grouping with S. Newport str. SL254.

Keywords:

Salmonella virulence genes; Ducks; Chicken; Turkey; Pigeon; Human; Antimicrobial resistance; Outer membrane proteins; Prevalence; Serotyping.