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## Prevalence, antibiotic resistance and molecular characterization of *Salmonella* serovars in Lebanese broiler chickens: Focus on *Salmonella kentucky*

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Ton-typhoidal Salmonella sp. of chicken origin has always been the major causative pathogen of food poisoning worldwide. Furthermore, non-responsible use of antibiotics promotes the development of multidrug-resistant bacteria. Since data on Salmonella in poultry industry in Lebanon are scarce, this study was conducted to determine the prevalence of Salmonella at different stages of the production chain, their antibiotic resistance profile and molecular patterns. Over a period of 3 years, samples of feces were collected by a sock method from local Lebanese farms (n=237), poultry meat from slaughterhouses (n=100) and from retail (n=1600). In parallel, ceca (n=100) and neck skins (n=100) were collected from two major slaughter plants. Isolated Salmonella strains (n=663) were serotyped from which 500 were analyzed for antimicrobial resistance (panel of 29 drugs) using the standard disk diffusion and MIC Method (CLSI guideline). Pulsed-field gel electrophoresis (PFGE) using the macro-restriction enzyme Xbal was used to define the molecular patterns of the main serovars. The results highlighted a high prevalence in poultry with 30% of positive farms and almost 55% of the samples from slaughterhouses and retail. A large diversity of serotypes was identified with Salmonella infantis (33%), Salmonella enteritidis (28%) and Salmonella kentucky (22%) the most predominant ones. High resistance to Nalidixic acid was shown in all Salmonella strains. No remarkable resistance was detected in Salmonella enteritidis. In addition, Salmonella infantis was resistant to both Streptomycin, Tetracycline at a rate of 100% and 97%, respectively. However, the most prominent resistance was exhibited in Salmonella kentucky, where all strains (n=133) were multidrug resistant (MDR) and showed 100% resistance to Nalidixic acid, Ciprofloxacin, Norfloxacin and Enrofloxacin and at a significant rate to Ampicillin (72%), Tetracycline (61%), Amoxicillin (59%) and Gentamycin (50%). Salmonella kentucky were differentiated by PFGE into 10 pulso-types from which six (n=96) showing 94, 2% pattern similarity index. Similar genomic profile and antibiotic-resistance phenotypes were detected between farms, slaughterhouses and retail suggesting the circulation and transmission of identical clones. Furthermore multidrugresistant Salmonella kentucky CIP<sup>R</sup> (n=9) to 3<sup>rd</sup> Cephalosporin antibiotics recovered from both slaughterhouse and retail market displayed an identical PFGE pattern. This study reported for the 1st time in Lebanon the high prevalence of Salmonella sp. and the detection of multi-resistant Salmonella Kentucky in poultry. This work highlighted the interconnectedness between different ecologies, through a 'Farm to fork' approach, which urge to establish a strategic plan on Salmonella and the use of antimicrobials in Lebanese poultry industry to protect consumer health.

## Biography

Rima El Hage is the In-Charge of Microbiological Laboratory at Lebanese Agricultural Research Institute. She has completed her Master's degree in Food Chemistry from Saint Joseph University, Lebanon. She is currently a PhD student at National Polytechnic Institute of Toulouse, France. Regionally, she is nominated by Lebanon-Ministry of Agriculture to be part of the Arab experts contributing to developing a common Arab approach for food safety risk assessment.

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