Abstract

Salmonella is considered as an important pathogen for the poultry industry. Among *salmonella*, *salmonella typhimurium* has a special place, because both in terms of diversity of hosts and in terms of geographical diversity is high. Many researchers have concluded that using selective antibiotic can increase antibiotic resistance in human and animal bacteria such as *salmonella*. An antibiotic resistance transfer factor between bacteria is an integron, and the next is beta-lactam. Beta-lactams are a wide range of enzymes that, in addition to producing penicillin-resistance, interfere with the resistance to a wide range of cephalosporins. The acquired resistance of β-lactamase is mainly due to the *CTX-M* type broad-spectrum beta-lactamases. In this study, samples from 253 turkeys that were randomly selected from different regions of Zabol were obtained by colobacic swab and transferred to the Microbiology Laboratory of the Faculty of Veterinary Medicine in the TSB environment. Samples were evaluated by culture in lysine decarboxylase, *salmonella - shigella* agar, triple shooter agar, urea broth, macrocake agar and culture medium. The prevalence of *Salmonella* in Zabul's farms was 14.62% (37 *salmonella* from 253 samples). All specimens were evaluated and confirmed by culture and standard biochemical tests. The chromosomal DNA of all isolates was extracted by boiling method. In order to confirm the detection of *Salmonella* genus, an *invA* gene in 284 bp long was used, and a 559 bp gene *fliC* gene was used in PCR to detect the thyroid repellency of the *typhimorium*. The isolates that were negative for *invA* gene were removed and the remaining isolates were re-PCR for finding *CTX-M-1* resistance genes of 593 bp and *Integrase 1* at 160 bp. Finally, the samples were tested for antibiograms of different generations of cephalosporins and their sensitivity to each antibiotic was measured. The result of the antibiogram also showed: All samples (100%) were sensitive to cefipime antibiotic (FEP30), which is a fourth-generation cephalosporin. Antibiotic susceptibility is Cefepime > cefixime > Ceftriaxone = Cefoxitin = Cefalotin> Cefazolin. It was also found that in this study, resistance to two antibiotics cefoxitin and cefixime (15.15%) and resistance to two antibiotics ceftriaxone and cefepime were not observed. In this study, the frequency of *invA* and *FliC* genes in 37 samples of *Salmonella* in PCR was 89.18% (33 cases) and 51.35% (19 cases). The frequency of *Int1* and *Ctx-m-1* genes in 33 positive *Salmonella* isolates from turkey was 96.96% (32 cases) and 75.75% (25 cases), respectively. In this study, the prevalence of *Integrase 1* and *CTX-M-1* in *salmonella* isolated from turkeys in Zabol region was very high compared to other areas. Increasing the resistance to antibiotics in this study can be due to an over-consumption and without antibiotics in the poultry industry. By continuously evaluating these resistances, especially at the national and regional levels, and subsequently by using specific measures for the level and type of antibiotic use on the flock level, the prevalence and diffusion of resistance can be greatly prevented.

Keywords: *Salmonella typhimurium*, *CTX-M-1* beta-lactamases, *Integrase 1*, Cephalosporin, PCR, turkeys

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Identification of *Salmonella typhymorium* and study of resistance pattern of cephalosporins and survey of prevalence of Bla-*CTX-M-1* and *class 1 integrase* by PCR in *Salmonella* isolated from turkeys in Sistan

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