

## Antibiotic resistance pattern and biofilm formation ability of *Escherichia coli* derived from beef cattle in Ilam and Kurdistan provinces

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### Abstract

*Escherichia coli* are commensal gastrointestinal microflora of human and animals, but some strains due to the presence of pathogenic factors may cause various animal and human diseases. The present study aimed to identify antimicrobial resistant pattern and biofilm formation potential of *E. coli* derived from beef cattle in Ilam and Kurdistan provinces. Samples were taken from neck, arms and thighs of 90 slaughtered cows (45 cows from Ilam and 45 cows from Kurdistan). *E. coli* isolation was done based on culturing on selective and differential culture media and biochemical tests. The antibiotic susceptibilities and biofilm formation potential were done by Kirby Bauer's disk diffusion and microtiter plate (MtP) tests, respectively. The Spearman rank correlation test performed to study the correlation between antimicrobial susceptibility and biofilm formation and *p* values less than 0.05 were considered as a significant level. Of 270 meat samples, 42 *E. coli* were isolated. In both provinces, samples taken from the thighs had significantly more *E. coli* bacteria than necks and arms. The highest resistance rate was reported to sulfamethoxazole and tetracycline (85.71%), followed by ampicillin (80.95%). Besides, all *E. coli* were sensitive to colistin. Based on MtP, 24 (57.14%), 12 (28.57%) and 6 (14.28%) isolates were categorized as strong, moderate and weak biofilm producer, respectively. The significant positive correlation was found between biofilm formation and resistance to ampicillin, amoxicillin, amikacin, ciprofloxacin, gentamicin, tetracycline and ceftriaxone. High antibiotic resistance rates and strong biofilm formation ability of *E. coli* isolates obtained from red meat suggest the need for continuous surveillance in the food chain.

**Key words:** *Escherichia coli*, Antibiotic resistance, Biofilm formation, Beef cattle

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