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**Prevalence and risk factors for carriage of Extended-Spectrum Beta-Lactamase producing *Escherichia coli* in Dogs in Ho Chi Minh City, Vietnam**

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**Abstract:**

**Background/Objective:** Extended spectrum beta-lactamase (ESBL)-producing *Escherichia coli* are an emerging problem in veterinary and human medicine. Compared with human medicine, information regarding ESBL-producing *Escherichia coli* is limited in veterinary medicine, particularly in companion animals. This study was conducted to investigate the prevalence and risk factors for carriage of ESBL-producing *E. coli* in dogs in Ho Chi Minh city, Vietnam.

**Methods:** Our cross-sectional study was conducted from November 2023 to March 2024. A total of 114 remaining fecal samples collected from dogs for routine diagnostic/screening at a veterinary clinic in Ho Chi Minh city were included in this study. Epidemiological data was extracted from the veterinary medical records. ESBL-producing *E. coli* was isolated using ECC (CHROMagar) supplemented with cefotaxime (1 ug/ml). Risk factor analysis for carriage of ESBL-producing *E. coli* was carried out using logistic regression.

**Results:** Overall, the prevalence of ESBL-producing *E. coli* in dogs in Ho Chi Minh city was 38.6% (44/114). There was no significant difference in the prevalence of ESBL-producing *E. coli* among different age groups, breeds, genders, raising types, feed types, vaccination statuses and health statuses of the dogs (p>0.05). Among 72 dogs reported antimicrobial usage, the most frequently used antimicrobial class was penicillin/beta-lactamase inhibitors (amoxicillin/clavulanic acid) at 34.7% (25/72), followed by 3rd generation of cephalosporins at 27.8% (20/72), tetracycline at 25.0% (18/72), trimethoprim/sulfonamides at 20.8% (15/72) and 1st generation of cephalosporins at 16.7% (12/72). The proportion of multidrug resistance in ESBL-producing *E. coli* was 91.5%. Risk factor analysis found that ESBL-producing *E. coli* was associated with 3rd generation of cephalosporins use in dogs (OR = 3.63, 95% CI=1.25–10.54).

**Conclusion:** Our findings showed that ESBL-producing *E. coli* was commonly isolated from dogs and was linked to the use of 3rd generation cephalosporins. This has significant implications for veterinary and public health, particularly regarding antimicrobial usage.

**Keywords:** Antimicrobial resistance, Dogs, ESBL-producing *E. coli*, Multidrug resistance