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**Antimicrobial resistance in *E. coli* isolates from healthy and dogs hospitalised in Slovak veterinary clinics**

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**Abstract:**

**Background/Objective:** Antimicrobial resistance is of increasing concern worldwide. The usage of antimicrobial drugs in veterinary medicine has increased in the last few decades.

**Methods:** In our study, we analyzed 300 E. coli isolates from fecal samples from 30 healthy dogs and 50 patients at a surgery department of a veterinary clinic in Slovakia. After the identification of the *E. coli* isolates, the MIC was analysed by microdilution method and evaluated by MIDITECH software, which evaluated also the mechanism of resistance.

**Results:** We found high resistance to ampicillin in both healthy dogs (33.3% of isolates) and in patients (66% of isolates). 26.66% of isolates from healthy dogs and 66% of isolates from clinic patients were resistant to tetracycline. In treated dogs, MIC analysis also showed resistance to cefuroxime (30%) and cefotaxime (32%). The results of treated dogs showed MIC levels for tetracycline (9.9 mg/L), ampicillin (17.8 mg/L), cefuroxime (9.4 mg/L) and cefotaxime (12 mg/L) compared to clinical breakpoints.  *E. coli* strains isolated from healthy dogs were 100% susceptible to fourteen of the antibiotics evaluated, while strains isolated from patients only showed 100% susceptibility to ertapenem, meropenem, and amikacin. In our study, we found a mechanism of multidrug resistence (MDR) in 33% of the isolates from patients at the clinic but also in healthy dogs (33.3%). The ESBL mechanism of resistance was shown in 6% of the *E. coli* strains, and the high number of isolates that showed MDR causes great concern as β-lactams are used extensively in both veterinary medicine.

**Conclusion:** Our results suggest that dogs could be a potential reservoir of resistance genes. Administration of antimicrobials has an effect on resistance; therefore, selection, dosage, and optimal duration of antibiotic therapy are essential.

**Keywords:** *E. coli*, antimicrobial resistance, dogs