Molecular and phenotypic insights into antimicrobial resistance in *Staphylococcus* isolates from external otitis in pets

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Introduction: External otitis is a frequent infection in companion animals, often involving *Staphylococcus* species. Rising antimicrobial resistance (AMR) in these bacteria poses significant challenges for treatment and public health. This study aimed to investigate the AMR profile of *Staphylococcus* species isolated from external otitis in companion animals.

Material and Methods: Between 2023-2024, ear swab samples were collected from dogs (n=59) and cats (n=19) with clinical signs of otitis from the teaching Hospital FMV-Ulusófona in Lisbon, Portugal. The swabs were inoculated onto Sheep Blood Agar and incubated at 37°C for 24-48 hours. Suspected *Staphylococcus* colonies were identified based on colony morphology, and species was confirmed by PCR. Antimicrobial susceptibility was assessed using the disk diffusion method, as recommended by CLSI guidelines. A total of 20 antibiotics were tested. PCR was performed for the detection of various antimicrobial resistance genes.

Results: A total of 83 *Staphylococcus* isolates were identified from 52 dogs and 18 cats. *Staphylococcus pseudintermedius* was the most prevalent (57.83%, n=48/83). The highest resistance was observed for ampicillin (65.06%, n=54/83), moderate resistance to doxycycline (39.76%, n=33/83), erythromycin (30.12%, n=25/83), and clindamycin (26.50%, n=22/83). Resistance was also observed to fluoroquinolones (22.89%, n=19/83) and trimethoprim/sulfamethoxazole (22.89%, n=19/83). Genotypic analysis showed the presence of several AMR genes: *blaZ* (65.06%, n=54/83), *mecA* (18.07%, n= 15/83), *tetM* (32.53%, n=27/83). The *mecC* gene was not detected.

Conclusions These findings highlight the need for ongoing surveillance and emphasize the importance of appropriate antimicrobial stewardship in managing these infections and mitigating potential zoonotic risks associated with resistant *Staphylococcus* spp.
Keywords: *Staphylococcus* spp., otitis, companion animals, antimicrobial resistance.

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