Background: Reliable detection of resistance in veterinary pathogens is critical for effective treatment, control and prevention. Given the widespread use of antimicrobial drugs, continued performance assessment requires periodic reevaluation with contemporary isolates. We evaluated the accuracy of the Sensititre ARIS 2X (TREK Diagnostic Systems) and Vitek 2 (bioMerieux) automated systems when testing Gram-positive pathogens.

Methods: Bacterial isolates (65 staphylococci and 45 enterococci) recovered in 2010 from companion animal (75%), dairy cow (18%), and miscellaneous (7%) sources were tested for susceptibility to 10 antimicrobial agents (Trimethoprim/Sulfamethoxazole, Oxacinil, Penicillin, Erythromycin, Enrofloxacin, Ampicillin, Oxacillin, Gentamicin, Clindamycin, and Marbofloxacin) by the four systems compared with existing laboratory methods (primarily disk diffusion). Total error rates were calculated for each system and for the three test systems; Table 1).

Results: A total of 1,737 categorical interpretations were generated for 10 antimicrobial agents when testing 110 contemporary Gram-positive veterinary pathogens. Most errors occurred when testing enterococci and fluoroquinolones by disk diffusion (22.2%); and MiE when testing staphylococci/clindamycin (33.3%)/erythromycin (9.5%), and VME, ME and MiE for Sensititre were, respectively, 0.7%, 0.0% and 2.9%, all very acceptable. Comparative data using frozen-form microbroth dilution panels remains to be provided for the other three test systems. Poster-121. ASM Annual Meeting, Orlando, 2006.

Conclusions: Sensititre ARIS 2X and Vitek 2 had low total and acceptation error rates (1.6% and 1.7%, respectively), when testing this collection of contemporary Gram-positive veterinary pathogens, compared with an unacceptable 11.4% error rate using established laboratory methods. Most errors occurred when testing enterococci and fluoroquinolones by disk diffusion (22.2%), and were infrequent with the newer automated methods (<5%).

Bacterial isolates. Clinically significant veterinary pathogens (110 total) were recovered from companion and other animals from a USA university veterinary diagnostic laboratory in 2010, and included staphylococci (65) and enterococci (45). Isolates recovered originated from companion animals (75%), dairy cattle (18%), miscellaneous (7%), and other species (3%). Further details of species and numbers tested during this period are found in Table 1.

Identification and susceptibility testing methods. All isolates were tested with the ARIS 2X (TREK Diagnostic Systems), Vitek 2 (BioMerieux), Etest (BioMerieux), and the Susceptibility Testing System (STS) (MicroScan). Isolates were tested with a range of breakpoints when testing staphylococci (Etest, STS, and MiE) and enterococci (MiE). VME, ME and MiE for Sensititre were, respectively, 0.7%, 0.0% and 2.9%, all very acceptable. Comparative data using frozen-form microbroth dilution panels remains to be provided for the other three test systems. Poster-121. ASM Annual Meeting, Orlando, 2006.

Most errors occurred when testing enterococci and fluoroquinolones by disk diffusion (22.2%), and were infrequent with the newer automated methods (<5%).

The numerical data were tested for normality using the test of skewness, and the Kruskal Wallis test for differences in total error rates across the systems. All error rates were calculated for each system and the three test systems. Poster-121. ASM Annual Meeting, Orlando, 2006.

Comparison of data using/and or existing laboratory methods, and automated software for veterinary diagnostic laboratories. Procedings of the 6th International Conference on Veterinary Reference Laboratories, 2005.


Antimicrobial susceptibility testing, the characterization of bacterial isolates from clinical samples of unknown origin, is a routine diagnostic test performed in many veterinary diagnostic laboratories. A sound understanding of the principles and practices of antimicrobial susceptibility testing is therefore required for the appropriate use of antimicrobial agents.


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