**Evaluation of the Sensititre Aris 2X and Vitek 2 Automated Systems for Antimicrobial Susceptibility Testing of Contemporary Gram-Negative Pathogens Originating from Veterinary Sources**


**INTRODUCTION**

Antimicrobial susceptibility testing (AST) of veterinary pathogens is critical for treatment efficacy, control of disease and antimicrobial resistance. Automated systems, which perform rapid and accurate AST, have replaced manual methods in many veterinary diagnostic laboratories. These automated systems vary in their performance of critical antimicrobials and prevalence of commonly occurring pathogens, the automated systems provide a high level of concordance and low false error rates.

**MATERIALS & METHODS**

**Bacterial isolates.** Clinically significant veterinary pathogens (385 total) were recovered from primary sources; animals by a US-based veterinary diagnostic laboratory, in 2010, and included 144 Escherichia coli (47.2%) and Klebsiella spp. (32.7% of isolates), 45 Vibrio spp. (11.7%), 15 Streptococcus spp. (3.9%), 14 Pasteurella sp. and 7 Actinobacillus spp. (8 total PAS). Isolates recovered originated from the upper respiratory tract (45.5%), skin and soft tissue (11.7%), bone (7.7%), joint (5.5%), Trachea (5.1%), and in 1 isolate not identified. Further details at species and antimicrobial agent levels are listed in Tables 1 and 2.

**Identification and susceptibility testing methods.** All isolates were tested with automated and standard laboratory methods. All isolates were tested with 2 automated systems and the standard method for the selected antimicrobials. Sensititre Aris 2X (TREK Diagnostic Systems) (categorical agreement by 2 of the three test systems). Evaluation of the Sensititre Aris 2X and Vitek 2 automated systems for antimicrobial susceptibility testing of contemporary gram-negative pathogens originating from veterinary sources. Acknowledgements: The investigation was supported in part by TREK Diagnostik Systems and bMikros, Inc.

**RESULTS**

- A total of 3,756 categorical interpretations were generated for 11 antimicrobial agents when testing 205 contemporary Gram-negative veterinary pathogens by three susceptibility test systems.
- Overall agreement between the 3 systems was 90.8% and agreement between Sensititre ARIS 2X and Vitek 2 was 95.8%.
- Rates for very major (VME), major (ME) and minor errors (MiE) for Sensititre were, respectively, 0.2%, 0.2% and 2.0% for Vitek 2, 0.3% and 2.5% for Sensititre ARIS 2X and Vitek 2 automated systems, respectively, compared with routine laboratory methods (primarily disk diffusion using CLSI M31-A3 breakpoints or the Vitek Legacy).
- No VME were found with the Vitek 2; MEs were seen with combinations of other agents.
- Overall agreement between the 3 systems was 90.8% and agreement between Sensititre ARIS 2X and Vitek 2 was 95.8%.
- Rates for very major (VME), major (ME) and minor errors (MiE) for Sensititre were, respectively, 0.2%, 0.2% and 2.0% for Vitek 2, 0.3% and 2.5% for Sensititre ARIS 2X and Vitek 2 automated systems, respectively, compared with routine methods (primarily disk diffusion using CLSI M31-A3 breakpoints or the Vitek Legacy).

**CONCLUSIONS**

- A total of 3,756 categorical interpretations were generated for 11 antimicrobial agents when testing 205 contemporary Gram-negative veterinary pathogens by three susceptibility test systems.
- Overall agreement between the 3 systems was 90.8% and agreement between Sensititre ARIS 2X and Vitek 2 was 95.8%.
- Rates for very major (VME), major (ME) and minor errors (MiE) for Sensititre were, respectively, 0.2%, 0.2% and 2.0% for Vitek 2, 0.3% and 2.5% for Sensititre ARIS 2X and Vitek 2 automated systems, respectively, compared with routine methods (primarily disk diffusion using CLSI M31-A3 breakpoints or the Vitek Legacy).
- No VME were found with the Vitek 2; MEs were seen with combinations of other agents.
- Overall agreement between the 3 systems was 90.8% and agreement between Sensititre ARIS 2X and Vitek 2 was 95.8%.
- Rates for very major (VME), major (ME) and minor errors (MiE) for Sensititre were, respectively, 0.2%, 0.2% and 2.0% for Vitek 2, 0.3% and 2.5% for Sensititre ARIS 2X and Vitek 2 automated systems, respectively, compared with routine methods (primarily disk diffusion using CLSI M31-A3 breakpoints or the Vitek Legacy).

**ACKNOWLEDGEMENTS**

The investigation was supported in part by TREK Diagnostik Systems and bMikros, Inc.