



- ¹Leibniz-Institute for Zoo- and Wildlife Research, Berlin, Germany
²Federal State Laboratory Berlin Brandenburg, Berlin, Germany
³Martin-Luther-University Halle-Wittenberg, Halle, Germany
⁴Institute for Animal Ecology, University Potsdam, Potsdam, Germany
⁵Friedrich-Loeffler-Institute, Wusterhausen, Germany
⁶Inst Hygiene & Infectious Diseases in Animals, University Giessen, Germany

PITFALLS IN THE DETECTION OF ESBL-PRODUCING BACTERIA FROM WILD ANIMALS

M. Grobbel¹, N. Dinse¹, U. Wittstatt², O. Lindecke^{1,3}, C. Hönicke⁴, C. Szentiks¹,
F. J. Conraths⁵, C. Ewers⁶

Purpose

Wild animals are important players in the spirit of one health. To unravel their putative role in the complex scenario of antimicrobial resistance and transmission cycles, we investigated samples from wild animals for ESBL-producing *Enterobacteriaceae*.

Methods

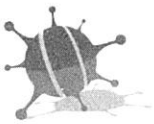
Fecal or gut samples collected from red foxes, hares, bats, rodents and different carnivores were cultured on chromogenic agar containing 2µg/ml cefotaxim. Colonies were identified biochemically and tested for β-lactamase genes by PCR and sequence analysis. Phylogenetic investigation via pulsed-field-gel-electrophoresis was performed within the different test populations.

Results

ESBL-producing *E. coli* were isolated from 53/567 red foxes from the Berlin city area with various PFGE-patterns. At the same time, only 4/135 ESBL isolates were found in foxes from rural areas in Brandenburg, all 4 showing identical PFGE-patterns. In 30/131 bats we found *Hafnia alvei* isolates which are known to produce ACC *ampC*-β-lactamases, thereby mimicking ESBL-production on the screening plates. Among 316 rodents from rural areas, no ESBL-producing *Enterobacteriaceae* were detected.

Conclusions

Due to low prevalence in rural areas, even a large sample numbers provide no guarantee that resistant bacteria can be identified, if present. Any direct comparison of resistant isolates from urban and rural populations is therefore difficult. Dealing with different animal species bears the risk of confounders, e.g. intrinsically resistant bacteria mimicking the targeted bacteria. In times of increasing numbers of resistances and limited efforts to develop new antimicrobial drugs it is crucial to know the role of each puzzle piece in one health. As funding for this research is scarce, it is important to avoid stepping into the mentioned pitfalls.

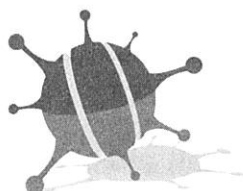


Corresponding author

Dr. Mirjan Grobbel
Leibniz-Institute for Zoo- and Wildlife Research
Alfred-Kowalke-Str. 17
10325 Berlin, Germany
E-Mail: grobbel@izw-berlin.de

Deutsche Veterinärmedizinische Gesellschaft e.V.
German Veterinary Medical Society

**16th International Symposium
of the World Association
of Veterinary Laboratory
Diagnosticians
(WAVLD)**



10th OIE Seminar

32nd Symposium of AVID



**June 5 – 8, 2013
Berlin, Germany**

DVG Service GmbH
Friedrichstr. 17 · 35392 Giessen
Tel.: +49 (0)641 24466 · Fax: +49 (0)641 25375
E-Mail: info@dvg.de · Homepage: www.dvg.de