

A longitudinal study on the occurrence of Extended-spectrum beta-lactamases and CIT-type AmpC beta-lactamases-producing *Escherichia coli* in conventional and organic pig farms in Northeast Germany

Katharina Meissner¹, Sebastian Günther², Carola Sauter-Louis¹, Franz J. Conraths¹, Timo Homeier-Bachmann¹

¹ Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Institute of Epidemiology, Südufer 10, 17493 Greifswald-Insel Riems, Germany

² Institute of Pharmaceutical Biology, University of Greifswald, Friedrich-Ludwig-Jahn-Str. 17, 17489 Greifswald, Germany

Extended-spectrum β -lactamase (ESBL)/AmpC-producing *Escherichia coli* strains are widely distributed among pigs. However, there was little information available on the occurrence of ESBL/AmpC-producing Enterobacteriaceae in organic pig farms in Germany.

Three conventional and four organic pig farms were examined for the presence of ESBL/AmpC-producing Enterobacteriaceae in a longitudinal study in Mecklenburg-Western Pomerania. Each farm was visited 5 times roughly every two months in 2018. Depending on the farm, pooled faecal samples of 6 age groups were collected. Swabs of the pooled faecal samples were taken, cultured and tested for phenotypically ESBL-suspicious *E. coli* colonies. Presence of genes encoding beta-lactamases of CTX-M, SHV, TEM and CIT-type AmpCs was determined in these colonies using a real-time PCR.

In total, 1150 faecal swabs were cultured, of which 281 *E. coli* were phenotypically cefotaxime-resistant, i.e. ESBL-suspicious. All farms were classified as ESBL-suspicious, but the number of ESBL-suspicious samples per farm varied between 1% (organic farm) and 43% (conventional farm). ESBL-suspicious samples per barn or barn compartment varied between 8% (organic farm) and 78% (also an organic farm). Determination of the underlying resistance genes by real-time PCR of the most promising phenotypically cefotaxime-resistant 186 *E. coli* isolates revealed that almost all isolates were CTX-M-positive (90%).

Contact:

Katharina Meissner

katharina.meissner@fli.de