DTU Vet
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Diversity of antimicrobial resistance genes in Danish pig population

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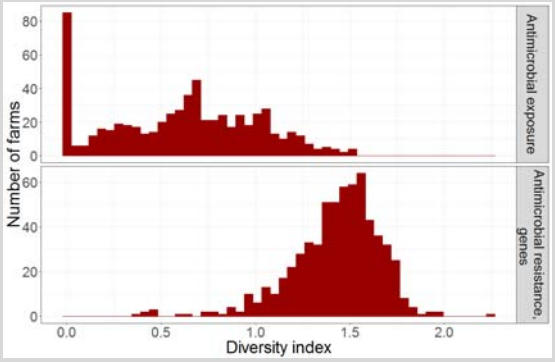
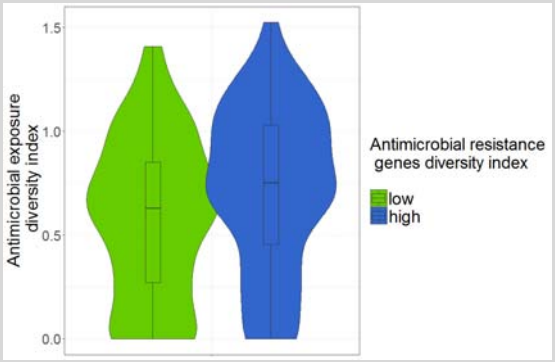
Why

- Antimicrobial resistance is a global health problem
- There is a need to understand antimicrobial resistance patterns in order to set up effective initiatives to combat the global health issues due to increasing levels of antimicrobial resistance
- Diversity measures might be a valuable method to assess the patterns of antimicrobial resistance
- The objective of this study was to explore the association between the diversity of antimicrobial resistance genes and the diversity of antimicrobial exposure.

Results



Histogram of antimicrobial resistance gene diversity and antimicrobial exposure diversity.

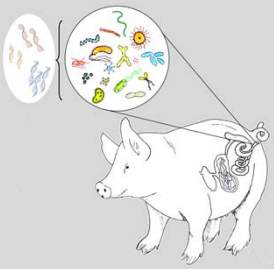


Significant difference (p = 0.0005) in the antimicrobial exposure diversity between farms with high (blue) and low (green) antimicrobial resistance gene diversity.

How

Antimicrobial resistance genes

- 627 farms
- Faecal samples
- qPCR
- Quantification of 38 antimicrobial resistance genes



Antimicrobial exposure

- National register data
- Antimicrobial exposure
- 11 antimicrobial classes

Diversity Index

Shannon's diversity index

$$H' = -\sum_{i=1}^{S} p_i \cdot \ln(p_i)$$

Statistical analyses

Comparison of farms with high (>75 percentile) and low (<25 percentile) diversity of antimicrobial resistance genes.

Conclusion

- Antimicrobial resistance gene diversity is associated with antimicrobial exposure diversity
- Levels of specific antimicrobial resistance genes tended to increase with increasing antimicrobial resistance gene diversity indicating that high diversity of antimicrobial resistance genes is associated with high levels of antimicrobial resistance

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