Evaluation of intestinal sampling sites in pigs at slaughter for assessing antibiotic resistance level in swine herds

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In the EU project SafeOrganic, the objective is to compare the level of antibiotic resistance in conventional pig herds with the level in organic pig herds, where a restricted use of antimicrobials is expected to result in less resistant bacteria. For such survey, sampling at the abattoir opposed to at each individual herd would reduce the work load and costs significantly. However, due to the potential oral exposure to bacteria in the environment during transport and lairage of pigs, intestinal content sampled at the slaughterhouse may not represent the bacterial status of the pig back in the herd. To assess this, we examined the gastrointestinal passage velocity via the oral route. In addition, we compared the proportion of resistant *Escherichia coli* in rectal swabs sampled at the farm with the proportion in different segments of the large intestine at slaughter, as a measure of any induced change in the pigs' bacterial community from farm to slaughterhouse. Twelve slaughter pigs were fed with inert particles before transport to the slaughterhouse, where the pigs were slaughtered approx. 2, 4, 6 and 8 h after feeding. The large intestine of each pig was examined for localization of the particles and the numbers of *E. coli* in rectal swabs (farm) and faecal content from caecum, mid-colon and end-colon was enumerated on 3M Select *E. coli* Count plates (SEC) with or without tetracycline (TET) to determine the proportion of TET resistant *E. coli*.

Four hours after feeding, the particles was located in the mid-colon in some pigs indicating a relatively short intestinal passage time after ingestion and then the risk of finding bacteria not originating from the host pig but from the environment. However, the proportion of the TET resistant *E. coli* in the large intestine appeared relatively stable over time, though generally a little lower than in rectal swabs. Accordingly, it seems that testing for the level of TET resistant *E. coli* at slaughter can allow for comparison of the presence of TET resistance also at herd level. Ongoing investigations of pigs from different herds should allow for further conclusions on this.