CHLORAMPHENICOL IN PIG TISSUES, PLASMA AND URINE AFTER LOW ORAL DOSES

INTRODUCTION
Chloramphenicol is a broad spectrum antibiotic, which is illegal to use for treatment of food producing animals due to its toxic effects on the bone-marrow in humans. Chloramphenicol has been found to occur naturally in straw. Since straw is the most common bedding material for pigs in Sweden, we investigated if low daily doses of chloramphenicol (4, 40 and 400 µg/pig) fed orally during 14 days, could result in chloramphenicol residues in pigs and, if so, would still be detectable after a 7 days withdrawal period.

ANALYSES
- Muscle and urine were analysed both at RIKILT and NFA using similar but not identical procedures. Liver, kidney and plasma were analysed only at RIKILT.
- In both laboratories, chromatography was performed on an ACQUITY UPLC system (Waters, Manchester, UK) equipped with an ACQUITY UPLC BEH C18 analytical column (Waters, Manchester, UK).
- Detection was carried out using a Waters model Xevo TQS triple quadrupole mass spectrometer in the negative electrospray ionization (ESI) mode.

RESULTS
- A dose related increase of residues was found in muscle, plasma, kidney and urine, but no chloramphenicol was found in liver (LOD <0.05 µg/kg).
- In the lowest dose group, residues were over the RPA only in urine (median concentration 6 µg/kg).
- One week after last dose, chloramphenicol levels above RPA could only be found in urine from the highest dose group (median concentration 1.2 µg/kg).
- The results of the analyses from NFA and RIKILT showed a good conformity.
- The methods for muscle and urine used at NFA were more sensitive, probably because of a more extensive sample preparation.

CONCLUSIONS
Chloramphenicol in very low doses (4 µg/pig daily) which may be naturally occurring, can be absorbed by pigs resulting in positive findings above the RPA in urine. Administration of approximately 10 times higher doses are required to find corresponding amounts in plasma and kidney and even higher doses to exceed the RPA in muscle.