Potential of ptr-tof-ms for measuring the boar taint
Components: androstenone, skatole and indole
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Introduction
In the future it is likely that castration of pigs will cease. An affordable system for rapid measurement of the boar taint compounds: skatole, indole and androstenone (see Figure 1) should be developed for the slaughter industry to sort carcasses according to their content of these compounds.

The Danish Meat Research Institute has tested the ability of the Ionicon PTR-TOF-MS (Proton Transfer Reaction – Time of Flight – Mass Spectrometer) for measuring the presence of the three boar taint compounds in the headspace above a fat sample in a closed vial. The PTR-TOF 8000 from Ionicon was designed especially for quantifying sub-ppbv amounts of volatile organic compounds (VOC).

Materials and methods
In Figure 2 is shown a typical mass spectrum of the headspace air from a fat sample at room temperature. Already at low temperatures the headspace contains a very complex mixture of compounds.

Samples
Fat samples from 14 entire male pig carcasses were analysed both with the PTR-TOF-MS and using the HPLC based ASI method which is DMRI’s basic reference method for skatole, indole and androstenone.

PTR-TOF-MS results
In Figures 5 and 6 the ion yield is shown for skatole and indole respectively corresponding to the masses shown in Figure 1.

Conclusion
The PTR-TOF-MS was successfully tested for measuring indole and skatole in the headspace above the back fat. Work needs to be done for further improvement of the sample conditioning allowing at-line use of the method. Preliminary studies have shown that PTR-TOF-MS is capable of measuring androstenone, which is a much larger molecule than skatole.

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