

Abstract title: Fully automated and rapid at-line method for measuring boar taint related compounds in back fat.

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Abstract text:

A rapid mass spectroscopic method, capable of measuring the malodorous boar taint compounds androstenone and skatole in fat samples from male pig carcasses was developed. The method is well suited for use in commercial abattoirs as an at-line method to detect the presence of these compounds in pig carcasses. The developed chemical assay is based on salt assisted liquid-liquid extraction followed by direct measurement with Laser Diode Thermal Desorption-MS/MS. The method, capable of giving a result for both androstenone and skatole every 10 seconds, will when implemented in an abattoir as an automated at-line method give a single MS-MS instrument a measuring capacity of up to 2880 male pig carcasses per 8-hour workday. The LOQ for the rapid method is 0.05 µg/g and 0.10 µg/g for skatole and androstenone respectively. The LOQ is to be compared with expected sorting thresholds at the abattoir of 0.25 µg/g for skatol and at least 1 -2 µg/g for androstenone.

Coefficient of variation is 5% for skatol and 3% for androstenone. The method will be implemented at a large Danish abattoir during 2018. From each uncastrated male carcass on the slaughter line, fat biopsies (0.3-0.5 g) are automatically extracted, placed in a deep well plate and weighed. Deep well plates containing 24 samples are conveyed to an in-house laboratory for extraction and MS-MS analysis. Total time from a sample is acquired on the slaughter line until the analysis result is in the abattoir data base is less than 40 minutes. The pure running costs of analysis per carcass, including consumables, is below