

Compact e-nose for rapid boar taint detection on pork carcasses



■ KEYWORDS

Boar taint detection

Electronic nose

Volatile Organic Compounds (VOCs)

Real-time slaughterhouse screening

■ PATENT

Title: Sensor device

Pending : PCT

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■ LICENSING

Exclusive, non-exclusive licences
and research collaborations

■ INVENTORS

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■ PROBLEM

Boar taint is an unpleasant smell released when cooking meat from uncastrated male pigs and is caused by compounds like **androstene** and **skatole**. These compounds are produced during the sexual maturation of male pigs and are released during cooking, giving the meat an unpleasant smell and taste, comparable to that of urine, sweat, or feces.

Traditional detection methods in slaughterhouses rely on human assessors who sniff a piece of fat on the carcass after heating it. This test is subjective, error-prone, and affected by olfactory fatigue. Alternatives like mass spectrometry are costly and unsuitable for real-time processing on slaughter lines.

■ SOLUTION

The invention proposes a miniaturized, low-cost gas sensor device designed for rapid, automated detection of boar taint on slaughter lines.

It operates by volatilizing a small fat sample (ideally at ~350°C), then exposing two gas sensors to the resulting vapour. One sensor is highly reactive to boar taint VOCs (skatole, androstene), while the other is less sensitive. By comparing the rate of signal change between the two sensors during a brief sampling window (less than 20 seconds), the device can determine the presence of boar taint without requiring full signal stabilization.

This differential-signal method bypasses the limitations of both human evaluation and expensive analytical tools. The system is designed to be integrated inline, avoids disrupting the slaughter process, and includes mechanisms to purge the sensors and ensure accuracy and reproducibility in harsh industrial environments.

■ INNOVATION

- Dual-sensor differential detection
- Fast analysis on transient signal
- Inline, compact**
- No human or lab needed**

■ TECHNOLOGY STATUS

TRL 4 – Lab Prototype

■ MARKETS

- Meat Processing and Slaughterhouses (pork)

■ SCIENTIFIC PUBLICATIONS

- Clément Burgeon, Alice Markey, Marc Debliquy, Driss Lahem, Justine Rodriguez, Ahmadou Ly and Marie-Laure Fauconnier, "Comprehensive SPME-GC-MS Analysis of VOC Profiles Obtained Following High-Temperature Heating of Pork Back Fat with Varying Boar Taint Intensities", *Foods* 2021, 10 (6), 1311.
- Clément Burgeon, Marc Debliquy, Driss Lahem, Justine Rodriguez, Ahmadou Ly, Marie-Laure Fauconnier, 'Past, present, and future trends in boar taint detection', *Trends in Food Science & Technology*, 112 (2021) 283-297.

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