

Rooting out horse-meat fraud in the wake of a recent food scandal

September 17 2014



As the United Kingdom forms a new crime unit designed to fight food fraud—in response to an uproar last year over horse meat being passed off as beef—scientists from Germany are reporting a technique for detecting meat adulteration. They describe their approach, which represents a vast improvement over current methods, in ACS' *Journal of Agricultural and Food Chemistry*.

Hans-Ulrich Humpf and colleagues note that food fraud is a major



global economic problem. But they also say that adding, for example, horse or pork to other meats without disclosure also can cause consumers to violate their ethical standards and religious practices. The severity of the issue came to light last year in Europe when many ground beef products were found to contain <u>horse meat</u>. And some "beef" samples were as much as 100 percent equine. Food industry experts have attributed the wide-scale problem to organized crime.

To help root out such fraudulent practices, food scientists and regulators have a couple of methods at their disposal. But these techniques occasionally yield false results, cannot detect more than one kind of adulterant or are ineffective at testing processed <u>food</u>, such as sausages. To address these problems, Humpf, along with Christoph von Bargen and Jens Brockmeyer, took another approach, building on the recent introduction of mass spectrometry for meat authentication.

The researchers designed a rapid and simple method for extracting and analyzing proteins from processed food to detect whether horse or pork meat is present. When they tested their approach, they found it was sensitive enough to reliably detect as little as 0.24 percent horse or pork meat even in highly processed beef samples.

More information: "Meat Authentication: A New HPLC-MS/MS Based Method for the Fast and Sensitive Detection of Horse and Pork in Highly Processed Food" *J. Agric. Food Chem.*, Article ASAP. <u>DOI:</u> <u>10.1021/jf503468t</u>

Abstract

Fraudulent blending of food products with meat from undeclared species is a problem on a global scale, as exemplified by the European horse meat scandal in 2013. Routinely used methods such as ELISA and PCR can suffer from limited sensitivity or specificity when processed food samples are analyzed. In this study, we have developed an optimized



method for the detection of horse and pork in different processed food matrices using MRM and MRM3 detection of species-specific tryptic marker peptides. Identified marker peptides were sufficiently stable to resist thermal processing of different meat products and thus allow the sensitive and specific detection of pork or horse in processed food down to 0.24% in a beef matrix system. In addition, we were able to establish a rapid 2-min extraction protocol for the efficient protein extraction from processed food using high molar urea and thiourea buffers. Together, we present here the specific and sensitive detection of horse and pork meat in different processed food matrices using MRM-based detection of marker peptides. Notably, prefractionation of proteins using 2D-PAGE or off-gel fractionation is not necessary. The presented method is therefore easily applicable in analytical routine laboratories without dedicated proteomics background.

Provided by American Chemical Society

Citation: Rooting out horse-meat fraud in the wake of a recent food scandal (2014, September 17) retrieved 27 April 2024 from <u>https://phys.org/news/2014-09-rooting-horse-meat-fraud-food-scandal.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.