

DNA barcoding alone sufficient to detect fraudulent deer products

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Many Europeans are fretting these days over what they eat, and whether horse meat might have adulterated their pork chops. Food fraud has been dominating headlines globally - calling for new policies in law enforcement and more robust methods for successful food identification and authentication. As companies and manufacturers resort to fraudulent practices to extract more cash from the gullible public, it is estimated that up to 7% of the consumer supply chain contains hidden ingredients (i.e. – not disclosed on the label). And while all too often policymakers seem oblivious to the problem, the growing awareness of plain criminal activity in food supply has stimulated an increase in published research on animal DNA testing, either for the identification of species or for the genetic linkage of a sample to a particular organism.

The conventional methodologies employed for the determination of species origin in [meat products](#) have predominantly applied molecular methods of immunochemical, electrophoretic and chromatographic analysis of proteins. For those cases where reliance on [morphological characteristics](#) is impractical or impossible, scientists offer now novel techniques allowing the identification of species specific [DNA sequences](#). Among these is a technique that relies on the much debated DNA barcoding - developed by researchers from the Government Laboratory in Hong Kong who have come up with a method that permits DNA detection of the fraudulent substitution of commercial deer products, regardless of their physical state, so that identification by morphology (form) is not required.

Deer meat has come a long way as an alternative to pork and beef. But it has continued to catch up with consumers steadily if slowly over the last decade, mainly due to its nutritive and therapeutic values but also versatile serving methods. And while venison is low in fat and high in protein, iron, zinc, selenium, vitamin E and omega-3 fatty acids - adding up to one healthy meal – in view of recent scams, it has become vital to provide tenable methods of effective deer meat verification.

The article published recently in *DNA Barcodes* (<http://www.versita.com/dnabra>), an open access journal by Versita, describes the protocol set up by Dr. W.M. Sin and Dr. Y.K. Tam - to examine whether DNA methods alone suffice to detect fraudulent substitution of commercial deer products or, whether any additional protocols are necessary to detect fraudulent substitution of cattle and water buffalo tendons (HK\$50-80) for deer tendons (HK\$280-640). The research confirmed that no other method proves as efficient and straightforward as the use of DNA barcodes, which are sufficient on their own to detect such substitution for deer in all tendon products, except for glue. Furthermore, the research findings permit [DNA detection](#) of fraudulent substitution of commercial deer products, regardless of their physical condition.

The attractiveness of this method lies in its utility. Commenting on the research, Prof. Jan Pawlowski, from the Department of Genetics & Evolution at University of Geneva, Switzerland, says: "The authors did an excellent work, offering a robust, solid and viable molecular tools to identify deer DNA even in highly processed products. This is a new example showing the importance of DNA barcoding for traceability of commercial products".

The method may well be embraced by law enforcement authorities and forensic scientists as an inexpensive alternative that only requires standard laboratory techniques for handling DNA. The move helps to

combat the widespread mislabeling of deer, which results in cheaper meat being sold as a more expensive deer variety. It also opens a prospect for more in-depth research into other food supplies, and the roll-out of new technology that would allow a systematic use of barcoding. With the new food scandals unraveling on a daily basis, DNA barcodes have a great potential to prevent and combat wildlife crime.

More information: [www.degruyter.com/view/j/dna.2 ...
-0001.xml?format=INT](http://www.degruyter.com/view/j/dna.2...-0001.xml?format=INT)

Provided by Versita

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