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DNA testing reveals horse meat in two products bought in US

[Neil Clarkson](#) | 23 August 2015 10:15 pm | [4 Comments](#)



Horse DNA was detected in two purchased meat samples tested as part of a study in California.
[file image]

Horse meat has been detected in two of 48 samples of ground meat products purchased from retailers in California.

It is illegal for horse meat to enter the food chain in the United States. The presence of horse meat in the two samples was detected during a study undertaken by researchers in the Food Science Program at California's Chapman University.

The discovery comes after the 2013 horse-meat scandal in Europe, which saw a range of ready-made meals pulled from supermarket freezers across the continent after beef was found to have been contaminated with horse meat.

The resulting international investigation revealed the complexities of the food chain and its vulnerability to rogue traders.

Researchers at Chapman University have just published two separate studies exploring meat mislabeling in consumer products. One focused on identification of the species found in ground meat products and the other investigated game meat species labeling.

Both studies examined products sold in the US commercial market; and both identified species mislabeling.

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In the study on identification of species found in ground meat products, 48 samples were purchased from five online specialty meat distributors and four retail outlets (three supermarkets and one butcher) in Orange County, California. The samples represented 15 different meat types.

They were tested for the presence of beef, chicken, lamb, turkey, pork and horse using a combination of DNA barcoding and real-time polymerase chain reaction (PCR).

Thirty-eight of them were found to have been labeled correctly. However, 10 were found to have been mislabeled. Of these, nine were found to contain additional meat species and one sample was mislabeled in its entirety. Horse meat was detected in two of the samples.

One of the samples containing horse was labeled as ground bison and the other as ground lamb meat.

Both had been purchased from two different online specialty meat distributors.

The sample labeled as ground bison had a top match for American elk, but analysis also revealed the presence of beef, pork, and horse.

The sample labeled as ground lamb was identified as lamb/sheep, but analysis also revealed the presence of pork and horse.

The sample labeled as lamb listed the US as its country of origin, while the sample labeled as bison listed Canada as its country of origin. Meat species testing has been carried out in Europe in light of the 2013 horse-meat scandal, there has been limited research carried out on this topic in the United States,” noted Rosalee Hellberg, an assistant professor at Chapman University and a co-author on both studies.

“To our knowledge, the most recent US meat survey was published in 1995.”

The study speculates that the presence of multiple species commonly found in ground meats suggests the possibility of cross-contamination at the processing facility.

Unintentional mislabeling may occur when several species are ground on the same manufacturing equipment, without proper cleaning in between samples, the authors said.

Another trend observed in the study indicated the possibility of lower-cost species being intentionally mixed in with higher-cost species for economic gain.

Overall, mislabeling was found to be most common in products purchased from online specialty meat distributors (versus supermarkets), which showed a 35 percent rate of mislabeling and included products labeled as black bear and yak burgers.

The second study, focusing on game meat species labeling, used a total of 54 game meat products collected from online retail sources in the United States. Of these 54 samples, a total of 22 different types of game meat were represented based on the product label. Like the previous study, the samples were tested using DNA barcoding. The results showed 10 products to be potentially mislabeled. Two products labeled as bison and one labeled as yak were identified as domestic cattle. Other mislabeling included a product labeled as black bear that was identified as American beaver, and a product labeled as pheasant that was identified as helmeted guineafowl. Additionally, there were also five products identified as a near threatened (bison) or threatened (lion) species and these were all determined to be correctly labeled and legally sold.

Game meats represent an important specialty market in the US with an estimate value of \$US39 billion. According to the US Food and Drug Administration (FDA), game meats are defined as exotic meats, animals and birds, which are not in the Meat and Poultry Act.

Game meats produced in the US are regulated by the Department of Agriculture, while game meats imported into the US are regulated by the FDA.

Both studies were published in the journal *Food Control*.