

Calamari or Pig Rectum: Debunking the Myth

Authors: Gerylyz Nunez, Arly Castellanos

Mentor: Vince Joralemon

Frank McCourt High School



Abstract

This urban myth was introduced in a section of NPR's "This American Life" that explained a man had visited a farm where the boxes were labelled "pig rectum". Our purpose was to determine whether restaurants are selling pig rectum as calamari rings. If this was proven true, the reputation of the calamari industry would be greatly tarnished. We participated in the 2014-2015 session of the DNA Barcoding program conducting the same experiment, but our results were inconclusive once again. We planned on returning to the program with the intention of going at it again, trying to collect from different sources with determination to get the results that can satisfy our longing curiosity. This time, we had the experience to help drive us through another year of debunking this food fraud. Our objective here is to help New York City know and understand what is happening in their restaurants and to analyze the validity of the myth of whether or not pork rectum is used to replace calamari. To do this, we first extracted the DNA from the collected specimens, amplified the results, and analyzed the results. Our most essential materials are the specimen, tubes, pipettes, and more. However, during the experiment, we had trouble extracting the DNA. Only two samples returned. Both came from pet food, not actual squid rings. However, the wet cat food, which was marketed as a seafood mix, came back as red deer. While this didn't answer our question, it posed a new one, and it opened up an whole new can of *cat food*.

Introduction

A popular case of food fraud is the Ikea meatball scandal. They, along with other European based companies, were caught in a meat fraud scandal all along Europe in 2013. In the European Ikea meatballs, they had found traces of horse meat. While they weren't in the American-served meatballs, they were in nearly all the European stores, as their meat had all come from the one farm. They in turn stopped selling meatballs in Slovakia, the Czech Republic, Hungary, France, Britain, Portugal, Italy, the Netherlands, Belgium, Spain, Greece, Cyprus and Ireland, and their home country, Sweden. While it doesn't affect Americans directly, it could mean that there are cases of food fraud similar to this here.

Our goal in this experiment is to debunk the myth by collecting several samples from as many restaurants in New York City as possible. Unknown ingredients in foods are of great concern in New York City since we are a city of integrated cultures and diverse groups. In New York alone, the percentage of foreign born people is 22.0%, and this may relate to the fact that not all of us are familiar with the ingredients added into divergent cuisines. The hypothesis tested was that there might some traces of pork in the samples we found, which would follow the question, is calamari being replaced by pork in New York City?

Materials & Methods

We selected samples from Flushing because pig intestine is already a part of the East Asian cuisine, so we thought it likely that those samples, if any, would help to answer the question. Samples were collected from March 7, 2016 . Samples were collected as frozen calamari rings, either by themselves, or in "mixed seafood" packages, except for the pet food which were ordered but still kept cold. Samples were all purchased at retail grocery stores. 9 different samples were collected, all from different distributors.

Results

Species Label	Date Collected	Original Condition of Sample (breaded, frozen, refrigerated, etc.)	Sample Location (Restaurant Names Anonymized)	DNA Identified
KHJ - 002	3/14/16	Refrigerated	Latitude: 40.7802977097 Longitude: -73.9814507961	Cervus Elaphus (Red Deer)
KHJ - 003	3/14/16	Refrigerated	Latitude: 40.7802977097 Longitude: -73.9814507961	Gallus sonneratii (Grey Junglefowl)
KHJ - 00	3/14/15	Refrigerated	Latitude: 40.7802977097 Longitude: -73.9814507961	Gallus gallus (Red Junglefowl)

Acknowledgements

We would like to thank the Harlem DNALC for all of their tireless support and wonderful times these past 2 years!

Discussion

After collecting 9 samples in total, we can come to the conclusion that most calamari, is in fact calamari. Our hypothesis of predicting that there is at least some trace of pork in the results is unsupported due to the simple fact that there was no pork found. Our results either came back as unidentifiable or surprisingly, another animal.

Last year, we had the opportunity to learn that in order to properly conduct this experiment and determine whether the samples were going to either be squid or pork OR any other animal, we must sequence the samples for both vertebrate and invertebrate. By having this advantage of past experience, we had little to no issues when it came to extracting the DNA. In fact, this time around, our samples provide a little more insight to the animal food industry.

From the two samples out of the 9 in total that were collected, they were the only ones that came back identifiable and they were not identified as squid. They did not come back as any invertebrate even. The two samples were both determined to have some sort of meat in them, and one contrary to their packaging ingredients.

The first sample, KHJ-002, was a can of wet cat food that contained the ingredient Taurine. Taurine is known to be a compound that is found in animal tissue, and in this particular can of food, red deer was most likely the particular animal that this compound derived from. This was a striking piece of information because of the fact that there were bigger portions of different ingredients such as sardines and squid, that failed to show through the DNA extraction process.

In conclusion, after two years we can finally state that the myth was wrong. We couldn't get the results we wanted, maybe at the fault of the frozen calamari, or the fault of the group. It's difficult to get fresh samples, seeing as calamari is not exactly the same as squid. Buying fresh squid is different than calamari, which is always sold frozen. As such, the DNA in the calamari had probably denatured long before we bought it. Even so, we've done what we could with the circumstances, and even found a new story to investigate. Although we didn't find pork, our results still bring attention to the food fraud in New York.

References

- Reference section:
- Calhoun, B. (2013, January 11). Transcript. Retrieved November 17, 2014, from <http://www.thisamericanlife.org/radio-archives/episode/484/transcript>
- Del Signore, J. (2013, January 13). Is that Calamari or Pig Rectum? Retrieved November 17, 2014, from http://gothamist.com/2013/01/14/is_that_calamari_or_pig_rectum.php
- Engler, B. (2013, January 18). Is Imitation Calamari Made From Pig Rectum? The Anatomy of a Food Rumor. Retrieved November 17, 2014, from http://www.slate.com/articles/food/2013/01/calamari_made_of_pig_rectum_the_this_american_life_rumor_isn_t_true_but.html
- Grenoble, R. (2013, January 16). 'Imitation Calamari' Investigated By 'This American Life.' Suggested To Have Dubious, Pork-Based Origin. Retrieved November 17, 2014, from http://www.buffpost.com/2013/01/16/imitation-calamari-sliced-pig-rectum_n_2482063.html
- Google Trends - Web Search Interest - Worldwide, 2004 - present. (n.d.). Retrieved November 17, 2014, from <http://www.google.com/trends/explore?q=kale>
- Panamae Squid Rings, 1 lb. (n.d.). Retrieved November 17, 2014, from <http://www.walmart.com/ip/Panamae-Squid-Rings-1-lb/25876474>
- Seafood Fraud: Overview. (n.d.). Retrieved November 17, 2014, from <http://oceans.org/en/our-work/promote-responsible-fishing/seafood-fraud/overview>
- Smithfield By Later Pork Chitterlings, 10 lb. (n.d.). Retrieved November 17, 2014, from <http://www.walmart.com/ip/Smithfield-By-Later-Pork-Chitterlings-10-lb/10849680>
- United States Census Bureau. (n.d.). Retrieved November 17, 2014, from <http://quickfacts.census.gov/qfd/states/36000.html>
- U.S. Food and Drug Administration. (n.d.). Retrieved November 17, 2014, from <http://www.fda.gov/food/foodscienceandresearch/RFEResearch/71528.htm>
- Higgins, A., & Castle, S. (2013, February 25). Ikea Recalls Meatballs After Detection of Horse Meat. Retrieved November 17, 2014, from http://www.nytimes.com/2013/02/25/us/food-and-drugs/ikea-recalls-horse-meat-in-meatballs.html?pagewanted=all&_r=1
- Schiller-Lewis, Georgia B.; Park, Eunhyun "Taurine: new implications for an old amino acid" *FEBS Microbiology Letters* 2003, 226, pp. 195-201. doi:10.1016/S0927-1081(03)00811-8