Illegal importation of meat derived food products through passenger airline carriers and possibility of disease introduction

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Keypoints:

-Commercial airplane passengers bring illegal food imports
-These illegally imported food products are an overlooked but important disease introduction source
-The illegal importation by commercial travelers happens more frequently then generally assumed

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The recent African Swine Fever (ASF) outbreaks in China have created concern in the US swine industry over the possible introduction of the disease into the US, thus making Foreign Animal Disease (FAD) a primary topic of concern. One of the most pressing concerns about FADs in general, and ASF in particular, is what are the likely sources of entry, and how the associated risks can be mitigated. Illegally imported products, carried by commercial air passengers are often overlooked as a minor introduction source. Several studies around the world show that commercial air passengers do represent a likely source of disease introduction. Outbreaks of ASF, classical swine fever (CSF) and foot and mouth disease (FMD) have been attributed to feeding imported waste meat to domestic pigs (Falk, et al., 2013).

It is difficult to estimate the total amount of illegal food products entering a single country each year. A study conducted in Germany in 2015 at two major airports tracked seizures for three months, including an intensive 10 days of special controls where higher numbers of passenger luggage was searched. Based upon that data they estimated that each year 2,800 tons of illegal food products were brought in via the Frankfurt airport alone. The most commonly imported foods were meat and meat products, including raw, home cooked, preserved, and packaged foods (Beutlich, et al., 2015). Another study, conducted in Switzerland estimated that the total volume of non-intercepted meat products were 8.6 tons for bush meat, and 1,013 tons for other meat products (Falk, et al., 2013).

A key point to understand the risk of improperly imported foods is knowing how often they contain pathogens and whether these have the capability of remaining infectious. Because many of the products carried by commercial passengers are unregulated, prepared informally, and are not maintained in a continuous cold chain, they represent a high risk of transmission for both human and animal health. In the German study, out of 474 samples tested, 5% of them contained food borne pathogens (Beutlich, et al., 2015). In a similar study conducted in Spain 67 out of 122 samples tested at an airport contained human noroviruses, and hepatitis E (Rodriguez-Lazaro, et al., 2015). A modeling study focused on estimating the risk of introduction of ASF and CSF into the US using airport and customs data. The study identified specific airports (i.e. Washington-Dulles, George Bush-Houston, JFK-Queen, Warwick, Sanjuan, West Palm Beach, Charlotte, Ft. Lauderdale, Newark and Cleveland) as ports of entry with the highest risk for both ASF and CSF introduction. This work also identified the months of May through July as the months with the highest risk (Jurado, Paternoster, Martínez-López, Burton, & Mur, 2018).

It is estimated that only between 10-50% of improperly imported products are intercepted at customs (Jurado, Paternoster, Martínez-López, Burton, & Mur, 2018). One study's sensitivity analysis showed that for both ASF and CSF, the likelihood of detecting illegal products was highly correlated with the final risk of disease introduction. This means that an increase in customs detection of products brought by commercial passengers largely reduces the risk of a CSV or ASF introduction into the US (Jurado, Paternoster, Martínez-López, Burton, & Mur, 2018). This work also found that risk varied greatly by month and airport, and that high-risk countries of origin could be identified. Using this information, custom's efforts could be adjusted to target high risk airports, times of year, and to screen for travelers from high risk country.

Recently, on October 15th, 2018 a customs and border protection beagle found a whole roasted pig in the luggage of a traveler from Ecuador (Lieu, 2018) at the Hartsfield-Jackson Atlanta airport. Ecuador as any other South American country is ASF negative, but CSF continues to be present in the country. It is unknown whether the smoked pig has been tested for CSF, but the case is a perfect example of the variety of products that are being transported to the US. On October 1st, Japanese customs officials confiscated a pork sausage from a Beijing traveler. The sausage tested positive for ASF (Reuters). African Swine Fever has also been found at a South Korean airport in pork products brought in a commercial passenger airline from China (Reuters). All of these examples highlight the reality of the risk illegally imported products carried by commercial travelers play in FAD introduction.

It is important for the swine community to be aware of these risks, to be aware of what food products are being brought to their sites by people, and to push for effective prevention methods. It also highlights the need of the swine community to communicate this risk to the non-swine community to raise awareness and thus contribute to protecting the industry. By using research that helps identify where the highest risks lie spatially and temporally, as well as flights from which countries represent risk, better prevention methods can be developed and implemented.

Hardy of the Atlanta Beagle Brigade with the roasted pig that he found at the Atlanta Airport on Ocotber 15th, 2018 (Lieu, 2018)

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