

# Food authenticity vulnerability in the pandemic

## Food Fraud

Food fraud is not new and has been around since the early commercialisation of food. There is historical evidence of counterfeit seals on antique Roman amphorae containing fraudulent olive oil and wine and the ancient Greeks had laws on adulteration of cereals and fats. Food fraud can occur in various ways ranging from isolated acts of dishonesty by individuals to organised illegal activity coordinated by sophisticated criminal gangs (Table 1). Fraud can involve dishonesty at any stage in the production or supply of food; it is often complex and can be seriously harmful to consumers and businesses.

Common types of food fraud include substitution or dilution of an authentic ingredient with a cheaper product, such as replacing extra virgin olive oil with a cheaper inferior oil. The foods that are most often reported to be adulterated include herbs and spices, milk and milk-based products, coffee, tea, seafood, saffron, honey and olive oil. Food fraud costs the global food industry an estimated US\$40bn a year.

In addition to affecting consumer choice and confidence, food fraud

*The effects of the COVID-19 pandemic are being felt across the food supply network. Sterling Crew reviews the potential food authenticity challenges created by the pandemic and the mitigation of the emerging risks and threats.*

## Table 1 - Types of food fraud

- **Theft** - dishonestly obtaining food, drink or feed products to profit from their use or sale.
- **Adulteration** - including a foreign substance which is not on the product's label to lower costs or fake a higher quality.
- **Substitution** - replacing a food or ingredient with another substance that is similar but inferior.
- **Misrepresentation** - marketing or labelling a product to wrongly portray its quality, safety, origin or freshness.
- **Counterfeiting**. A known brand's name, packaging, recipe or food processing method is copied, and counterfeit food is presented as a legitimate product.
- **Document fraud** - making, using or possessing false documents with the intent to sell or market a fraudulent or substandard product.
- **Illegal processing** - slaughtering or preparing meat and related products in unapproved premises or using unauthorised techniques.
- **Waste diversion** - illegally diverting food, drink or feed meant for disposal, back into the supply chain.

It can cause illness and even death. This was the case in China in 2008 when melamine was used as a nitrogen source to fraudulently increase the measured protein content of infant formula milk, resulting in more than 50,000 babies hospitalised and six deaths. A recent study estimated that food fraud accounted for 5-25% of all globally reported food safety incidents (1).

Following the 2013 global issue of the fraudulent replacement of horsemeat in beef products, the UK government commissioned the Elliott review into the integrity of the UK's food supply network (2). Although the 'horsemeat scandal' did not result in a risk to public health, the incident highlighted the breakdown in the traceability and biosecurity of food products in a complex supply network and highlighted the need for stricter preventative control measures. The Elliott review looked at the weaknesses of the UK food supply network and suggested measures that could be taken to ameliorate them. It resulted in a seismic shift in food fraud mitigation.

**Impact of COVID-19 on UK food fraud vulnerability**

The food sector has been dramatically impacted by the COVID-19 pandemic economically, operationally and socially across the entire worldwide network (3). It has been under intense pressure due to disruption relating to human resources, transportation and reduced production capability. There has been a scarcity of raw materials and products, which has increased prices and the use of alternative suppliers and ingredients. New suppliers and realigned networks have emerged which might not have been verified to the same degree as established supplier structures.

This has raised concerns about food fraud vulnerability across the food supply network and created opportunities for food crime. The Government has urged businesses to be vigilant on food crime during the coronavirus outbreak.

**The reduction of regulatory control measures and oversight**

If a food fraudster recognises the opportunity to commit food fraud, then the absence of oversight measures can be a catalyst for them to act. The disruption caused by the pandemic has resulted in the supply network being policed less vigorously and undergoing reduced scrutiny. Many governments and inspection agencies are telling their auditors to stay home and observe social distancing, thereby creating a more favourable environment for food fraudsters to operate. The third party auditing schemes which help to provide food authenticity assurance (4) have been disrupted and this has compromised regulatory activity and reduced oversight. When these regulatory controls are inadequate they increase the risk of food fraud.

The restrictions which many countries have put in place to manage the spread of COVID-19 have severely impacted the food

sector. This was exacerbated by public panic buying and stockpiling to prepare for a worst case scenario. The UK food supply network responded to the challenge, with farmers finding new supply opportunities, factories switching capacity to key products, food service stock being directed to retail and retailers rationing items and increasing home deliveries. The pandemic has highlighted the importance of resilience in our food system and reiterated the importance consumers place on authenticity and provenance of their food as demonstrated by their food choices and new buying patterns.

**Food supply network disruption**

About half of UK food is sourced globally. Contemporary global food supply networks have become longer, more complex and vastly expanded in scale, making them challenging to regulate and manage. The global supply network is more flexible and transient, so as to take advantage of more efficient and competitive buying. This can present a more favourable environment for fraudsters, who are becoming technologically savvy, making it increasingly difficult to detect fraud in complex networks.

Online food sales from social media platforms also represent an area of vulnerability. It is not always clear if the food being sold is from a legitimate registered source. The platforms have created an opportunity for fraudsters to tap into food shortages generated by the pandemic and operate in an online ‘unregulated’ environment. There is little food regulatory oversight as already limited local authority resources are stretched and taken up with combating the public health crisis.

**Mitigation of emerging risks and threats**

Robust management system



controls, such as VACCP (Vulnerability Assessment and Critical Control Points), are already in use to mitigate the risks of food fraud. VACCP plans are already being requested from suppliers by some of the larger food chains. It may only be a matter of time before they become a mandatory part of every supplier’s food safety programme. The pandemic has demonstrated the value of VACCP and it could accelerate its wider adoption.

A food fraud management system begins with an evaluation step to characterise food fraud. The three key components that give rise to food fraud vulnerability are the presence of opportunity, the existence of motivation and the absence of control measures. All of these have been impacted by the pandemic.

**The role of scientific analysis**

There are a variety of analytical techniques that can be used to test for food authenticity. However, the capabilities of some testing laboratories have been compromised by the pandemic,

with the requirement to follow social distancing rules and the reduced availability of staff and materials.

Analytical testing is a key method of assuring food authenticity but cannot be used to identify every type of food fraud (6). Interpretation of results is rarely clear cut and analytical results are often used to inform and target further investigation rather than for making a single compliance decision. Once the adulteration risks have been characterised for a given raw material, a surveillance programme can be developed which builds confidence in the organisation’s suppliers and confirms that the vulnerability prevention measures in place are appropriate.

**The Food Authenticity Network**

The Food Authenticity Network (FAN) provides valuable information to help businesses secure food supply chains by mitigating food fraud (7). It gathers information in a structured manner and

disseminates it via its open access website. It aims to raise awareness of the tools available to check for mislabelling and food fraud and to ensure that there is access to a resilient network of laboratories providing fit for purpose testing to check for food authenticity. The network provides access to food fraud mitigation services, guidance and reports.

FAN has created a dedicated COVID-19 Resource Base that brings together global information to help business combat some of the new pandemic-associated food fraud challenges. It considers that the conditions created by the pandemic have increased food fraud vulnerability. However, there is no current evidence of COVID-19 related food fraud, although issues may come to light as standard surveillance activities are resumed.

**The Food Industry Intelligence Network**

The Food Industry Intelligence Network (fiin) (8) facilitates the sharing of anonymised authenticity test results and information amongst its food industry membership. This intelligence assists in combating food fraud. The information is also shared with government departments, such as the FSA (Food Standards Agency) and FSS (Forensic Science Service), so they might better understand where food fraud risks may occur in the food industry.

Every year over 50,000 authenticity tests are conducted and pooled for intelligence sharing and since its creation fiin has collated over 250,000 product authenticity test results. Pooling of analytical testing data on this scale will help identify any potential change in the type and nature in food fraud created by the circumstances of the pandemic.

**National Food Crime Unit**

The National Food Crime Unit



provides leadership on food crime across England, Wales and Northern Ireland. The unit also works closely with the Scottish Food Crime and Incidents Unit. It works to prevent, detect and investigate food crime across the UK.

**Conclusions**

Many of the risk factors for food fraud have increased across the global food supply network due to the COVID-19 outbreak. The steps taken following the horsemeat incident and the publication of the subsequent Elliott report have strengthened the UK's food supply network authenticity controls and helped to mitigate vulnerability to fraud.

However, the pandemic has exposed vulnerabilities in the UK food system, such as insufficient capacity in UK food production and labour. These issues need to be addressed and further consideration should be given to building resilience to possible future shocks.

The pandemic has highlighted some of the weaknesses in the nature and complexity of the global food network. The UK food industry must assure the authenticity of food by continuing to minimise the vulnerability to food fraud and by mitigation of the emerging authenticity risks and threats created by the pandemic.

The IFST is continuously monitoring and responding to this outbreak. It has created a COVID-19 Advisory Group and a COVID-19 Knowledge Hub to consolidate advice, practical guidance and links to resources to support individuals, smaller food businesses and larger food operations.

**References and Author Information**

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The opinions expressed are those personally held by the author and not necessarily by any associated organisation.

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