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焦點個案 Incident in Focus

埃博拉(伊波拉)病毒病與食物安全 Ebola Virus Disease and Food Safety

食物安全中心

風險評估組

莊富傑獸醫報告

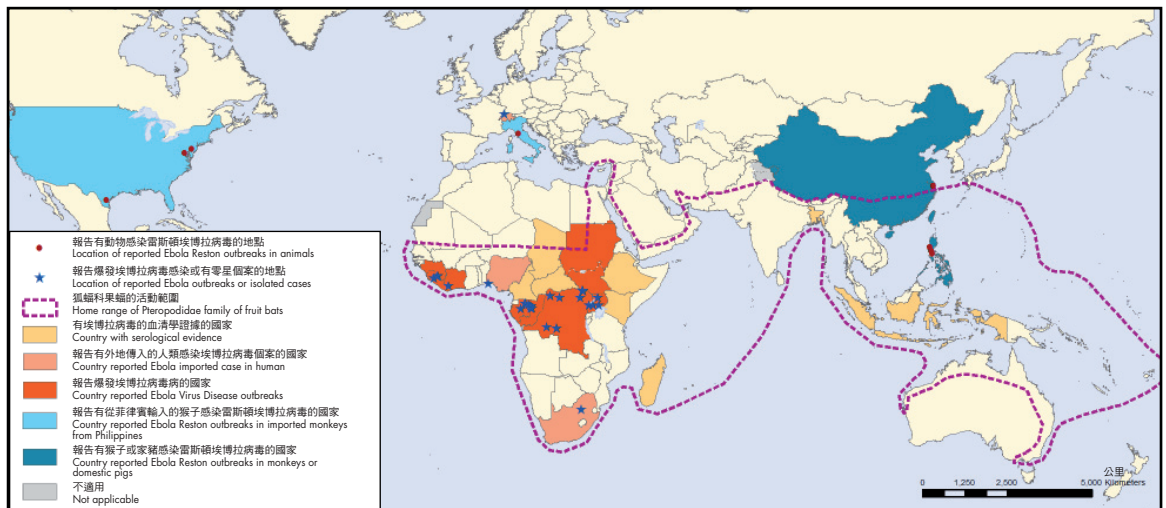
Reported by Dr. Ivan CHONG, Veterinarian,

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二零一四年三月十三日，幾內亞衛生部向世界衛生組織(世衛)通報，該國東南部叢林地地區爆發埃博拉(又稱伊波拉)病毒病且快速蔓延。疫情隨後擴大至西非各國，造成多宗感染及死亡個案。由於動物身上曾驗出埃博拉病毒，令人關注人類會否經由動物及動物製品而染病。本文將探討與埃博拉病毒有關的食物安全問題。

On 13 March 2014, the Ministry of Health of Guinea notified the World Health Organization (WHO) of a rapidly evolving outbreak of Ebola virus disease (EVD) in forested areas of south eastern Guinea. The disease has since then spread to other parts of West Africa, causing illnesses and deaths in affected countries. Given the fact that Ebola viruses have previously been detected in animals, there are concerns over the risk of transmission of EVD through animals and animal products to humans. This article aims to explore food safety issues associated with Ebola viruses.



人類及動物感染埃博拉病毒病在世界各地的疫情分布 (摘自世界衛生組織網頁，更新於二零一四年八月七日)
Geographic distribution of EVD outbreaks in human and animals, updated on 7 August 2014 (adapted from World Health Organization).

埃博拉病毒

埃博拉病毒是一組可導致人類和某些動物患上嚴重疾病的病毒。目前已知的埃博拉病毒有五種，從西非患者身上採集到的診斷樣本對其中一種名為薩伊的埃博拉病毒呈陽性反應。果蝠被認為是這種病毒的自然宿主。一般相信薩伊埃博拉病毒是通過密切接觸受感染動物的血液、分泌物、器官或其他體液而傳到人類。在非洲，最初的患者很可能是在捕獵、屠宰和處理受感染的野生動物的過程中感染了這種病毒。

人類染上埃博拉病毒病

埃博拉病毒病是經由感染可致病的埃博拉病毒品種所致，是一種嚴重且死亡率甚高的人類疾病，病徵包括突發性發燒、極度虛弱、肌肉疼痛、頭痛和咽喉痛。隨後會出現嘔吐、腹瀉、皮疹、腎

Ebola Viruses

Ebola viruses are a group of viruses that are capable of causing severe illness in human and certain species of animals. There are to date five known species of Ebola viruses and samples taken from the current outbreak in West Africa have been tested positive for a species called Zaire ebolavirus. Fruit bats are considered possible natural hosts for this virus which is believed to be introduced into human population through close contact with the blood, secretions, organs or other bodily fluids of infected wild animals. In Africa the initial cases most likely occurred during hunting, butchering and preparing meat from infected wild animals.

Ebola Virus Disease in Humans

EVD in humans is caused by infection of a pathogenic species of Ebola virus. It is a severe and often fatal illness in human. Signs and symptoms of EVD include sudden onset of fever, intense weakness, muscle pain, headache and sore throat, followed by vomiting, diarrhoea, rash, impaired kidney and liver function and sometimes internal and external bleeding. While the initial cases of EVD in the current outbreak are believed



臟和肝臟功能受損，在某些情況下更會出現內出血和外出血。雖然這次疫情中最初的埃博拉病毒患者是因處理受感染或死去的野生動物而染病，但其後大部分病例都是通過人際間傳播，而傳播途徑包括直接或間接接觸受感染者的血液、分泌物、器官或其他體液。

雷斯頓埃博拉病毒

直至今日為止，引起這次疫情的薩伊埃博拉病毒的流行範圍僅限於非洲地區。但另一種名為雷斯頓的埃博拉病毒則曾在亞洲地區的非人類靈長目動物和豬隻身上檢測出來。

與薩伊埃博拉病毒不同的是，雷斯頓埃博拉病毒與這次埃博拉病毒病大型疫情無關，而且迄今所有感染雷斯頓埃博拉病毒的患者臨床上並沒有出現症狀。現有的證據顯示，與其他埃博拉病毒品種相比，雷斯頓埃博拉病毒對人類的致病性較低。

進食動物產品安全嗎？

一般來說，埃博拉病毒病並非由食物傳播。把食物徹底煮熟，直至其中心溫度達70°C或以上可消滅埃博拉病毒。故世衛指出，進食經正確處理及煮熟的食物是安全的。然而，當處理生的肉類和動物產品時必須遵守基本的衛生守則。在處理生的肉類和其他動物產品(如內臟、骨頭、血液等)前後均須洗淨雙手；所有用作處理上述食物的工作枱面、器皿及設備亦須在使用前後清洗乾淨。

食物安全中心採取的行動

食物安全中心(中心)會保持警覺，繼續密切監察非洲埃博拉病毒病的疫情。輸港肉類須附有經認可的主管當局所簽發的衛生證明書；在本地屠房屠宰的活生動物(包括豬)在屠宰前及屠宰後都有一套嚴謹的檢驗程序，只有檢驗合格的肉類方可進入本地市場。

注意要點：

- 人類可能因捕獵、屠宰和處理受感染的野生動物而感染埃博拉病毒病。
- 直至今日為止，在非洲以外的地區並沒有出現因處理或進食肉類而感染埃博拉病毒病的個案。
- 由於埃博拉病毒會在徹底煮熟食物的過程中被消滅，進食經正確處理及煮熟的食物是安全的。

給市民的建議

1. 如到出現疫情的地區外遊，應避免接觸野生動物。
2. 動物產品在食用前應徹底煮熟。
3. 處理生的肉類和動物產品前後都要用肥皂洗淨雙手。所有用作處理上述食物的工作枱面、器皿及設備亦須在使用前後清洗乾淨。

給業界的建議

1. 在農場和屠房工作的人士應穿着合適的個人保護衣物，例如手套、口罩、膠靴和圍裙等，並用正確的方法洗手。
2. 如有大批豬隻不尋常地患病或死亡，須向當局通報。病豬或死豬，包括肉、血和其他體液應妥為處理和銷毀。
3. 死豬或屠宰前及屠宰後未能通過檢驗的豬隻不應流入市場。

to be contracted by handling infected wild animals or carcasses, the majority of cases in humans have occurred as a result of human-to-human transmission through direct or indirect contact with the blood, secretions, organs or other bodily fluids of infected people.

Reston Ebolavirus

Thus far, the Zaire ebolavirus that is responsible for the current EVD outbreak is not known to be endemic outside Africa. However, in the past, another species of Ebola virus known as Reston ebolavirus was detected in Asia in non-human primates and pigs.

Unlike Zaire ebolavirus, human infections with Reston ebolavirus have not been associated with EVD and so far all infected individuals did not develop clinical symptoms. Available evidence suggests that Reston ebolavirus is less capable of causing illness in humans when compared to other Ebola viruses such as Zaire ebolavirus.

Is It Safe to Consume Animal Products?

EVD is not generally transmitted by food. Thorough cooking of food products with core temperature reaching at least 70°C can inactivate Ebola virus. The WHO therefore advises that it is safe to consume food products that are properly prepared and cooked. However, it is important that general principles for good hygiene are observed when preparing raw meat and animal products. Hands should be washed thoroughly with soap before and after handling raw meat and other products of animal origin (e.g. offal, bones, blood etc.). Working surfaces, utensils and equipment that have been in contact with the above should also be cleaned thoroughly before and after use.

Actions Taken by the Centre for Food Safety

The Centre for Food Safety (CFS) will remain vigilant and continue to monitor for the latest development of the current EVD outbreak in Africa. Imported meat must be accompanied by a health certificate issued by the competent authority of the exporting country. On the other hand, live animals, including pigs, entering the local slaughterhouses are subject to stringent ante-mortem and post-mortem inspection and only meat from animals that have passed relevant inspections will be allowed to enter the food chain.

Key Points to Note:

- EVD can be introduced into human population during hunting, butchering and preparing meat from infected wild animals.
- So far, outside Africa, there has been no report of cases of EVD in humans that is associated with the preparation or consumption of meat.
- It is safe to consume food products that are properly prepared and cooked as Ebola virus is inactivated by thorough cooking.

Advice to the Consumers

1. Avoid contact with wild animals when travelling to the affected areas.
2. Food of animal origin should be thoroughly cooked before consumption.
3. Wash hands thoroughly with soap before and after handling raw meat and animal products. All working surfaces, utensils and equipment should also be cleaned before and after handling the above products.

Advice to the Trade

1. Farm and slaughterhouse workers should wear appropriate personal protective equipment such as gloves, masks, boots and aprons. Proper hand washing should be practised.
2. Unusual occurrence of herds with sick or dying pigs should be reported. Sick or dying pigs, including raw meat, blood and other bodily secretions should be handled and disposed of properly.
3. Meat from dead pigs or pigs that did not pass ante-mortem and post-mortem inspection should not enter the food chain.

食用色素：是敵是友？(上篇)

Food Colours: Devil or Friend? (Part I)

食物安全中心
風險評估組
科學主任郭麗儀女士報告

Reported by Ms. Joey KWOK, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

食用色素是食物添加劑的二十多種作用類別之一，自古以來一直是製作食物的重要材料。食用色素能夠給食物著色或恢復食物的色澤，令食物變得賞心悅目，增添進食的樂趣。但現今有消費者對食用色素的安全性產生懷疑。從這期開始，我們會分數期探討食用色素的特性、用途和安全性。

使用歷史

早在公元前1500年，人類已懂得給食物著色。那時期的埃及古墓中的壁畫描繪了有色糖果的製作工藝。中國古代文獻亦有關於古人利用天然色素給食物和酒著色的記載，例如用艾草汁製作綠色的艾糍；用紅曲米中的紅曲色素令酒呈紅色等。

世界上第一種人工合成的染色料“苯胺紫”是由英國化學家柏金爵士(Sir William Henry Perkin)在一八五六年發現的。它的主要原料是煤焦油。在此之前，所有食物和化妝品的染色料都是取自天然，主要從植物中提取，也包括來自動物和礦物的一些色素。但這些天然染色料大多成本高昂，需要大量人手製作，而且在光照下容易褪色。苯胺紫的發現，令合成染色料工業在十九世紀乘時興起。

天然、合成還是人工？

現今很多消費者關注到食用色素的製作原料問題。相對於合成或人工色素，愈來愈多消費者崇尚天然色素。據文獻記載，全球約有數十種常用的食用色素。其實，不論染色料用甚麼原料製造，只要經過安全評估評定為可作食物用途，並使用適當，便可以合理地確定對消費者的健康是無害的。

食用色素的製作與使用

事實上，我們日常吃的食物中本身含有很多食用色素，例如薑黃。薑黃是薑黃根莖經過乾燥後碾成的橘黃色粉末。亞洲很多食品都使用薑黃來增色及/或增香，例如醃漬黃蘿蔔等醃漬食品、咖喱／咖喱粉、薑黃飯以及備受世界各地人們歡迎的芥末醬等。

另一種是因使胡蘿蔔(俗稱紅蘿蔔)呈橙色而得名的β-胡蘿蔔素。工業生產β-胡蘿蔔素的方法有多種，其中包括：(i)從胡蘿蔔、棕櫚油或蕃薯中用溶劑提取後再作淨化處理；(ii)利用三孢布拉霉菌發酵生產β-胡蘿蔔素後用溶劑提取；或(iii)化學合成。

此外，還有一類食用色素是自然界中不存在，只能以化學合成的方法製造的，如“檸檬黃”和“日落黃FCF”。這兩種食用色素以往用煤焦油製造，現在主要用石油製造。

時至今日，食用色素已廣泛應用於各種加工食品中。常見的包括以昆蟲(用雌性胭脂蟲製造的胭脂蟲紅)和礦物(鈦鐵礦中的二氧化鈦)製造的食用色素。

Food colours, being one of the over twenty functional classes of food additives, have an important role in food processing which could be dated back to antiquity. Food colours add to the enjoyment of food by offering an appealing appearance with added or restored colours. Nevertheless, some consumers nowadays are sceptical about them, wondering whether they are safe. This series of articles on food colours will discuss the nature, uses and safety of food colours.

History of Use

The use of food colours can be traced back to 1 500 B.C. when the art of making coloured candies was illustrated in paintings in Egyptian tombs. In ancient China, literature has recorded the colouration of food and wine with natural colours, for example, juice of mugwort had been mentioned in the making of a special kind of green dumpling whereas the monascus pigments in red fermented rice had been mentioned to give the wine a red colour.

The first synthetic colourant, mauveine, was discovered by the English chemist Sir William Henry Perkin in 1856, using coal-tar as the major source of raw material. Before that time, the colourants used in food and cosmetics were of natural origins mostly from plants but also animals and minerals. Nevertheless, many of these natural colorants were expensive and labour-intensive to produce, and easily faded when exposed to light. The discovery of mauveine gave birth to the synthetic colorants industry in the nineteenth century.

Natural, Synthetic or Artificial?

Among many consumers in this modern age, the origin of food colours attracts much concern, and notably there has been increasing preference for natural food colours over synthetic or artificial ones. According to literature, there are several dozens of colourants commonly used in food throughout the world. Regardless of their origin, if food colours have been ascertained as safe for food use through safety evaluation and are used appropriately, there is a reasonable certainty that they cause no harm to consumers.

Production and Applications of Food Colours

Indeed, many food colours occur naturally in the foods we eat every day. For instance, turmeric, which is a yellow powder mainly used in food as a colourant but sometimes also for its aroma, is often found in food items and dishes in Asia, such as pickles (e.g. pickled daikon radish), curries/curry powders, yellow steamed rice, as well as mustard condiment which is one of the most popular and widely used condiments in the world. Turmeric is simply obtained by drying and grinding the rhizomes of the plant *Curcuma longa*.

On the other hand, beta-carotene, from the Latin name “carota” for carrot, is the colourant responsible for the orange colour of carrot. Beta-carotene can be produced commercially by a variety of methods, including (i) solvent extraction of carrots, palm oil or sweet potato etc. with subsequent purification; (ii) fermentation using the fungal species *Blakeslea trispora* followed by solvent extraction; or (iii) chemical synthesis.

For some other food colours, such as tartrazine and sunset yellow FCF, they are not found in nature and can only be produced by chemical synthesis. These two food colours are derived from raw materials mainly obtained from petroleum although coal-tar was the traditional origin.

Nowadays food colours are being widely applied in processed foods. Some common food colours include those originated from insects (carmines from the female cochineal insects) or minerals (titanium dioxide from ilmenite).



以薑黃入饌的例子：黃薑飯(左)、芥末醬(右上)及醃漬黃蘿蔔(右下)

Examples of food items that may be prepared with turmeric: yellow steamed rice (left), mustard condiment (top right) and pickled daikon radish (bottom right)

常見的食用色素及其應用範圍
Common food colours and their applications

食用色素 Food colours	來源 Sources	色系 Colour shade	應用範圍 Food applications
β-胡蘿蔔素 Beta-carotene	胡蘿蔔、棕櫚油、蕃薯 Carrot, palm oil, sweet potato	黃—橙—紅 Yellow-orange-red	牛油、人造牛油、乳製品、果汁 Butter, margarine, dairy products, fruit juice
胭脂蟲紅 (胭脂紅酸) Cochineal (Carminic acid)	雌性胭脂蟲身體 Bodies of the female cochineal insects	紅色 Red	酒精飲品、加工肉類食品 Alcoholic beverages, processed meat products

食用色素 Food colours	來源 Sources	色系 Colour shade	應用範圍 Food applications
檸檬黃 Tartrazine	原材料來自石油 Raw materials obtained from petroleum	黃色 Yellow	糖果、汽水、鹹味小食、烘焙食品 Sugar confectionary, soft drinks, savoury snacks, bakery products
二氧化鈦 Titanium dioxide	鈦鐵礦(成分為鐵和氧化鈦、 FeTiO ₃) Ilmenite (iron and titanium oxide, FeTiO ₃)	白色 White	糖果和糕餅裝飾 Confectionary and bakery decorations
薑黃 Turmeric	薑黃的根莖 Turmeric rhizome	黃色 Yellow	醃漬食品、咖哩/咖哩粉、薑黃飯、芥末醬 Pickles, curries/curry powders, yellow steamed rice, mustard condiment

下期我們會探討食用色素的用途及有關的爭議。

In the next article, we will look into the uses of food colours and the controversies.

食物事故點滴
Food Incident Highlight

意大利進口開心果含黃曲霉毒素

食物安全中心(中心)在八月初接獲歐洲聯盟委員會食品和飼料快速預警系統的通報,指若干由意大利出口至香港的預先包裝去殼開心果樣本受黃曲霉毒素污染,濃度為每公斤含282微克,超出《食物內有害物質規例》(第132AF章)對開心果內黃曲霉毒素所定的可容許最高濃度(每公斤食物含15微克)。中心得悉事件後,已即時聯絡有關進口商,並封存及銷毀已進口的存貨。另外,中心已發出食物警報,提醒市民切勿食用受影響的產品。

黃曲霉毒素是由黃曲霉菌在適當的溫度和濕度條件下產生的一組有毒化合物,較常見於花生、木本堅果和粟米等食物。黃曲霉毒素是一種毒性強烈的致癌物質,可能會引致肝癌。

市民應停止食用有關產品,並將有關產品交予中心銷毀。



受影響的開心果
The affected pistachio

Aflatoxins in Pistachio from Italy

In early-August, the Centre for Food Safety (CFS) received a notification from the Rapid Alert System for Food and Feed (RASFF) of the European Commission that some prepackaged shelled pistachio contaminated with aflatoxins (at 282 µg/kg) from Italy was imported to Hong Kong. This level exceeded the maximum level permitted for pistachio of 15 µg/kg stipulated in the *Harmful Substances in Food Regulation* (Cap. 132 AF). The CFS immediately contacted the importer concerned, marked-and-sealed the product and subsequently disposed all the imported stock. The CFS also issued a **food alert** warning the public not to consume the affected product.

Aflatoxins are a group of toxic compounds produced by some moulds of the *Aspergillus* species under favourable temperature and humidity. They are more commonly found in peanuts, tree nuts, corn, etc. Aflatoxins are potent human **carcinogens**, and are associated with liver cancer.

Consumers should not consume the concerned product. Affected products should be submitted to the CFS for disposal.

丹麥腸含李斯特菌

丹麥獸醫和食品局上月公布一款名為rullepølse的豬肉腸疑被李斯特菌污染,須從市場回收。該款豬肉腸由丹麥的Jørn A. Rullepølser A/S肉製品廠生產,屬冷吃肉類。事件中據報有20人受影響,其中12名有嚴重長期病患的患者死亡。食物安全中心(中心)接報後立即聯絡有關當局了解情況。雖然現今沒有證據顯示受影響的產品曾輸入本港,但為審慎起見,中心已知會業界和市民有關事件。

李斯特菌是在泥土和水中常見的細菌。這種細菌可在一般烹煮溫度下輕易消滅,但能在冷藏低溫下生存和繁殖。雖然身體健康的人在感染李斯特菌後只會出現輕微症狀或甚至沒有任何病徵;但對孕婦、初生嬰兒、長者及免疫力較弱的人而言,李斯特菌卻是一種危險的細菌。

中心呼籲市民若最近在海外或網上買了上述豬肉腸,應停止食用。中心會繼續密切留意事件,並與有關當局保持聯絡,以便跟進事件。

Listeria in Danish Sausage

Last month, the Danish Veterinary and Food Administration announced that rullepølse, a kind of pork sausage served as cold cut meat, made by Jørn A. Rullepølser A/S in Denmark was withdrawn from sale because of possible contamination with *Listeria monocytogenes*. In this incident, 20 people were reported to be affected, of which 12 patients with serious underlying medical conditions died. The Centre for Food Safety (CFS) immediately contacted the relevant authorities and found no evidence indicating the affected product had been imported into Hong Kong. For the sake of prudence, the CFS alerted the trade and the public of the incident.

Listeria monocytogenes is a bacterium commonly found in soil and water. It can be easily destroyed by cooking but can survive and multiply at refrigerator temperature. Although healthy people develop few or no symptoms when infected, *Listeria monocytogenes* could be dangerous to pregnant women, newborns, the elderly and people with low immunity.

The CFS advises consumers who have recently bought the pork sausage concerned abroad or online should stop consuming it. The CFS will continue to closely monitor the situation and liaise with relevant authorities to follow up on the incident.

風險傳達
工作一覽
Summary of
Risk Communication Work

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