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游天頌先生及郭麗儀女士聯合報告

Reported by Mr. Arthur YAU and Ms. Joey KWOK, Scientific Officers,
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美國近日回收受肉毒桿菌污染的食物

二零零七年七月十八日，美國食物及藥物管理局宣布 Castleberry's 食品公司因應四人吃下熱狗辣椒醬引致肉毒中毒的報告，回收三款有關食品。其後，回收行動擴及該公司80多款罐裝食品和數款罐裝狗糧。食物安全中心(中心)已提醒本港零售商停售和消費者停吃有關的問題食品，並會繼續留意有關情況，在有需要時採取行動。

肉毒桿菌的特點

肉毒桿菌是會產生毒素的有孢子細菌，只可在完全無氧的環境下繁殖。此菌可在攝氏3.3至50.0度的溫度下生長，但不會在酸鹼值4.6以下的酸性環境生長，其孢子在環境中無處不在，可於土壤、海洋沉積物和魚類及其他動物的腸道中找到。這些孢子非常耐熱，令肉毒桿菌可在休眠狀態中存活。一旦有利其生長的合適環境出現，孢子便有可能發芽生長。

肉毒桿菌會產生毒性極強的神經毒素，毒素分量即使只得數納克(一納克即十億分之一克)已足以引致肉毒中毒。不過，烹煮(例如攝氏80度的熱力)十分鐘或更長時間就可破壞這種毒素。

在食物製造業中，有時會使用特定防腐劑抑制肉毒桿菌的生長，舉例來說，在生產火腿和煙肉的過程中便會使用亞硝酸鈉和硝酸鈉。



製作不善的罐頭食品可引致肉毒中毒
Improperly canned food may cause botulism

食源性肉毒中毒

大部分食源性肉毒中毒是因吃下未經再作烹煮或翻熱的食物，而這些食物中已含有肉毒毒素。食源性肉毒中毒病徵包括非常疲倦、虛弱無力、眩暈，繼而出現視力模糊、口乾和吞嚥及說話困難。病者亦可能出現嘔吐、腹瀉或便秘。此外，這種毒素亦可能會令呼吸肌肉癱瘓，如沒有呼吸儀器的輔助，可引致死亡。

Recent Recall of *Clostridium botulinum* Contaminated Food in the United States

On 18 July 2007, the U.S. Food and Drug Administration (FDA) announced that the Castleberry's Food Company had recalled three different brands of hot dog chili sauce, following the reporting of four human cases of botulism associated with eating these products. The recall was subsequently expanded to include more than 80 different canned food products as well as a few canned dog food products from the company concerned. The Centre for Food Safety (CFS) has alerted the local retailers to stop selling and consumers to stop eating the affected food products. The CFS will continue to monitor the situation and take actions as necessary.

Features of *Clostridium botulinum*

Clostridium botulinum is a spore-forming, toxin-producing bacterium that can only grow in the absence of oxygen. It can grow within the temperature range of 3.3-50.0°C but cannot grow in acidic environment with pH value below 4.6. Its spores exist ubiquitously in the environment, and can be found in soil, marine sediments and the intestine of fish and other animals. The spores are heat-resistant, and allow the bacteria to survive in a dormant state. When favourable conditions supporting their growth are available, the spores can germinate and grow.

Clostridium botulinum produces very potent neurotoxin. The toxin is so potent that even minute amounts in terms of nanograms (one nanogram is one billionth of a gram) can cause an illness. However, the toxin can be destroyed by cooking temperatures such as heating at 80°C for ten minutes or longer.

In the food manufacturing industry, specific preservatives are sometimes used to inhibit the growth of *Clostridium botulinum*, such as the use of sodium nitrite and sodium nitrate in the manufacturing of ham and bacon.

Occurrence of Foodborne Botulism

Most foodborne botulism cases are caused by the ingestion of pre-formed toxin that is already present in the food which was consumed without subsequent cooking or reheating. Symptoms of foodborne botulism include marked fatigue, weakness, vertigo, often followed by blurred vision, dry mouth and difficulty in swallowing and speaking. Vomiting, diarrhoea or constipation may also occur. The toxin may also paralyse the breathing muscles and cause death if breathing assistance is not provided.

Although botulism is very serious, it rarely occurs. Human cases are often linked to the consumption of home-canned fruits and vegetables. Cases involving fish, onions, garlic in oil, sausages and preserved meats have also been reported overseas. The mechanism is that when canned, bottled or vacuum-packed foods are improperly processed, or only lightly processed and then stored in air

焦點個案
Incident in Focus

雖然肉毒中毒是非常嚴重的疾病，但極少發生。人們患上此病通常與進食自製罐裝水果及蔬菜有關，而海外病例報告亦曾涉及魚類、洋蔥、油浸蒜頭、香腸和醃肉。罐裝、樽裝或真空包裝食品如未經妥善加工處理，又或只是略作加工便放進密封容器內並貯存在室溫下，這種耐熱的孢子可在這些加工程序後仍然存活，並可在其後無氧和沒有其他微生物競爭的貯存環境中繁殖，產生毒素。

嬰兒肉毒中毒是在一九七六年首次發現，是一種特別類型的肉毒中毒。嬰兒吃下肉毒桿菌孢子，孢子繼而在其腸道內發芽和生長，釋出毒素。部分病例與可能受肉毒桿菌孢子污染的蜜糖有關。此病極少發生在一歲以上的人士身上，因為其腸道內的天然微生物群已發展得較為成熟，不利這些孢子發芽。嬰兒肉毒中毒的病徵包括便秘，食慾不振，虛弱無力和無法控制頭部。部分嬰兒的病徵輕微，但亦有嚴重甚或致命情況。

根據衛生防護中心的資料，本港過去十年只有一宗懷疑肉毒中毒呈報個案。

給業界的建議

業界應採取各項措施，例如遵從嚴格的加熱程序，令製成品達致適當的酸鹼值或恰當使用防腐劑，以確保其食物經妥善處理，符合安全標準。此外，在運送和貯存期間亦應適當處理食物，防止細菌生長和毒素形成。

給消費者的建議

- 避免給一歲以下嬰兒餵食蜜糖。
- 自製罐裝食物的人士應遵從製作罐裝食物的正確守則及衛生程序，並應考慮在進食前先把自製罐裝食物持續煮沸至少十分鐘，以破壞當中可能存在的肉毒毒素。
- 遵從罐裝、樽裝及真空包裝食物製造商的處理和貯存指示。
- 如密封容器(例如罐頭)看來已破爛、膨脹或已損壞，就應避免進食該容器內的食物。

更多資料

如欲獲得近日回收受肉毒桿菌污染食物一事的更多資料，請瀏覽下列網頁：

- [中心發出的新聞公報](#)
- [中心發出的食物警報](#)



用以自製罐裝食物的玻璃瓶
Glass jar for home-canning

tight containers at room temperature, the heat-resistant spores may be able to survive the processing and grow in the absence of oxygen and other competing microorganisms during the subsequent storage, and produce toxin.

Infant botulism is a special type of botulism that was first recognised in 1976. It is caused by the ingestion of the *Clostridium botulinum* spores that germinate and grow in the intestine of infants and release toxin. Honey, which may be contaminated with the spores, is implicated in some cases. Infant botulism rarely happens to persons over one year old as the better developed natural microbiological flora in their intestines do not favour the germination of the spores. Symptoms of infant botulism include constipation, loss of appetite, weakness and loss of head control. The symptoms can be mild in some infants but can be severe and fatal in others.

In Hong Kong, according to the Centre for Health Protection, there was only one suspected case of botulism reported in the past ten years.

Advice to the Trade

The trade should ensure that their food products are properly processed to ensure safety, such as by following strict thermal processes, attaining appropriate pH values in the final products, and prudent use of preservatives. They should also handle the food products appropriately during transportation and storage to prevent the growth of the bacteria and the formation of toxin.

Advice to the Consumers

- Avoid feeding honey to infants less than one year old.
- For those individuals who do home-canning, follow proper canning requirements and hygienic procedures, and consider boiling the home-canned food for at least ten minutes before consumption to destroy any botulinum toxin that may be present.
- Follow the handling and storage instructions given by manufacturers of canned, bottled and vacuum-packed foods.
- Avoid consumption of food from sealed containers (e.g. canned food) that appear to be damaged, bulged or spoilt.

Further Information

Further information about the recent recall on *Clostridium botulinum* contaminated food can be obtained from the following webpages:

- [The CFS Press Release](#)
- [The CFS Food Alert](#)

風險傳達 工作一覽 Summary of Risk Communication Work

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食用植物中的天然毒素

Natural Toxins in Food Plants

食物安全中心風險評估組
研究主任鄧紹平博士報告

Reported by Dr. Anna S.P. TANG, Research Officer,
Risk Assessment Section, Centre for Food Safety

引言

天然毒素存在於多種植物內，當中有些是人們常吃的食物。吃下這些有毒物質可能會損害健康。由植物毒素引致的食物中毒時有所聞。

什麼是天然植物毒素和為什麼植物內會有毒素？

天然毒素可能本已存在於植物中，通常是植物自行產生的代謝物，以抵禦細菌、真菌、昆蟲和捕獵者等威脅，並且可能因植物而異，令不同植物有個別的特徵，例如顏色和味道。

食用植物中的天然毒素常見例子有豆類（例如四季豆、扁豆、刀豆、紅腰豆和白腰豆）中的植物血球凝集素；北杏、竹筍、木薯和亞麻籽中的氰甙；馬鈴薯中的甙生物鹼；白果中的4'-甲氧基吡哆醇；鮮金針（鮮黃花菜）中的秋水仙鹼；以及部分野菇中的毒蕈鹼。

由天然植物毒素引致的中毒

這類食物中毒主要發生在下列三種情況：

(1) 吃下並非供人食用的植物：

野菇和野芋等部分野生植物含有難以透過烹煮破壞的烈性毒素，人們可能誤以為這些野生植物是可供食用而吃下，但即使只是吃下小量，亦可能出現嚴重中毒症狀。

(2) 吃下未經妥善烹煮或處理的食用植物：

食用前沒有徹底煮熟的四季豆、扁豆和刀豆經常會令人中毒。吃下足夠分量未經烹煮的含氰甙植物（例如北杏）會引致食物中毒，但這些植物以沸水徹底煮熟（例如在中式湯）則可供安全食用。至於木薯和竹筍等植物，在烹煮前放進水中浸泡或切成小塊均可更有效地消除有毒的氰化物。

(3) 吃下不能透過烹煮或處理程序破壞毒素的植物：

部分可供食用的植物不能透過一般處理程序有效減低當中的毒素，如大量吃下這些植物亦會引致食物中毒。以往曾有人在進食至少十顆白果後出現中毒症狀，因為烹煮難以破壞白果中的所有毒素。部分食用植物如馬鈴薯在發綠或發芽時，可能含有大量植物毒素。由於這些毒素非常耐熱，即使馬鈴薯已徹底煮熟，亦會引致食物中毒。

不同的天然毒素可引致不同的中毒症狀，由輕微的腸胃不適至嚴重的中樞神經系統症狀。一般而言，食用人士會否出現中毒症狀取決於所吃的植物分量、植物中的毒素含量和個人體質。植物中的毒素含量會視乎品種、生長條件和地理因素而有極大差異。

給市民的建議

市民在進食含天然毒素的食用植物前應採取措施減低風險（見表一），同時切勿自行採摘及食用野生植物。兒童、長者及身體欠佳者等須加倍留意。此外，市民亦應遵從傳統已知的安全處理食物方法，並保持均衡的飲食。

Introduction

Natural toxins are present in a wide variety of plants, some of which are commonly consumed as food. These toxic substances when ingested can be potentially harmful to human health. From time to time, food poisoning cases due to plant toxins have been reported.

What are Natural Plant Toxins and Why are they Present?

Natural toxins may be present inherently in plants. They are usually metabolites produced by plants to defend themselves against various threats such as bacteria, fungi, insects and predators, which may be species specific and give the plant its particular characteristics, e.g. colours and flavours.

Common examples of natural toxins in food plants include lectins in beans such as green beans, red kidney beans and white kidney beans; cyanogenic glycosides in bitter apricot seed, bamboo shoots, cassava, and flaxseeds; glycoalkaloids in potatoes; 4'-methoxy pyridoxine in ginkgo seeds; colchicine in fresh lily flowers; and muscarine in some wild mushrooms.

Poisoning Caused by Natural Plant Toxins

These types of poisoning mainly occur in the following three scenarios:

(1) Consumption of plants not intended for human consumption:

Some wild plants, such as wild mushrooms and giant elephant ears, contain potent toxins that are not easily destroyed by cooking. These wild plants may be mistaken as edible plants. Severe symptoms may occur even when they are eaten in small amounts.

(2) Consumption of food plants without proper cooking or processing:

Green beans often cause poisoning if they are not thoroughly cooked before consumption. Cyanogenic plants such as bitter apricot seeds can cause food poisoning when eaten raw and in sufficient amount, but are safe for consumption when thoroughly cooked in boiling water, such as in Chinese soups. For plants such as cassava and bamboo shoots, toxic cyanide can be removed more effectively by soaking in water or by cutting into small pieces before cooking.

(3) Consumption of plants where the toxins cannot be destroyed by cooking or processing:

Some edible plants can also cause food poisoning when eaten in excess, where the toxins present cannot be effectively reduced through normal processing. Cases of poisoning have been reported following consumption of as few as ten ginkgo seeds because not all the toxins present can be readily destroyed by cooking. High levels of plant toxins may be present in some food plants such as potatoes when they are greened or sprouted. Since the toxins are heat stable, food poisoning can occur even when the potatoes are thoroughly cooked.




Different natural toxins may cause different symptoms ranging from mild gastrointestinal symptoms to severe central nervous system symptoms. In general, whether poisoning will occur depends on the amount of the plant ingested, the level of toxins present and susceptibility of the individual. The level of toxins present in a plant can vary widely according to the species, growth conditions and geographical factors.

Advice to the Public

The public is advised to take measures for reducing risk prior to ingestion of food plants containing natural toxins (see Table 1), and not to pick and consume wild plants. Particular attention should be given to children, the elderly and individuals with poor health conditions. The public should follow the conventional ways of food processing that are known to be safe, and maintain a balanced diet.

表一 減低因進食含天然毒素的食用植物所帶來風險的措施

Table 1. Measures for reducing risk associated with the consumption of food plants containing natural toxins

食物 Food	減低風險措施 Measures for Reducing Risk
四季豆、扁豆、刀豆、紅腰豆、白腰豆、黃豆 Green bean, red kidney bean, white kidney bean, soya bean 	把豆浸透，然後以沸水高溫徹底煮熟。 Cook thoroughly at boiling temperature after thorough soaking in water.   
竹筍、木薯 Bamboo shoot, cassava 	去皮浸泡，切成小塊，再用沸水徹底烹煮。 Remove the peel, soak in water, cut into small pieces and cook thoroughly in boiling water. 
北杏、亞麻籽 Bitter apricot seed, flaxseed 	用沸水徹底煮熟；如果用其他方法烹煮，則只可少量進食。 Cook thoroughly in boiling water; limit the intake if cooked by other methods. 
馬鈴薯 Potato 	切勿進食已發芽、已發綠或已壞的馬鈴薯。 Do not consume sprouted, greened or damaged potatoes. 
白果 Ginkgo seed 	切忌生吃；只可少量進食，特別是兒童。 Do not consume raw; limit the intake especially for children.
鮮金針(鮮黃花草) Fresh lily flower (fresh Jin Zhen) 	徹底煮熟；曬乾後的金針可供安全食用。 Cook thoroughly; dried lily flower (dried Jin Zhen) can be safely consumed. 

零食中的沙門氏菌

美國食物及藥物管理局近日警告消費者切勿進食一款鬆脆零食。有關零食後來證實受某一品種的沙門氏菌污染，並在美國引致多宗中毒個案。該局其後作出跟進，在警告中加入同一公司出售的另一款零食。中心亦發出警報，呼籲本港業界停售和市民停吃有關食品。

沙門氏菌存在於人類和野生及飼養動物的腸道內。在食物中，沙門氏菌較常見於牛肉、豬肉、家禽、奶類、蛋類及其製品。吃下含沙門氏菌的生或未煮熟的食物，或受該菌污染的即食食物（這些食物可能經由用具、其他食物或處理食物的人而受污染），均可引致食物中毒。患者可出現發燒和腹痛及腹瀉等腸胃不適，這些病徵在嬰兒和長者身上會較嚴重。

食物製造商應確保食物生產程序已有足夠措施消滅沙門氏菌，並防止食物在生產過程中再受污染。

Salmonella in Snacks

The U.S. Food and Drug Administration (FDA) has recently warned consumers not to eat a crunchy snack product which was later confirmed to be contaminated with a strain of *Salmonella* responsible for a disease outbreak in the U.S. The warning from the FDA was subsequently updated to include one more variety of snack marketed by the same company. The CFS has also alerted the local traders not to sell and the public not to consume the products concerned.

Salmonella is found in the intestinal tract of humans as well as both wild and domestic animals. In food, *Salmonella* is more commonly found in beef, pork, poultry, milk, eggs and their products. Food poisoning can be caused by eating raw or undercooked food that contains the bacteria, or by consuming ready-to-eat food that has been contaminated with the bacteria through utensils, other foods or food-handlers. Individuals who are infected with *Salmonella* may suffer from fever, and gastrointestinal discomfort such as abdominal pain and diarrhoea. The symptoms are more severe in infants and the elderly.

Manufacturers should ensure adequate processing in their food production steps to destroy the bacteria, and to prevent re-contamination thereof.

牛奶糖中的甲醛

近日海外報道在牛奶糖中驗出甲醛，為此食物安全中心(中心)在本港零售店鋪抽取了十個牛奶糖樣本作測試，全部均沒有發現甲醛。

甲醛屬於化學物，經常用作製造可用於木材、紙張和紡織工業的塑膠樹脂。此外，甲醛亦會在環境和部分食物中天然存在。由於甲醛是一種代謝中間物，所以小量的甲醛會存在於大部分的生物內。不過，甲醛有時會在食物加工過程中被濫用作漂白劑或防腐劑。一般人主要透過吸入途徑攝入甲醛，而吃下少量甲醛不會對健康造成急性影響。

在本港，甲醛不得用於食物中。中心的食物監察計劃會監察食物中是否含有甲醛。貿易商應確保從可靠的來源採購食品，而製造商則不應在食物加工過程中使用甲醛。

Formaldehyde in Creamy Candies

Following recent overseas reports on the detection of formaldehyde in creamy candies, the Centre for Food Safety (CFS) had collected 10 samples of these candies from local retail outlets for testing. All the samples were found negative for formaldehyde.

Formaldehyde is a chemical commonly used for manufacturing plastic resins which are in turn used in wood, paper and textile industries. It also occurs naturally in the environment and in some foods. As a metabolic intermediate, formaldehyde is present at low levels in most living organisms. However, it is sometimes used abusively as a bleaching agent or preservative during food processing. The general population is exposed to formaldehyde mainly by inhalation. Ingestion of a small amount of formaldehyde is unlikely to cause any acute health effects.

Formaldehyde is not permitted for food use in Hong Kong, its presence in food is monitored under the Food Surveillance Programme of the CFS. Traders should ensure that they source food products from reliable sources whereas manufacturers should not use formaldehyde in food processing.