食物安全焦點
Food Safety Focus

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Review of Food Poisoning Outbreaks Related to Food Premises and Food Business in 2013

食物安全中心
食物事故應變及管理小組
張家慧醫生報告

Reported by Dr. Karen CHEUNG, Medical & Health Officer, Food Incidents Response & Management Unit, Centre for Food Safety

本文就食物安全中心(中心)在二零一三年接獲的本港食肆及食物業的食物中毒個案作出回顧。

This article reviews the food poisoning outbreaks related to local food premises and food business reported to the Centre for Food Safety (CFS) in 2013.

與本港食肆及食物業相關的食物中毒事件

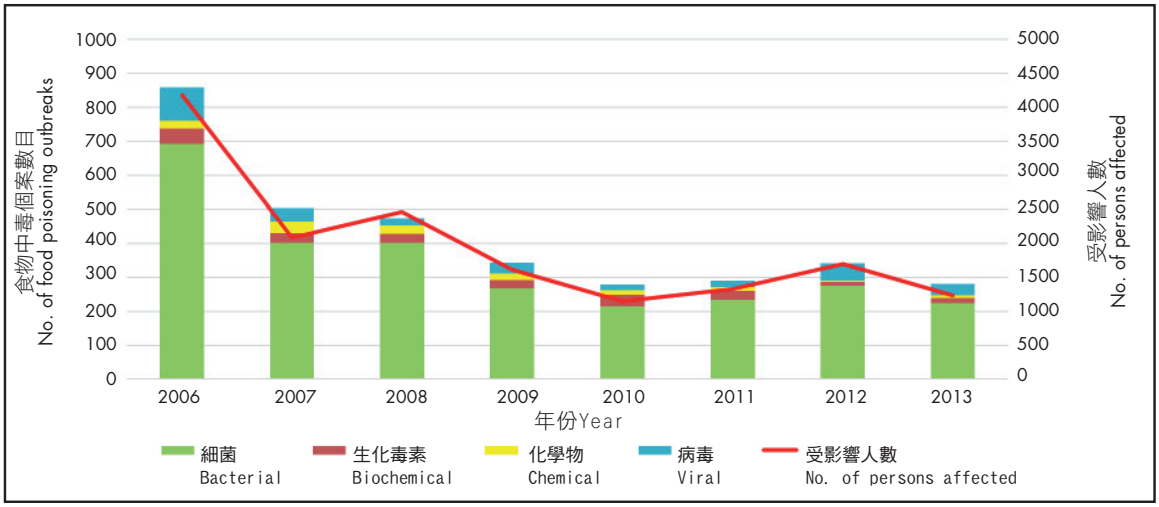
中心和衞生署合作調查及監控有關食肆及食物業的食物中毒個案。在二零一三年，中心接獲285宗由衞生署轉介的懷疑食物中毒個案，共有991人受影響。由衞生署轉介的懷疑食物中毒個案數字在二零零六年至二零一零年間逐年下降，最近三年漸趨平穩，保持在每年280至350宗之間（見圖）。

Food Poisoning Outbreaks Related to Local Food Premises and Food Business

The CFS, in collaboration with the Department of Health (DH), is responsible for the investigation and control of foodborne disease outbreaks related to local food premises and food business. In 2013, the CFS received 285 referrals from the DH on food poisoning outbreaks affecting 991 persons. The annual number of referrals decreased generally from 2006 to 2010 and had since remained more or less stable over the past three years, between 280 to 350 cases per year (see Figure).

2006至2013年有關食肆／食物業的食物中毒個案數目、病原體及受影響人數

Number of food poisoning outbreaks related to food premises and food business by causative agent and the corresponding number of persons affected from 2006 to 2013



病原體及成因

在二零一三年所有個案中，由細菌引起的仍然佔大多數(80%)，排在頭三位的是副溶血性弧菌、沙門氏菌和產氣莢膜梭狀芽孢桿菌。至於病毒所引起的食物中毒個案，全部都是因進食生的或未徹底煮熟的雙貝類而感染諾如病毒，佔整體事件數目的12%。其餘的8%個案則由雪卡毒素、草酸鈣和河豚毒素等化學物／生物毒素所引致。

Causative Agents and Contributing Factors

Bacterial foodborne agents remained the leading cause (80%) of all food poisoning outbreaks in 2013, with *Vibrio parahaemolyticus*, *Salmonella* and *Clostridium perfringens* being the top three bacterial pathogens. For the viral causes, norovirus, associated with the consumption of raw/undercooked bivalves, was found to be the exclusive viral agent causing 12% of all the outbreak referrals. For the remaining 8%, ciguatoxin, calcium oxalate and tetrodotoxin were the incriminated chemical/biotoxin causing the food poisoning cases.

焦點個案
Incident in Focus

在去年調查的285宗食物中毒個案中，最常見的三個成因分別是食物未經徹底煮熟、貯存溫度不當和生吃食物受污染。

徹底煮熟—真的足夠了嗎？

以下的連串食物中毒個案說明了徹底煮熟食物和選擇安全食材的重要性，隨後本文會簡述本港的河豚毒素中毒個案。

因進食未徹底煮熟的食物而引起的連串食物中毒個案

二零一三年十月，中心接獲三宗食物中毒事件報告，一共涉及六名患者。流行病學調查顯示，患者很可能是因為進食“香蕉高力豆沙”以致沙門氏菌食物中毒。一個從食肆抽取的食物樣本對D組沙門氏菌呈陽性反應。此外，其中一名患者的糞便樣本亦對沙門氏菌呈陽性反應。經過進一步化驗兩個細菌樣本的種類和形態，證實兩者很可能來自同一源頭。這個情況有兩種可能性，一是食材早已受細菌污染，二是食物處理人員在配製過程中有不衞生的做法而令食材受到污染。鑑於所有相關食物處理人員的糞便樣本均驗不出含沙門氏菌，所以最有可能的成因是食材受污染在先，沒有徹底煮熟在後，最終造成連串食物中毒事故。中心已針對問題向食肆的食物處理人員及管理人員詳細講解有關的衞生知識，而有關食肆亦已暫時停售該問題食品，待完成檢討其製備程序指引以確保食物安全後才考慮重新發售。檢控持牌人出售不宜供人食用的食物的工作已展開。

河豚毒素中毒本港個案

河豚毒素是一種毒性強烈的海洋生物神經毒素，主要分布在若干河豚品種、刺規和海星等海洋生物的魚卵、魚肝和魚皮中。河豚毒素既耐熱又耐酸，烹煮、風乾和冷藏等方法都不能將之清除。

自二零零三年起，本港共發生十宗河豚毒素中毒個案，涉及20名患者，其中四宗發生在二零一三年。河豚中毒的潛伏期由兩分鐘至24小時，患者的症狀普遍是麻痺、四肢無力和眩暈。所有患者均求醫診治，其中15人送院治理，一人需深切治療。各人其後均已康復，沒有出現併發症。

在十宗河豚毒素中毒個案中，其中六宗的患者所吃的魚來自本地，不是購自本地魚販就是光顧本地食肆。有鑑於此，我們有必要加強普羅大眾和魚販對河豚毒素風險的認識，讓他們了解到河豚毒素足以致命。

結語

有關食肆及食物業食物中毒事件數目在過去數年維持在相對低的水平。一如既往，政府定當繼續努力保障食物安全，而業界和市民亦應時刻謹守“食物安全五要點”，以期從認清成因方面著手預防食物中毒個案的發生。

Of the 285 cases investigated last year, inadequate cooking, improper holding temperature and contaminated raw food were the most frequently identified contributing factors.

Cooking Adequately -- Is it Enough?

Below is a cluster of food poisoning outbreaks illustrating the importance of food safety practices concerning the areas of thorough cooking and choosing safe raw ingredient, followed by a brief discussion on pufferfish poisoning.

A Cluster of Food Poisoning Outbreaks related to Inadequate Cooking

In October 2013, three food poisoning outbreaks affecting a total of six persons were reported to the CFS. Epidemiological investigation of these cases suggested *Salmonella* food poisoning related to the consumption of "Banana Soufflé in Red Bean Paste". A food sample collected at the restaurant was tested positive for Group D *Salmonella* and a stool sample of one of the victims was also tested positive for *Salmonella*. Further testing of the type and pattern of the two bacteria samples revealed that they were likely to be from the same origin. The bacteria could have contaminated the raw ingredients or being introduced following lapse of hygienic practice by the food handlers, but the stool samples of all related food handlers were tested negative for *Salmonella*, contamination of the raw ingredient followed by inadequate cooking was the most likely contributing factor to this cluster of outbreaks. Specific health advice was therefore conveyed to the food handlers and restaurant management. Sale of the food item was suspended pending the review of the procedural guide on its preparation to ensure food safety before reinstatement. Prosecution against the licensee for selling food unfit for human consumption is in progress.

Local Situation of Tetrodotoxin or Pufferfish Poisoning

Tetrodotoxin is a potent marine neurotoxin. It is mainly distributed in the ovaries, livers and skins of various marine species such as some pufferfish, porcupine fish, starfish, etc. The toxin is both heat- and acid-stable and thus cannot be destroyed by cooking, drying or freezing.

Since 2003, a total of ten outbreaks of pufferfish poisoning involving 20 victims had been reported. Four of the cases were reported in 2013. Numbness, peripheral weakness and dizziness were the commonly reported symptoms with a latency period ranged between two minutes to 24 hours. All victims had sought medical care and 15 of them were admitted to hospital with one requiring intensive care. All had since recovered with no known complication.

The fish in six out of these ten outbreaks were acquired locally, either through local fishmongers or patronising local food premises. It is therefore important to heighten the awareness of the general public and fishmongers on the risk of tetrodotoxin poisoning, which may result in fatal consequence.

Conclusion

It is observed that the number of food poisoning outbreaks has remained at a relatively low level over the past few years. While the government will continue to be vigilant in safeguarding food safety, the trade and the public are advised to adopt and adhere to the "Five Keys to Food Safety" to address the common contributing factors of food poisoning in order to prevent the occurrence of future outbreaks.

風險傳達工作一覽
Summary of Risk Communication Work

風險傳達工作一覽（二零一四年三月） Summary of Risk Communication Work (March 2014)	數目 Number
事故/食物安全個案 Incidents / Food Safety Cases	78
公眾查詢 Public Enquiries	91
業界查詢 Trade Enquiries	152
食物投訴 Food Complaints	338
給業界的快速警報 Rapid Alerts to Trade	2
給消費者的食物警報 Food Alerts to Consumers	1
教育研討會/演講/講座/輔導 Educational Seminars / Lectures / Talks / Counselling	42
上載到食物安全中心網頁的新訊息 New Messages Put on the CFS Website	58

食物安全平台
Food Safety Platform

烹調的長短「波」
Different "Waves" of Cooking

食物安全中心
風險評估組
科學主任莊梓傑博士報告

Reported by Dr. Ken CHONG, Scientific Officer,
Risk Assessment Section,
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煮食電器的出現令烹調美食變得更加方便，受到不少香港人的熱捧。過去兩期我們探討了各種烹調方法的優劣，這期的主角將是利用微波和紅外線這兩種電磁波煮食的微波爐和光波爐(或稱透明煮食鍋)。

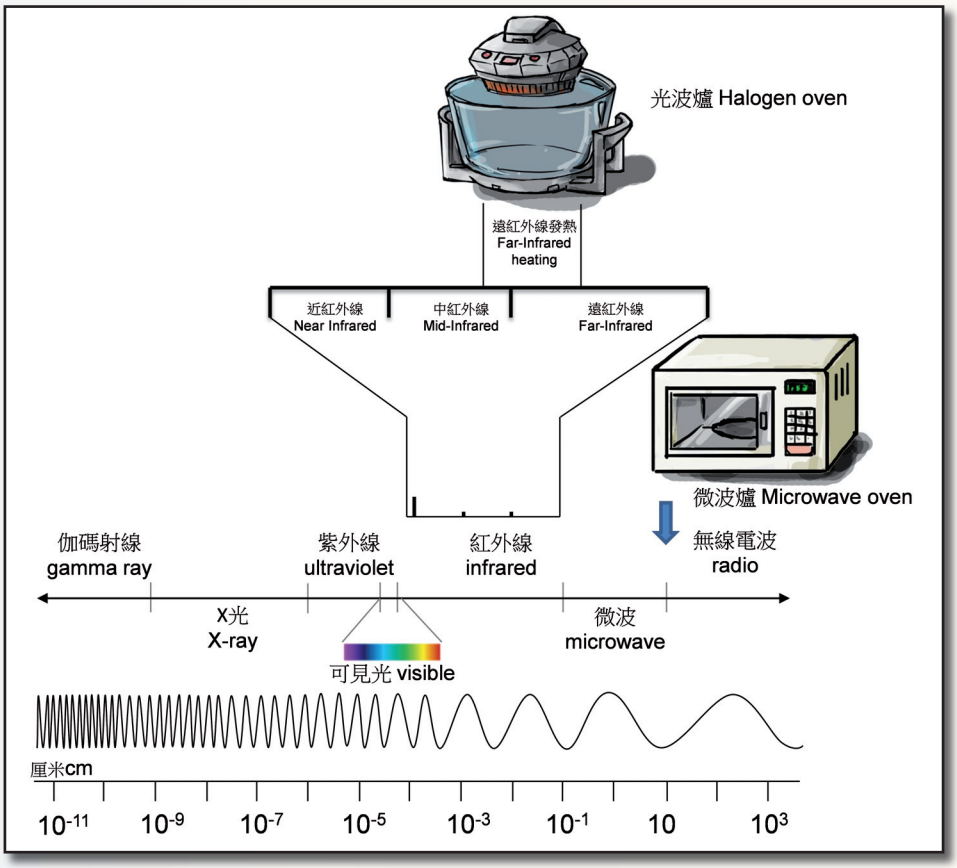
烹調的長短「波」

電磁波是在空間中以波的形式同時移動的電和磁性的能量。不同種類的電磁波的波長各有不同，波長愈短，所傳送的能量愈大。在電磁波譜中，微波和紅外線的波長較伽碼射線和X光長，因此能量較低。微波和紅外線可加熱食物，但不會令食物帶放射性。這些電磁波令食物的分子高速振動，從而產生能夠煮熟食物的高溫。光波爐的鹵素燈除了發射出紅外線外，亦會令爐內的空氣變熱，從而令食物變得金黃香脆。相反，微波不會令爐內部的空氣溫度升高。

產生加工過程污染物？

光波爐的烹煮過程也屬於乾熱烹煮，與平底鍋、電燒烤爐和焗爐一樣，只要是以高溫烹煮食物，都有可能產生污染物。這是因為高溫(通常遠高於攝氏100度)會導致食物中的主要成分(即碳水化合物、脂肪和蛋白質)出現化學變化，繼而產生加工過程污染物，例如丙烯酰胺、多環芳香族碳氫化合物(PAHs)、雜環胺(HCAs)等。關於PAHs的風險，以光波爐製作燒烤食物相對較炭爐燒烤安全，因為光波爐不會使食物受到煙燻和直接接觸火焰。雖然如此，燒烤食物始終不宜過量進食。

在微波煮食方面，食物安全中心之前曾就微波煮食的安全問題進行文獻研究，結論是使用微波烹煮肉類及肉類製品不會產生大量加工過程污染物，原因可能是微波煮食的溫度較低(通常不會超過攝氏100度)，烹煮的時間也較短。



電磁波譜中不同波長的電磁波
Electromagnetic waves spectrum of different wavelengths.

The use of electric cooking appliances makes the preparation of delicacy much simpler and is embraced by many Hongkongers. After talking about different cooking methods in past issues, the main characters in this issue are microwave ovens and halogen ovens (the latter one also called halogen convection ovens or turbo cookers/ovens) which employ different types of electromagnetic (EM) waves, namely microwaves and infrared waves respectively, for cooking.

The Waves for Cooking

EM waves are waves of electrical and magnetic energy moving together through space. There are different types of EM waves with different wavelengths in which energy transferred increases as the wavelength shortens. Moving along the spectrum of EM waves, microwaves and infrared waves have longer wavelengths, hence are of relatively lower energy, than gamma rays and X-rays. Microwaves and infrared waves can heat up food but does not make food "radioactive". The waves cause vigorous vibration of molecules in food resulting in high temperature that cooks the food. Apart from releasing infrared waves, halogen bulb also heats up the air in the chamber of halogen ovens, which helps the food get brown and crispy surface. On the contrary, microwaves do not heat up the air in the oven.

Formation of Process Contaminants?

Using halogen oven to cook food is also a type of dry-heat cooking, process contaminants can be formed at high temperatures in a similar way as cooking using pan, electric grill, or conventional oven. The high temperature (usually well above 100°C) can cause chemical changes in the major components in food (i.e. carbohydrates, fats and proteins) and subsequently generate process contaminants, such as acrylamide, polycyclic aromatic hydrocarbons (PAHs) and heterocyclic amines. With regards to the risk of PAHs, halogen oven is a relatively safer choice than charcoal grilling for making barbecued food, as it does not expose food to smoke and direct contact with flame. However, indulgence in barbecued food should be avoided.

As for microwave cooking, the Centre for Food Safety has conducted a literature review on the food safety previously and found that microwave cooking did not produce significant amount of process contaminants in meat and meat products. It is probably due to the lower cooking temperature (temperature of microwave cooking normally would not exceed 100°C) and shorter cooking time.

食物要均勻受熱！

我們用平底鍋煎牛排時要翻動牛排去煎另一面，用電器煮食也不例外。由於微波爐所產生的微波在爐內並非平均分布，食物會出現受熱不均的情況。而且很多因素都會影響加熱的速度，包括食物的含水量、形狀、體積和密度等。由於食物各部位的形狀或厚度不一，不均勻的加熱過程會令食物出現熱點和冷點，可能存在微生物引起的食物安全問題。用微波爐煮食要達致均勻的烹煮效果，烹煮期間應取出食物攪動或翻動；不能攪動的食物則應在微波爐關掉後再靜置數分鐘後才取出，好讓熱力擴散到食物的其他部分。

使用微波爐和光波爐煮食的貼士

以下是一些使用這些電器煮食的貼士：

微波爐

- 烹煮期間最好取出食物攪動或翻動，以免出現冷點。
- 食物應平均排列；有需要的話，加點液體。
- 食物應以微波爐適用的蓋子或保鮮膜蓋好，與食物間要留足夠空位以保留濕氣作均勻加熱。蓋子或保鮮膜不要封密，要露出一小部分空隙讓蒸氣排出。

光波爐

- 調至較低的溫度達到燒烤效果。
- 在確保食物徹底煮熟之餘，不宜用過高的溫度烹煮食物。

Cook Food Uniformly!

You need to turn over a steak when pan-fry it on stove; it is the same for cooking with electric appliances. Microwaves generated are not uniformly distributed inside the cooking cavity of microwave oven, which leads to uneven heating of food. The rate of microwave heating also depends on the moisture content, shape, volume and mass of food present. Since food can be of irregular shapes or variations in thickness, the uneven heating process may produce food items with hot and cold spots, which in turn may give rise to microbiological food safety concern. Hence, it is recommended to stir, rotate or turn food upside down midway through the cooking process for uniform heating. Food that cannot be stirred can be left to stand for a few minutes after turning off the oven, giving time for the heat to penetrate more evenly throughout.

Tips for Cooking Using Microwave Ovens and Halogen Ovens

Below are some tips on cooking with these electric cooking appliances:

Microwave ovens

- Stir or turn food upside down during cooking, if possible, to eliminate the cold spots.
- Place food evenly and add some liquid if needed.
- Cover the dish with a microwave-safe lid or plastic wrap while leaving enough room between the food and the cover. This help to retain the moisture for uniform cooking. Don't forget to loosen or vent the lid or wrap to allow steam to vent.

Halogen ovens

- Use lower temperatures to achieve grilling effect.
- Do not over-heat food but have to ensure the food is cooked thoroughly.
- Avoid overindulgence in barbecued meats.

食物事故點滴
Food Incident Highlight

植物不能隨便吃

本港上月出現兩宗分別因進食光果龍葵和水仙而中毒的個案。食物安全中心呼籲市民切勿進食非供食用的植物。

光果龍葵和水仙均含有生物鹼。生物鹼是一類天然存在於細菌、真菌和動植物等生物體中的化學物。很多生物鹼對於生物體都有毒性，是植物用以抵禦捕食者的防衛化合物。

中國約有1300種有毒植物，分布於140科，其中以杜鵑花科(如紅杜鵑)、大戟科(如一品紅和石栗)、茄科(如光果龍葵)和百合科(如蜘蛛蘭、水仙和風信子)的有毒種類較多。市民應避免採食野生植物；購買食物時要光顧可靠的供應商；以及只選吃素知安全的植物，如有懷疑，便不要進食。

Only Consume Plants Known to be Safe

Last month, two local food poisoning cases were reported where the victims had consumed *Solanum americanum* (American Black Nightshade) and Narcissus respectively. The Centre for Food Safety urges members of the public not to consume plants that are not known to be edible.

Both *Solanum americanum* and Narcissus contain alkaloids which are a group of chemicals naturally present in different organisms, including bacteria, fungi, plants and animals. Many alkaloids are toxic to other organisms and therefore they serve as chemical defense compounds to protect plants against predation.

In China, about 1 300 plant species distributed in 140 families have been found to be poisonous, in which Ericaceae (e.g. Red Azalea), Euphorbiaceae (e.g Poinsettia, Candlenut Tree), Solanaceae (e.g. American Black Nightshade) and Liliaceae (e.g. Spider Lily, Narcissus, Hyacinth) comprise relatively large number of poisonous species. Members of the public are advised to avoid picking wild plants for food use, source food from reliable suppliers and only consume plants that are known to be safe. Do not eat any part of a plant if in doubt.

本港一些常見的有毒植物(照片a、d、e、f和g來自美國農業部;照片c由漁農自然護理署提供)
Examples of common poisonous plants in Hong Kong. (Photos a, d, e, f and g by courtesy of the US Department of Agriculture; Photo c by courtesy of the Agriculture, Fisheries and Conservation Department)