

本期內容 IN THIS ISSUE

焦點個案

❖ 二零二零年食物事故回顧

食物安全平台

❖ 河豚毒素—河豚中的致命毒素

食物事故點滴

❖ 雪卡毒素中毒與進食珊瑚魚
❖ 北杏與食用植物中的天然毒素

風險傳達工作一覽

Incident in Focus

❖ Review of Food Incidents in 2020

Food Safety Platform

❖ Tetrodotoxin – the Deadly Poison in Puffer Fish

Food Incident Highlight

❖ Ciguatera Poisoning and Coral Reef Fish Consumption
❖ Bitter Apricot Seeds and Natural Toxins in Food Plants

Summary of Risk Communication Work

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焦點個案 Incident in Focus

二零二零年食物事故回顧

Review of Food Incidents in 2020

食物安全中心風險管理組
李予晴醫生報告

Reported by Dr. Yu-ching LI, Medical & Health Officer,
Risk Management Section, Centre for Food Safety

世界各地無論遠近都會發生食物事故，而食物供應鏈在全球化下日趨複雜。為了主動監察香港以外地區的食物事故，食物安全中心(食安中心)設有食物事故監測系統。一旦發生食物事故時，食安中心便可迅速採取行動，採用由風險評估、風險管理及風險傳達構成的風險分析機制，來減少可能對本港造成的影響。

Food incidents can occur near and far around the world while globalisation increases the complexity of the food supply chain. The Centre for Food Safety (CFS) has established a Food Incident Surveillance System (FISS) to monitor food incidents outside Hong Kong actively. The CFS takes swift actions in response to the food incidents to minimise the potential local impacts by adopting the risk analysis framework, namely risk assessment, risk management and risk communication.

二零二零年的食物事故

二零二零年，食安中心透過食物事故監測系統共監察到超過2000宗食物事故，當中包括約440宗因未有標示致敏物而引致的食物事故。針對與本地相關的事務，食安中心因應情況採取適切的行動，包括進行風險評估、檢查進口記錄，以及聯絡有關當局及業界。同時，食安中心可能會發出食物事故報表，提醒市民注意事故，並提供適當的食物安全建議。

Food Incidents in 2020

In 2020, the CFS identified more than 2,000 food incidents from the FISS, including about 440 food incidents related to undeclared allergens. The CFS took various pertinent actions in response to the incidents with local relevance, including conducting risk assessment, checking import records and contacting relevant authorities and traders. In parallel, the CFS might issue a food incident post to alert the public of the incident and provide appropriate food safety advice.

危害類型 Types of Hazard

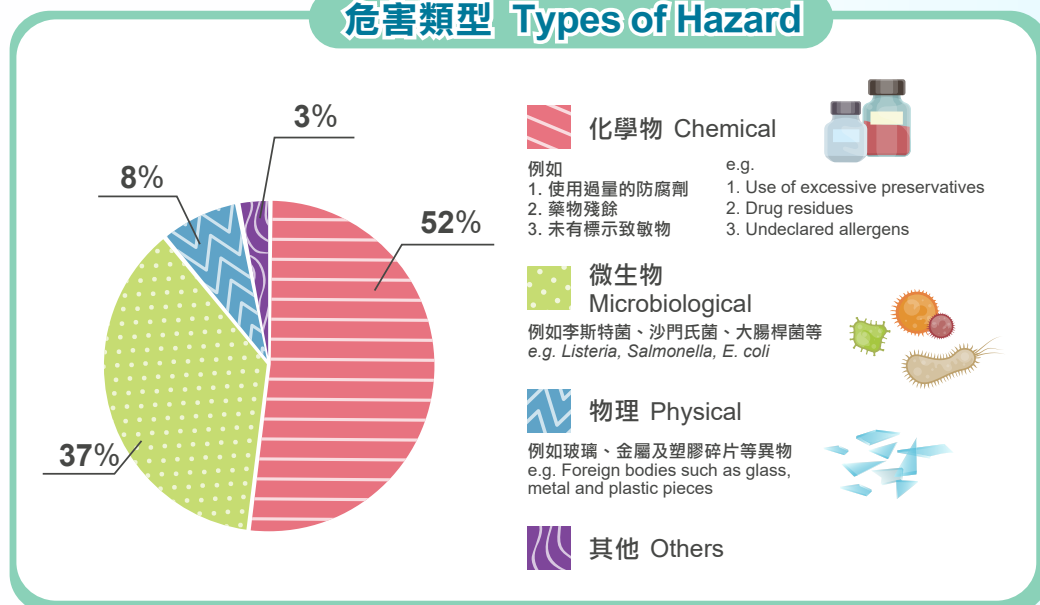


圖1: 本港就食物事故發出的警報或食物事故報表所涉及的危害類型

Figure 1: Types of hazard involved in food incidents with local alerts or food incident posts issued

焦點個案
Incident in Focus

如發現受影響的食品在本港市面有售，食安中心會指令業界停售或展開回收。食安中心隨後會發出本地警報，例如新聞公報、食物警報及業界警報，以通知消費者及業界，不要食用或出售受影響的產品。

二零二零年，食安中心共發出215則食物事故報表、15則業界警報、14則食物警報及14則新聞公報。事故所涉及的危害類型包括化學物(例如使用過量的防腐劑、藥物殘餘、未有標示致敏物等)、微生物(例如李斯特菌、沙門氏菌、大腸桿菌等)、物理(例如異物)，以及其他危害。半數以上的事務與化學物危害有關(見圖1)。

食物事故處理

當發生食物事故時，要實施適當的風險管理措施，關鍵在於食品溯源能力。監管食物安全的法律條文、與國際食物安全機構的合作，以及與食物業界的聯繫，都使食安中心能夠有效追蹤受影響產品在香港的進口及分銷情況。以下的食物事故說明食安中心如何透過食物事故監測系統迅速偵察和處理食物事故，並採取多方面的跟進行動。

烏克蘭農場雞蛋檢出含甲硝唑

二零二零年七月，食安中心透過食物事故監測系統得悉新加坡食品局發出通告，指烏克蘭一個農場的雞蛋產品檢出含有甲硝唑。

甲硝唑是一種用於殺滅細菌及原蟲的抗生素。食品法典委員會指出，由於缺乏數據，食物內的甲硝唑殘餘並沒有一個安全水平能顯示食用風險可予接受，對健康構成一定的影響。因此，食物規管當局應設法避免食物含有甲硝唑殘餘。

食安中心隨即聯絡烏克蘭及新加坡當局，查詢事故的詳情。根據現行的規管安排，蛋類進口商必須領有進口准許，並向相關的食物檢驗辦事處申報蛋類批次抵港。由於實施了進口管制措施，食安中心迅速找到從有關農場進口了雞蛋的本地蛋類進口商，並取得相關的進口資料，核實與烏克蘭當局所提供的出口資料相符。食安中心在進口層面扣檢有關農場的雞蛋批次，並要求進口商待涉事雞蛋檢測合格後才可出售。

在食安中心所抽取的其中一個雞蛋樣本中，檢出含有甲硝唑。該批雞蛋沒有流入本地市場，並在其後全數銷毀。食安中心指令業界停售有關農場的所有批次雞蛋。此外，食安中心暫停有關農場出產的雞蛋進口及在本港出售。食安中心亦發出新聞公報及業界警報，分別通知市民及業界。

食安中心繼續與烏克蘭規管當局聯繫，評估調查結果及所採取的補救措施。食安中心會審視有關農場的雞蛋進口本港的管制安排。

結語

食安中心致力減輕食物事故對市民健康的影響。透過食物事故監測系統及行之有效的管制措施，食安中心偵察食物事故，並制訂策略，從而適時和積極地保障市民的健康。

Upon identifying local circulation of the affected food products on the market, the CFS would instruct the trade to stop the sale or initiate a recall. The CFS would then issue local alerts accordingly, such as press release, food alert and trade alert, to inform consumers and the trade not to consume or sell the affected products.

In 2020, the CFS issued 215 food incident posts, 15 trade alerts, 14 food alerts and 14 press releases. The hazards identified in these incidents include chemical (e.g. use of excessive preservatives, drug residues, undeclared allergens, etc.), microbiological (e.g. *Listeria*, *Salmonella*, *Escherichia coli*, etc.), physical (e.g. foreign bodies) and others. Over 50% of the incidents were related to chemical hazards (see Figure 1).

Food Incidents Management

When a food incident occurs, traceability of food products is key to implementing suitable risk management measures. The legal framework of food safety control, collaboration with international food safety organisations, and liaison with the food trade enable the CFS to effectively track the import and distribution of the affected products in Hong Kong. The following food incident illustrates how the CFS detects and manages food incidents promptly through the FISS, followed by multidisciplinary actions.

Metronidazole in eggs from a Ukrainian farm

In July 2020, the CFS identified a notice issued by the Singapore Food Agency, through the FISS, that an egg product from a farm in Ukraine was detected with metronidazole.

Metronidazole is an antibiotic that kills bacteria and protozoa. According to the Codex Alimentarius Commission, there was a lack of data to establish a safe level of residues of metronidazole in food representing an acceptable risk to consumers, and significant health concerns were identified. Therefore, competent authorities should prevent residues of metronidazole in food.

The CFS immediately contacted the Ukrainian and Singaporean authorities for details of the incident. Under the current regulatory arrangement, importers of eggs are required to obtain an import permission and report the arrival of egg consignments to respective Food Inspection Offices. With the import control measures in place, the CFS quickly identified the local egg importers having imported eggs from the farm concerned and obtained relevant import details, which were consistent with the export information provided by the Ukrainian authority. The CFS held the egg consignments from the farm concerned for testing at import level and required importers not to sell the eggs involved until satisfactory test results were available.

One of the egg samples collected by the CFS was detected to contain metronidazole. The entire consignment of eggs was not released to the local market and was disposed afterwards. The CFS instructed the trade to stop selling all batches of eggs from the farm concerned. Besides, the CFS suspended the import into and sale within Hong Kong of eggs produced in the farm concerned. The CFS issued a press release and a trade alert to inform the public and the trade respectively.

The CFS continues to liaise with the competent authorities of Ukraine and assess the investigation findings and remedial measures taken. The CFS will review the import control arrangement of eggs from the farm concerned.

Conclusion

The CFS strives to reduce the public health impacts of food incidents. Through the FISS and the established control measures, the CFS detects food incidents and formulates strategies with a view to safeguarding the public's health timely and proactively.



河豚毒素 – 河豚中的致命毒素

Tetrodotoxin – the Deadly Poison in Puffer Fish

食物安全中心風險評估組
科學主任林漢基博士報告

Reported by Dr. John LUM, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

二零二一年四月，衛生署衛生防護中心調查一宗懷疑與進食河豚有關的中毒個案，涉及的一名28歲男子在一間食肆進食河豚不久後，出現暈眩及心悸。到底是什麼令河豚有毒呢？

河豚中的河豚毒素

許多四齒魷科的河豚都含有一種毒性強烈的毒素，稱為河豚毒素。根據一些機構及文獻的資料，河豚毒素對人類的毒性是氰化物的1000倍以上。河豚毒素可以與神經細胞膜中的電壓門控鈉離子通道結合，干擾從神經至肌肉的信號傳送，導致身體肌肉癱瘓。

一般來說，河豚毒素較多集中在河豚的生殖器官(主要是卵巢)、肝臟、腸臟及魚皮。不過，某些河豚品種的魚肉亦含有河豚毒素。河豚中的河豚毒素水平會按地域、品種及季節而有所不同。河豚毒素耐熱，烹煮、冷藏或乾燥都不能將之破壞。

河豚體內河豚毒素的來源

雖然河豚體內河豚毒素的來源尚未確定，但相信河豚是從其食物中攝入河豚毒素，然後毒素迅速累積並分布至體內各組織中。研究發現河豚毒素可以由數種細菌產生，最常見的是溶藻弧菌，當中有些細菌會存在於河豚的腸臟內。

河豚毒素中毒的表徵

任何人均可受河豚毒素中毒所影響。初步症狀在中毒後20分鐘至2小時內出現，包括嘴唇及口腔麻痺，然後四肢刺痛、說話含糊不清、動作失衡、肌肉無力及癱瘓。如中毒情況嚴重，可因呼吸及/或心臟衰竭而死亡。患者雖然全身癱瘓，但可能直至死亡前不久仍有意識並完全清醒。現時並無河豚毒素中毒的解毒劑。

河豚的迷思與事實

河豚毒素集中在河豚的內臟及魚皮，是否只吃魚肉便安全？

雖然河豚毒素主要累積在河豚的內臟及魚皮，但某些品種河豚的魚肉天然含有大量河豚毒素。此外，河豚的魚肉在割洗及其他配製過程中極容易受到體內其他組織中的河豚毒素所污染。要去除河豚的有毒器官而不污染魚肉，取決於處理人員的技巧，以及相關的認證制度以確保處理人員符合要求。目前，尚未有國際認可防止河豚毒素污染的河豚配製指引、程序及認證方法。

養殖的河豚是否保證不含河豚毒素？

河豚毒素如何在河豚體內產生、分布和累積，其確實原理尚待完全了解。雖然有文獻報告，以無毒飼料人工飼養的河豚含有較少分量的河豚毒素，但河豚毒素仍存在於養殖河豚體內的各組織中(例如卵巢及肝臟)。日本食品安全委員會評估了養殖河豚的毒性及水產養殖方法。該委員會所得的結論是，河豚的毒素產生機制仍然不明，未能正式確定在什麼條件下養殖河豚可降低毒素水平。因此，無法保證養殖的河豚不含河豚毒素。

我們能否透過抽樣檢測的方法確保河豚可供安全食用？

In April 2021, the Centre for Health Protection of the Department of Health investigated a suspected puffer fish poisoning case that involved a 28-year-old man who developed dizziness and palpitation shortly after consuming puffer fish at a restaurant. So, what makes the puffer fish poisonous?

Tetrodotoxin in Puffer Fish

Many puffer fish of the family *Tetraodontidae* possess a highly potent toxin known as tetrodotoxin (TTX), which is over 1,000 times more toxic to humans than cyanide according to some authorities and literature. TTX can bind to the voltage-gated sodium channels in nerve cell membranes. This interferes with the transmission of signals from nerves to muscles, causing paralysis of the body's muscles.

In general, TTX is more concentrated in the gonads (mainly ovary), liver, intestines and skin of puffer fish. However, certain species of puffer fish also contain TTX in their flesh. The level of TTX among puffer fish varies across geographical regions, species and seasons. TTX is heat-stable and cannot be destroyed by cooking, freezing or drying.

Origin of TTX in Puffer Fish

Although the source of TTX in puffer fish has not yet been conclusively identified, it is believed that puffer fish acquire TTX in their diet. The toxin then rapidly accumulates and is distributed to various tissues of the fish. TTX has been found to be produced by several bacterial species, with *Vibrio alginolyticus* being the most common species. Some of these bacteria are colonised in the intestines of puffer fish.

Presentation of TTX Poisoning

All humans are susceptible to TTX poisoning. Initial symptoms start within 20 minutes to two hours after intoxication, which include numbness of the lips and mouth, followed by tingling in the extremities, slurring of speech, motor imbalance, muscle weakness and paralysis. In severe intoxication, death can be resulted from respiratory and/or heart failure. The victim, although completely paralysed, may be conscious and completely lucid until shortly before death. There is no antidote for TTX poisoning.

Myths and Facts of Puffer Fish

Since TTX concentrates in the internal organs and skin of puffer fish, is it safe if I only eat the flesh?

Although TTX accumulates mainly in the viscera and skin of puffer fish, some species of puffer fish are known to contain a high level of TTX naturally in their flesh. Moreover, the flesh of puffer fish is extremely easy to be contaminated by TTX in other tissues during dressing and other preparation. Removal of toxic organs from a puffer fish without contaminating the flesh depends on the skills of the handlers and the accreditation system to ensure the handlers meet the requirements. At present, there is no internationally accepted guideline, procedure and accreditation scheme for the preparation of puffer fish to prevent TTX contamination.

Is farmed puffer fish guaranteed free from TTX?

The exact mechanism of TTX production, distribution and accumulation in puffer fish is not fully understood. Although there is literature reporting that puffer fish artificially reared with non-toxic diets possess a lower TTX amount, TTX is still present in various tissues (e.g. ovary and liver) of farmed puffer fish. The Food Safety Commission (FSC) of Japan has evaluated the toxicity and the aquaculture method of farmed puffer fish. The FSC concluded that the mechanism of toxin production in puffer fish is still unknown, and conditions for farming puffer fish to reduce the toxin level have not been officially established. As such, it cannot be guaranteed that farmed puffer fish is free from TTX.

Can we ensure the safety of puffer fish through sampling and testing scheme?

河豚毒素
*Tetrodotoxin

黃鰭多紀魷
Takifugu xanthopterus

月尾魚頭魷
Lagocephalus lunaris

- 河豚中的河豚毒素可以致命
- 沒有方法能確保河豚不含河豚毒素
- 避免進食河豚是防止中毒的最佳方法
- Tetrodotoxin in puffer fish is lethal
- There is no guaranteed method to ensure puffer fish is free from tetrodotoxin
- Avoid eating puffer fish is the best way to prevent poisoning

圖2: 河豚中的河豚毒素(河豚照片由漁農自然護理署提供)
Figure 2: Tetrodotoxin in puffer fish (Photo courtesy of the Agriculture, Fisheries and Conservation Department)

美國食品及藥物管理局表示，沒有抽檢方法足以確保整批河豚可供安全食用，因為任何一條河豚都可能含有致命分量的河豚毒素。換句話說，一個河豚樣本沒有檢出河豚毒素，並不能保證其他河豚不含毒素。河豚毒素沒有解毒劑，即使實施了抽樣檢測方法，進食河豚的風險仍然極高。

注意事項

1. 河豚含有河豚毒素，可以致命。
2. 烹煮、冷藏或乾燥都不能破壞河豚毒素，河豚毒素亦無解毒劑。
3. 不要進食河豚，是防止河豚毒素中毒的唯一可靠方法。

給業界的建議

不應進口或銷售食用河豚。

給市民的建議

不應進食河豚任何部分及加工河豚。

According to the US Food and Drug Administration, there is no adequate sampling scheme to ensure a safe lot of puffer fish since any single fish may contain a lethal dose of TTX. In other words, the absence of TTX in a fish sample cannot guarantee other fish are toxin free. While there is no antidote for TTX, the stake of eating puffer fish remains extremely high, even with a sampling and testing scheme in operation.

Key Points to Note

1. Puffer fish contain tetrodotoxin, which is lethal.
2. Tetrodotoxin cannot be destroyed by cooking, freezing or drying, and there is no antidote to it.
3. Not to consume puffer fish is the only reliable way to prevent tetrodotoxin poisoning.

Advice to the Trade

Not to import or sell puffer fish as food.

Advice to the Public

Not to consume any part of puffer fish and processed puffer fish.

食物事故點滴

Food Incident Highlight

本地最近發生一宗懷疑雪卡毒魚類中毒個案，患者在家中進食燕尾斑後出現腹瀉、噁心及腹痛。涉事的魚約有3斤重，購自本地一個街市魚檔。

雪卡毒素由干比亞藻這種有毒的海洋浮游生物產生，較多集中在珊瑚魚的內臟、肝臟及生殖器官。涉及雪卡毒魚類中毒的珊瑚魚體重通常為2公斤(3斤)以上。雪卡毒魚類中毒的臨床病徵包括嘔吐及腹痛等胃腸道症狀，以及嘴唇刺痛及疲倦等神經系統症狀。雪卡毒素耐熱，烹煮也不能將之去除。

為了降低雪卡毒魚類中毒的風險，市民宜減少食用珊瑚魚的次數及每次吃的分量，並避免進食珊瑚魚的頭、皮、腸臟及卵。業界(例如魚類進口商)應避免採購來自己知有魚類受雪卡毒素污染的水域的魚類。

雪卡毒素中毒與進食珊瑚魚

Ciguatera Poisoning and Coral Reef Fish Consumption

Locally, there is a recent case of suspected ciguatera fish poisoning (CFP). The victims had diarrhoea, nausea and abdominal pain after eating a yellow-edged lyretail (*Variola louti*) at home. The fish, around 3 catties in weight, was purchased from a local market fish stall.

Ciguaterins are produced by *Gambierdiscus toxicus*, a type of toxic marine plankton, and are more concentrated in the viscera, liver and gonads of coral reef fish. The coral reef fish involved in CFP usually weighs more than 2 kg (3 catties). The clinical manifestations of CFP include gastrointestinal symptoms like vomiting and abdominal pain, and neurological symptoms such as tingling of lips and fatigue. Ciguaterins are heat-stable and cannot be removed by cooking.

To reduce the risk of CFP, the public are advised to consume less coral reef fish in terms of frequency and the amount consumed in each meal. Avoid eating the head, skin, intestines and roe of the fish. Trades such as fish importers should avoid sourcing fish from [areas](#) knowingly at risk of having fish contaminated with ciguaterins.

北杏與食用植物中的天然毒素

Bitter Apricot Seeds and Natural Toxins in Food Plants

北杏是中式湯水常用的材料，但由於含有一定分量天然存在的氰化物，因此在海外引起了關注。過量進食未經烹煮的北杏可能會引致中毒。

有些常見的食用植物會產生天然毒素作為防禦的機制。其中一些只要去除有毒的部分，便可安全食用，例如蘋果、梨、李子(布林)、桃及櫻桃的果核。有些則要徹底煮熟才安全，例如生的青豆；同樣地，竹筍、木薯及乾的腰豆也要浸透和以沸水煮熟。然而，亞麻籽及白果(銀杏的種子)含有難以透過一般的食物烹製方法降低至安全水平的毒素，因此只應適量進食。

至於北杏，只要以沸水徹底煮熟，例如煲湯時延長煮沸的時間，便可大大減少氰化物的含量。一項研究顯示，北杏在沸水中烹煮15分鐘後，氰化物含量可減少98%。

While bitter apricot seed (北杏) is a common ingredient for preparing Chinese soups, there are concerns overseas due to its significant levels of naturally-occurring cyanide compounds. Excessive consumption of the raw seeds may lead to poisoning.

Some common food plants produce [natural toxins](#) as a defence mechanism. Some of them can be safely consumed by removing the toxic parts, such as the seeds of apples, pears, plums, peaches and cherries. Some such as raw green beans can be rendered safe through thorough cooking, likewise soaking and boiling for bamboo shoots, cassava and dried kidney beans. However, flaxseeds and ginkgo seeds contain toxins that cannot be easily reduced to a safe level through usual food preparation methods and therefore should only be consumed in moderation.

As for bitter apricot seeds, thorough cooking in boiling water, such as extended boiling when preparing soups, can significantly reduce the content of cyanide compounds. A [study](#) shows that boiling of the bitter apricot seeds for 15 minutes can reduce cyanide contents by 98%.



風險傳達工作一覽 (二零二一年四月)

Summary of Risk Communication Work (April 2021)

事故／食物安全個案
Incidents/ Food Safety Cases:
182

公眾查詢
Public Enquiries:
158

業界查詢
Trade Enquiries:
309

食物投訴
Food Complaints:
383

給業界的快速警報
Rapid Alerts to Trade:
7

給消費者的食物警報
Food Alerts to Consumers:
1

懷疑食物中毒個案通報
Suspected Food Poisoning Alerts:
0

教育研討會／演講／講座／輔導
Educational Seminars/ Lectures/Talks/
Counselling:
20

上載到食物安全中心網頁的新訊息
New Messages Put on the
CFS Website:
33