



由食物環境衛生署食物安全中心於每月第三個星期三出版
Published by the Centre for Food Safety, Food and Environmental Hygiene Department on every third Wednesday of the month

本期內容 IN THIS ISSUE

焦點個案

本港市面蔬菜中的除害劑殘餘

食物安全平台

香料中的霉菌毒素

食物事故點滴

跟進非洲豬瘟事故

蜂蜜檢出含微量抗生素甲硝唑

風險傳達工作一覽

Incident in Focus

Pesticide Residues in Vegetables Available in Local Markets

Food Safety Platform

Mycotoxins in Spices

Food Incident Highlight

Follow-up on the African Swine Fever Incident

Trace Amount of Antibiotic

Metronidazole Found in Honey

Summary of Risk

Communication Work

編輯委員會 EDITORIAL BOARD

總編輯

楊子橋醫生

顧問醫生(社會醫學)(風險評估及傳達)

行政編輯

吳志翔醫生

首席醫生(風險評估及傳達)

委員

梁靜勤醫生 首席醫生(風險管理)

陳詩寧獸醫 高級獸醫師(獸醫公共衛生)

張瑞珍女士 高級總監(食物安全中心)

嚴家義先生 高級總監(食物安全中心)

區嘉敏醫生 高級醫生(風險評估)

鍾偉祥博士 高級化驗師(食物研究化驗所)

Editor-in-chief

Dr. Samuel YEUNG

Consultant (Community Medicine)

(Risk Assessment and Communication)

Executive Editor

Dr. Henry NG

Principal Medical Officer

(Risk Assessment and Communication)

Members

Dr. Jackie LEUNG

Principal Medical Officer (Risk Management)

Dr. Allen CHAN

Senior Veterinary Officer

(Veterinary Public Health)

Ms. Syndia CHEUNG

Senior Superintendent (Centre for Food Safety)

Mr. K Y YIM

Senior Superintendent (Centre for Food Safety)

Dr. K M AU

Senior Medical Officer (Risk Assessment)

Dr. Stephen CHUNG

Senior Chemist (Food Research Laboratory)

焦點個案 Incident in Focus

本港市面蔬菜中的除害劑殘餘

Pesticide Residues in Vegetables Available in Local Markets

食物安全中心風險評估組
農業主任林菁女士報告

Reported by Mindy LAM, Agricultural Officer
Risk Assessment Section, Centre for Food Safety

二零一九年五月，某本地機構就本港市面上一批蔬菜中的除害劑殘餘發表調查結果，指有兩個蔬菜樣本（分別是莧菜和菜心）的除害劑殘餘含量超出本港的規管標準。蔬菜及水果是健康飲食不可或缺的一環，但若食用含有除害劑殘餘的蔬果，對消費者的健康會有影響嗎？本文將對進食含有除害劑的蔬菜的健康風險、本港的規管措施，以及清洗蔬菜的正確方式作一概覽。

In May 2019, a local organisation released its survey results on pesticide residues in some vegetables available in local markets. Two vegetable samples (a Chinese amaranth and Flowering white cabbage) were reported to contain pesticide residues at levels exceeding the Hong Kong regulatory standards. Vegetables and fruits are essential components of a healthy diet, but would consumers' health be affected if they consume these foods that are detected with pesticide residues? This article is going to provide an overview of pesticides in food, health risks of consuming vegetables with pesticides,

Using pesticide pyrimethanil in European lettuce as an example 以西生菜中的除害劑啞霉胺為例子



圖1: 以啞霉胺為例，聯合國糧食及農業組織/世界衛生組織農藥殘留聯合會議所訂的每日可攝入量為每日每公斤體重0-0.2毫克。如西生菜的啞霉胺含量為本港法定上限的每公斤3毫克，假設西生菜是攝入啞霉胺的唯一膳食來源，一個體重60公斤的人每日可進食4公斤(約6.6斤)西生菜，而不會對健康帶來可見風險(即不超過每日可攝入量)，不過有一點要注意的是其他食物亦可能含有啞霉胺。
Figure 1. Using pyrimethanil as an example, an Acceptable Daily Intake (ADI) of 0.02mg/kg bw/day was established by Joint FAO/WHO Meeting on Pesticide Residues (JMPR). For European lettuce containing pyrimethanil at local legal limit of 3 mg/kg and assuming that European lettuce is the sole dietary source of pyrimethanil, a 60 kg person could consume 4 kg (approximately 6.6 catty) of the European lettuce every day over the entire lifetime without appreciable health risk (i.e. not exceeding the ADI). It is important to note, however, that pyrimethanil may also come from other foodstuff.

食物內的除害劑殘餘

除害劑指用於防治、殺滅、驅趕或減少害蟲的物質或混合物。在生產糧食時適當使用除害劑，能增加和穩定農產量，提高食物質素，並使食物易於貯存。

即使適當使用除害劑，仍不免會有若干除害劑殘留於食物內。然而，只要遵照優良務農規範使用除害劑，殘餘量便會很小，進食這些食物不會影響健康。

進食含有除害劑殘餘的蔬菜的健康風險

最高殘餘限量通常由食物安全當局訂定，這是指遵循優良務農規範時，食物內或表面除害劑殘餘

local regulatory measures, and proper ways to wash vegetables.

Pesticide Residues in Food

Pesticides are substances or mixtures of substances that are used for preventing, destroying, repelling or mitigating pests. Proper use of pesticides in food production can enhance and stabilise crop yield, increase food quality and facilitate food storage.

Even proper use of pesticides will inevitably leave some residues in food. Nevertheless, if pesticides are used according to the [Good Agricultural Practice \(GAP\)](#), the residual levels would be small and consumption of these foods is not likely to affect health.

Health Risks of Consuming Vegetables with Pesticide Residues

Maximum residue limits (MRLs) are usually set by food safety authorities for indicating the maximum concentration of pesticide residues to be legally permitted in or on food when the GAP is observed. The primary purpose of establishing

焦點個案
Incident in Focus

的法定准許最高濃度。訂定最高殘餘限量的主要目的，是確保為防治蟲害而施用於農作物的除害劑分量減至最低，從而盡可能降低消費者的健康風險。當局在正式採納最高殘餘限量前，會按照既定的殘餘量及食物消費量模式進行膳食攝入量風險評估。這是為了確保符合規管標準的食物，都可供人安全食用。

雖然訂定最高殘餘限量的目的是保障消費者的健康，但這些標準不應直接視為「食物安全上限」。事實上，最高殘餘限量通常低於在一般食用情況下可構成健康風險的水平。因此，只要從食物中攝入的除害劑殘餘量低於[安全參考值](#)，即使進食除害劑殘餘含量超出最高殘餘限量的食物，也不表示消費者的健康會受損(例如西生菜中的啞霉胺)(圖1)。

食物內除害劑殘餘的本地規管措施

在香港，蔬菜及水果中的除害劑殘餘受《食物內除害劑殘餘規例》(第132CM章)所規管。過去三年，食物安全中心(中心)共抽取了72583個食物樣本作除害劑殘餘檢測，其中111個蔬果樣本的除害劑殘餘量超出本港法定上限，整體不合格率約為0.2%。

中心曾就除害劑殘餘進行總膳食研究，所得結果亦顯示，消費者從膳食中攝入[85種常見除害劑](#)及[部分有機氯類除害劑](#)的分量，不大可能對健康構成不可接受的風險。

清洗蔬菜的正確方式

消費者宜用流動的清水徹底沖洗蔬菜，以去除表面的除害劑、污垢及細菌，這亦是世界衛生組織建議的措施。一些國家的有關當局特別表明，不建議在家清洗蔬菜時使用洗滌劑或洗手液，以免有新的化學物殘餘在表面。此外，亦建議把外皮堅硬的農產品(例如南瓜)去皮或刷洗，以盡量除去除害劑殘餘及污垢。

跟進行動

因應上述調查結果，中心從市面抽取了莧菜及菜心的跟進樣本作除害劑殘餘檢測，結果全部合格。

注意事項

1. 適當使用除害劑可同時改善農作物的質與量。
2. 在一般食用情況下，進食除害劑殘餘含量超出最高殘餘限量的食物，未必表示消費者的健康會受損。

給消費者的建議

- 用流動的清水徹底沖洗蔬菜，以去除表面及縫隙中的除害劑及污垢。
- 每日進食至少2份水果及3份蔬菜，並選擇不同種類的蔬果，保持飲食均衡。

給業界的建議

- 本地農戶應遵從優良務農規範，只使用本港註冊的除害劑。
- 業界應有系統地妥為備存記錄，並向供應商了解清楚，以確保所售食物符合本港的法例規定。

MRLs is to ensure that only the minimum amount of pesticides is applied to crops for the need of pest control, and thereby minimising the risk to consumers' health. Before adopting an MRL, dietary exposure risk assessments are conducted with the established residual levels and food consumption pattern. This is to ensure that food complying with the regulatory standards are safe for human consumption.

Although the establishment of MRLs aims to protect consumers' health, these standards should not be directly interpreted as "food safety limits". In fact, MRLs are set at levels below the amounts that could pose a health risk under normal consumption. Therefore, intake of food containing pesticide residues that exceed MRLs does not imply that consumer's health is at risk (e.g. pyrimethanil in European lettuce) (Figure 1), provided that dietary intake of that particular residue is lower than [the safety reference values](#).

Local Regulatory Control of Pesticide Residues in Food

In Hong Kong, pesticide residues in vegetables and fruits are regulated under the Pesticide Residues in Food Regulation (Cap. 132CM). In the past three years, 111 vegetable and fruit samples out of 72 583 food samples collected by the Centre for Food Safety (CFS) for testing of pesticide residues were found to be exceeding the local legal limits. The overall unsatisfactory rate was about 0.2%.

Previous CFS's Total Diet Study on pesticides also showed that dietary exposures to the residues of [85 commonly encountered pesticides](#) and [some organochlorine pesticides](#) would unlikely pose unacceptable health risks to consumers.

Proper Ways to Wash Vegetables

Consumers are advised to rinse vegetables thoroughly under clean running water to remove pesticides, dirt and germs from the surface of the vegetables, a measure also recommended by the World Health Organization. Some national authorities have specifically not recommended the use of detergents or hand wash for home use lest it introduces a new source of chemical residues. Peeling and scrubbing of hard produce (e.g. pumpkins) are also recommended to minimise pesticide residues and dirt.

Follow-up Action

In response to the above survey result, the CFS had collected follow-up samples of Chinese amaranth and Flowering white cabbage from the markets for testing of pesticide residues. All results were satisfactory.

Key Points to Note

1. The proper use of pesticides in food production can improve both the quantity and quality of crops.
2. Intake of food with pesticide residues exceeding MRLs does not necessarily imply consumers' health is at risk under normal consumption.

Advice to Consumers

- Rinse vegetables thoroughly under clean running water to remove pesticides and dirt from the surface and crevices.
- Consume at least 2 servings of fruits and 3 servings of vegetables of different varieties daily for a balanced diet.

Advice to Trade

- Local farmers should only use Hong Kong registered pesticides in accordance with the GAP.
- Traders should maintain a good record keeping system and seek clarification from suppliers to ensure the food sold complies with the local legal requirements.

香料中的霉菌毒素

Mycotoxins in Spices

食物安全中心風險評估組
科學主任馬嘉明女士報告

Reported by Ms. Janny MA, Scientific Officer
Risk Assessment Section, Centre for Food Safety

我們在上兩期討論了食物中幾類對人類健康帶來關注的霉菌毒素，包括木本堅果及油籽中的黃曲霉毒素、穀物中的脫氧雪腐鐮刀菌烯醇，以及蘋果汁中的棒曲霉毒素。今期我們會把討論的焦點放在另一種食材中的霉菌毒素，這種食材就是通常只需少許，卻能增添食物味道的香料。

In the last two issues, we touched on several mycotoxins in food that present a health concern in humans, including aflatoxins in tree nuts and oil seeds, deoxynivalenol in cereals as well as patulin in apple juices. This time, we will focus on the contamination of mycotoxins in some other food ingredients that are often used in small quantities but can enhance flavours of our food – spices.

香料與霉菌毒素

人類以香料入饌，使食物色香味美的做法，源遠流長。香料由各種植物的芳香種子、果實、漿果、樹皮、根、根莖、花蕾及花朵乾製而成，以完整、磨碎、壓碎或混合的形式在市面上出售。



圖2: (由左至右) 據報乾製或脫水的肉豆蔻、辣椒和甜紅椒、薑、胡椒及薑黃較易受霉菌毒素污染。
Figure 2: (From left to right) Dried or dehydrated nutmeg, chilli and paprika, ginger, pepper and turmeric have been reported to have higher susceptibility to mycotoxin contamination.

香料大多產自炎熱潮濕又多雨的熱帶地區，這些氣候條件有利霉菌生長，因此在香料中找到霉菌毒素並不出奇。

Spices and Mycotoxins

Humans have had a long history of using spices for making food aromatic, flavoursome and desirably seasoned. Spices include dried aromatic seeds, fruits, berries, bark, roots, rhizomes, buds and flowers from a variety of plants. They can be marketed in whole, ground, crushed or blended forms.

Spices are mostly produced in tropical areas that have high temperatures, high humidity and heavy rainfall. These climatic conditions favour mould growth and hence it is not surprising to find mycotoxins in spices.

Dried or dehydrated nutmeg, chilli and paprika, ginger, pepper and turmeric are the major spices traded globally and have been reported to be contaminated with higher amount of mycotoxins i.e. aflatoxins and ochratoxin A than other spices.

乾製或脫水的肉豆蔻、辣椒和甜紅椒、薑、胡椒及薑黃是全球貿易中主要的香料，據報有關香料的霉菌毒素，即黃曲霉毒素及赭曲霉毒素A含量較其他香料為高。

甚麼是赭曲霉毒素A?

赭曲霉毒素A由曲霉屬及青霉屬的幾種霉菌所產生。除了香料外，赭曲霉毒素A也存在於多種食品，例如穀物和穀類製品、咖啡豆及乾果。赭曲霉毒素A最主要的不良影響是損害腎臟。雖然有明確證據顯示，赭曲霉毒素A會令動物患癌，但與人類患癌的關係仍然未明確。國際癌症研究機構把赭曲霉毒素A列為第2B組物質，即或可能令人類患癌。

What is Ochratoxin A?

Ochratoxin A is produced by several mould species of *Aspergillus* and *Penicillium*. Apart from spices, ochratoxin A has been found in a variety of food commodities, such as cereals and cereal products, coffee beans and dried fruits. The most sensitive effect of ochratoxin A, notably, is kidney damage. Contrary to the clear evidence of causing cancer in animals, the association of ochratoxin A and cancer in humans remains unclear. The International Agency for Research on Cancer has classified ochratoxin A as a Group 2B agent (i.e. possibly carcinogenic in humans).

香料中的霉菌毒素可能帶來的健康風險

雖然香料可能出現較高含量的霉菌毒素污染，但由於與其他食物相比，香料的食用量甚低，因此因進食香料而攝入霉菌毒素佔從整體膳食的分量可謂微不足道。舉例來說，全港首個食物消費量調查結果顯示，本港市民平均每日進食各種香料的份量大約為0.3克，遠低於大約為300克的大米。

Possible Health Risk Associated with Mycotoxins in Spices

Even though relatively high levels of mycotoxin contamination may occur in spices, the dietary exposure of mycotoxins attributable to spices consumption is generally considered negligible, given that the amount of spices consumed is very low as compared with other food commodities. For instance, as revealed from the First Hong Kong Population-based Food Consumption Survey, the average daily consumption amount of various spices by the local population is around 0.3 g, which is much lower than that of rice at about 300 g.

如何預防和減少香料中的霉菌毒素

由於霉菌在大自然中無處不在，要完全消除食物中的霉菌毒素，包括香料中的霉菌毒素，未必切實可行。為了保障公眾健康和確保食品貿易中的公平做法，食品法典委員會現正就某些香料中的霉菌毒素擬訂標準，並已制定《預防和減少香料中霉菌毒素操作規範》，供業界參考。建議的做法包括但不限於：(1) 新收割用以製作香料的材料應盡快加以乾製和處理；(2) 香料應妥為乾製，使水分活度低於0.65的水

Ways to Prevent and Reduce Mycotoxins in Spices

Due to the ubiquity of mould in nature, complete elimination of mycotoxins in food, including spices, might not be practical. To protect public health and ensure fair practices in the food trade, Codex is now establishing standards for mycotoxins in certain spices. Codex has also established a [Code of Practice for the Prevention and Reduction of Mycotoxins in Spices](#) for the trade's reference. Recommended practices include but not limited to (1) dry and process fresh materials for spices as quickly as possible after harvest; (2) dry spices properly to achieve a water activity below 0.65 – at this level, there would be hardly any mould growth and mycotoxin production; (3) pack dried or dehydrated spices, which tend to absorb moisture from the air (i.e. hygroscopic), quickly

平，在此水平下霉菌便難以生長，亦難以產生霉菌毒素；(3)乾製或脫水的香料容易受潮，因此經處理後應盡快以阻隔空氣中水分的物料包裝；以及(4)避免使包裝好的產品受潮。

至於公眾，應按照生產商所提供的指示貯存香料，例如貯存於陰涼、乾爽、通風良好的地方，遠離焗爐等熱源及潮濕處，並避免存放在雪櫃內以防止冷凝等。此外，為預防霉菌的傳入和污染，公眾應避免以濕的器具及木匙接觸整批香料，使用後應立即緊閉容器，也要避免不必要的囤積。

after processing using a material which shields the spices from moisture and (4) keep packaged commodities free of moisture or humidity.

For the public, they are advised to follow the storage instructions provided by the manufacturer, e.g. stored in a cool, dry, well-ventilated area, away from heat sources (e.g. ovens) and areas with high humidity, and avoid storing in a refrigerator to prevent condensation, etc. In addition, in order to prevent introduction and contamination of mould, the public should avoid contacting the whole lot of spices with wet utensils and wooden spoons. Immediately after use, containers should be closed tightly; unnecessary stockpiling should also be avoided.

食物事故點滴
Food Incident Highlight

跟進非洲豬瘟事故

Follow-up on the African Swine Fever Incident

二零一九年五月十日，上水屠房有一被屠宰豬隻驗出感染非洲豬瘟，是本港首宗個案。屠房內約六千頭豬於五月十三至十四日全數銷毀，其後屠房於五月十八日完成清洗消毒，並於五月十九日恢復運作。

於五月三十一日在上水屠房出現第二宗非洲豬瘟個案。屠房內約四千頭豬全數銷毀，隨後屠房於六月五日完成清洗消毒，並於六月六日恢復提供屠宰服務。

為了加強防範非洲豬瘟在本地散播，上水屠房已實施俗稱「日日清」的措施，所有運到屠房的活豬會在24小時內屠宰，存豬欄每日均會清空，並進行清洗消毒。新安排目的是減少豬隻傳播非洲豬瘟的機會。

非洲豬瘟不會傳人，並不構成食物安全風險。一般而言，豬肉須徹底煮熟，才可安全食用。如沒有官方衛生證明書，切勿攜帶肉類入境。

On 10 May 2019, the first African Swine Fever (ASF) case was detected in a pig carcass from Sheung Shui Slaughterhouse (SSSH). About six thousand pigs were culled from 13 to 14 May. SSSH was then subject to cleansing and disinfection, which was completed on 18 May. SSSH resumed its operation on 19 May.

On 31 May, the second ASF case was reported in SSSH. About four thousand pigs were culled. Subsequent cleansing and disinfection was completed on 5 Jun. Slaughtering services was resumed on 6 Jun.

To strengthen the prevention of ASF at local level, daily clearance arrangement has been imposed in SSSH in which live pigs will be slaughtered within 24 hours upon admittance. Lairages are cleared out and undergone cleansing every day. Such new practice aims to minimise the risk of ASF spread among pigs.

ASF will not infect human and does not pose food safety risk. As a general food safety advice, pork should be thoroughly cooked before consumption. Also members of the public are reminded not to bring any meat into Hong Kong without official health certificates.

蜂蜜檢出含微量抗生素甲硝唑

Trace Amount of Antibiotic Metronidazole Found in Honey

二零一九年四月，食物安全中心(中心)透過食物監測計劃檢出一個蜂蜜樣本含微量抗生素甲硝唑。中心已指令涉事商戶停售受影響批次的產品。

聯合國糧食及農業組織/世界衛生組織聯合食品添加劑專家委員會指出，甲硝唑及其代謝物的殘餘可對健康構成影響，食品法典委員會認為食物規管當局應設法避免食物含有甲硝唑殘餘。

蜂蜜是蜜蜂採集花蜜或蜜露所製成。與人類及其他動物一樣，蜜蜂可以受到細菌、病毒及寄生蟲感染。抗生素可用以治療一些蜂病，例如幼蟲病，但若濫用或使用不當(例如治療劑量過多或用作促生劑)，便會導致抗生素積聚於蜂蜜中。因此，業界應確保所出售的蜂蜜食品適宜供人食用，並符合法例要求；至於市民，則宜向可靠的商戶或養蜂場購買蜂蜜。

In April 2019, the Centre for Food Safety (CFS) identified a honey sample containing a trace amount of metronidazole, an antibiotic, under the food surveillance programme. The CFS has instructed the vendor to stop selling the affected batch of the product.

According to the Joint FAO/WHO Expert Committee on Food Additives, residues of metronidazole or its metabolites may cause significant health concerns. Codex considers that competent authorities should prevent its residues in food.

Honey is produced by bees from floral nectar or honeydew. Bees, like humans and other animals, are susceptible to infection by bacteria, viruses and parasites. Some bee diseases such as brood diseases can be treated with antibiotics. However, antibiotic misuse or inappropriate use of antibiotics (e.g. excessive dose used for treatment or used as growth promoters) may lead to accumulation of antibiotics in honey. Therefore, traders should ensure that food for sale is fit for human consumption and meets legal requirements, whereas the public are advised to buy honey from reliable vendors and apiary.



風險傳達工作一覽 (二零一九年五月)

Summary of Risk Communication Work (May 2019)

事故/食物安全個案
Incidents/ Food Safety Cases:
156

公眾查詢
Public Enquiries:
95

業界查詢
Trade Enquiries:
136

食物投訴
Food Complaints:
433

給業界的快速警報
Rapid Alerts to Trade:
9

給消費者的食物警報
Food Alerts to Consumers:
3

教育研討會/演講/講座/輔導
Educational Seminars/ Lectures/
Talks/ Counselling:
58

上傳到食物安全中心網頁的新訊息
New Messages Put on the
CFS Website:
53