



食物環境衛生署
Food and Environmental
Hygiene Department

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

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焦點個案 Incident in Focus

銀杏樹 — 種子含毒素的活化石

The Ginkgo – A Living Fossil with Poisonous Seeds

食物安全中心風險評估組
科學主任朱源強先生報告

Reported by Mr. Johnny CHU, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

二零一八年十一月, 衛生署衛生防護中心公布一宗白果中毒個案, 涉及的38歲女病人在食用從一街頭小販購買的50至60顆炒白果後, 出現暈眩、噁心、震顫、頭痛及腹痛等症狀。

In November, 2018, the Centre for Health Protection of the Department of Health announced a case of ginkgo seed poisoning. The case involved a 38-year-old woman who developed dizziness, nausea, tremor, headache and abdominal pain after consuming around 50 to 60 fried ginkgo seeds purchased from a street hawker.

銀杏樹

銀杏樹(學名: *Ginkgo biloba*), 又名公孫樹, 以古老聞名, 見證了恐龍在地球上出沒和突然消失。銀杏原產於中國, 曾被西方一些研究人員認為已經在地球上絕跡, 現卻分布於世界各地。銀杏常被稱為活化石, 因為銀杏在過去二億年時間內幾乎沒有發生任何變化, 同時亦可找到與恐龍同期的銀杏化石記錄。



炒銀杏
Fried/roasted ginkgo seeds



薏米腐竹白果碎肉湯
Soups containing ginkgo seeds



日式燒白果
Japanese-style grilled ginkgo seeds



白果腐竹糖水
Desserts containing ginkgo seeds

(a) 白果食品

(a) Ginkgo seeds consumed as food

白果入饌

銀杏的種子(白果)在亞洲各地(尤其是中國、日本及韓國)是常見的食物, 可用作粥、湯、菜餚及甜品的食材。本地亦不難見到食肆供應日式燒白果和街頭小販售賣炒銀杏。

白果中的毒素

很多植物(見下表)含有天然毒素, 有些更是日常的食物, 其中包括白果。白果具有毒性, 是因為含有4'-甲氧基吡哆醇及氰甙等毒素, 而4'-甲氧基吡哆醇則被認為是造成食物中毒的化學物。



(b) 白果

(b) Ginkgo seeds

4'-甲氧基吡哆醇存在於白果的食物貯存組織中, 具有抗維他命B6的特性, 能抑制谷氨酸形成4-氨基丁酸。4-氨基丁酸及谷氨酸在神經細胞之間起着信息傳遞的作用。一般相信, 在4-氨基丁酸減少與谷氨酸增加的雙重作用下, 會引致癲癇發作及抽搐。雖然烹煮不能使4'-甲氧基吡哆醇失去毒性, 但卻可除去氰甙等不耐熱毒素的毒性, 從而降低白果的毒性。值得注意的是, 未成熟及未經烹煮的白果毒性較強。

Toxins in Ginkgo Seeds

Natural toxins are present in a wide variety of plants (Table below), some of which are commonly consumed as food, including ginkgo seeds. Ginkgo seeds have poisoning effects due to the presence of toxins such as 4'-methoxypyridoxine (MPN) and cyanogenic glycosides; and MPN is believed to be the incriminated chemical in food poisoning cases.

MPN is found in the food storage tissue of the ginkgo seeds. It has an antivitamin B6 activity and inhibits the formation of 4-aminobutyric acid (GABA) from glutamate. GABA and glutamate play a role in transmitting nerve signals from one nerve cell to another. The dual effect of a decrease in GABA and an increase in glutamate is believed to induce seizures and convulsions. Cooking cannot inactivate MPN; however, it can reduce the toxicity of the seeds, probably by inactivating heat-labile toxins such as cyanogenic glycosides. It is worth noting that immature and uncooked ginkgo seeds are more toxic.

焦點個案
Incident in Focus

二零零八年至二零一八年植物及菇類毒素引致食物中毒的本地例子

Examples of food poisoning cases caused by plant and mushroom toxins in Hong Kong from 2008 to 2018.

植物 Plants	毒素 Toxins	症狀 Symptoms	預防措施/備註 Preventive measures/remarks
白果 Ginkgo seeds	4'-甲氧基吡哆醇及氰甙 4'-methoxypyridoxine and cyanogenic glycosides	噁心、嘔吐、腹瀉、腹痛、思維混亂及抽搐 Nausea, vomiting, diarrhoea, abdominal pain, confusion and convulsions	<ul style="list-style-type: none"> 烹煮白果 每天只限吃數顆白果 Cook ginkgo seeds. Limit intake to a few seeds per day.
野生芋頭 Wild taro	草酸鈣針晶體 Calcium oxalate raphide	舌頭麻痺及嘴唇腫脹 Numbness of the tongue and swelling of lips	<ul style="list-style-type: none"> 切勿採食野生植物 Do not pick and consume wild plants.
(1) 野生菇類 (2) 摻雜毒菇的可食用菇類 (1) Wild mushrooms (2) Edible mushrooms mixed with poisonous mushrooms	菇類毒素 Mushroom toxins	噁心、嘔吐、腹痛、大量流汗、出現幻覺、昏迷或其他神經性症狀 Nausea, vomiting, abdominal pain, profuse sweating, hallucination, coma or other neurological symptoms	<ul style="list-style-type: none"> 切勿採摘野生菇類 切勿購買懷疑摻雜不明品種的菇類產品 Do not pick wild mushrooms. Do not buy mushroom products which are doubted to be mixed with unknown species.
鮮金針 Fresh Jin Zhen	秋水仙鹼 Colchicine	嘔吐、噁心、腹痛及腹瀉 Vomiting, nausea, abdominal pain and diarrhoea	<ul style="list-style-type: none"> 用清水浸透，並徹底煮熟 經食品廠加工處理過的金針及乾金針可安全食用 Soak well in water and cook thoroughly. Commercially processed Jin Zhen and dried Jin Zhen are safe to eat.
未經烹煮的北杏 Raw bitter apricot seeds	氰甙 Cyanogenic glycosides	喉道收窄、噁心、嘔吐及頭痛 Constriction of the throat, nausea, vomiting and headache	<ul style="list-style-type: none"> 用清水浸透，並以沸水(例如湯)徹底煮熟後再多煮一段時間 Soak and cook thoroughly in boiling water (e.g. soup) for a longer period.
水仙球根 Narcissus bulbs	有毒生物鹼 Toxic alkaloids	噁心、嘔吐、腹瀉及暈眩 Nausea, vomiting, diarrhoea and dizziness	<ul style="list-style-type: none"> 切勿食用水仙球根 Do not eat narcissus bulbs.
野生水果 Wild fruits	植物毒素 Plant toxins	腹痛、嘔吐、腹瀉及咽喉有燒灼感 Abdominal pain, vomiting, diarrhoea and burning sensation of the throat	<ul style="list-style-type: none"> 切勿在公園或郊野採食野生水果 Do not collect and eat wild fruits from parks or the countryside.

對公眾健康的影響

白果的急性毒性最令人關注，中毒者通常會在進食後1至12小時出現噁心、嘔吐、腹瀉、腹痛、思維混亂及抽搐等典型症狀。兒童特別容易因進食白果而食物中毒。在嚴重個案中，即進食大量白果或易受白果毒素影響的人，可能會失去知覺，甚至死亡。有報告指出，一次過進食10至50顆煮熟的白果，可引致急性中毒。

採取的行動及預防措施

關於本文開首提及的白果中毒個案，衛生署及食物安全中心於二零一八年十一月五日分別發出新聞公報及「臉書」Facebook信息，提醒市民每天只可進食少量白果和不應進食未經煮熟的白果。兒童、長者及健康狀況欠佳人士須加倍留意。

注意事項：

1. 白果含有天然毒素。
2. 烹煮可以降低但不能消除白果的毒性。
3. 一次過進食10至50顆煮熟的白果，可引致急性中毒。

給業界的建議

- 向消費者提供食物安全建議，例如提醒顧客每天最多只可吃數顆白果。

給市民的建議

- 食用白果前應先烹煮，以降低白果的毒性。
- 每天只限吃數顆白果。兒童、長者及健康狀況欠佳人士須加倍留意。
- 如出現中毒症狀，應立即尋求醫護人員的意見與及時治療。

Public Health Significance

Acute toxicity is the main concern of ginkgo seed poisoning. Nausea, vomiting, diarrhoea, abdominal pain, confusion and convulsions are the classic symptoms which usually begin 1 to 12 hours after ingestion. Children are especially susceptible to this type of food poisoning. In severe cases where large amounts have been taken or in susceptible individuals, loss of consciousness and deaths may occur. It has been reported that ingestion of 10 to 50 cooked seeds at one time can cause acute poisoning.

Action Taken and Preventive Measures

Regarding the case of ginkgo seed poisoning, a press release and a message on Facebook were issued by the Department of Health and the Centre for Food Safety respectively on 5 November 2018 to remind the public not to consume uncooked ginkgo seeds and to limit the daily intake of ginkgo seeds. Particular attention should be given to children, the elderly and individuals with poor health conditions.

Key Points to Note:

1. Natural toxins are present in ginkgo seeds.
2. Cooking can reduce but cannot eliminate the toxicity of the seeds.
3. Ingestion of 10 to 50 cooked seeds at one time can cause acute poisoning.

Advice to the Trade

- Provide food safety advice to consumers such as reminding customers not to consume more than a few seeds per day.

Advice to the Public

- Cook ginkgo seeds before consumption to reduce the toxicity.
- Limit intake to a few seeds per day, especially for children, the elderly and individuals with poor health conditions.
- Immediately consult medical professionals for advice and prompt treatment if symptoms of poisoning develop.

取代(“REPLACE”)工業生產的反式脂肪以保護心臟健康

REPLACE Industrially-Produced Trans Fats to Protect Heart Health

食物安全中心風險評估組
科學主任林伏波博士報告

Reported by Dr. Violette LIN, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

上一期我們闡述了工業生產的反式脂肪如何對心臟健康造成雙重禍害，既減少「好」膽固醇，又使「壞」膽固醇增加。今期我們會解說業界可以如何減少在食品供應中使用工業生產的反式脂肪，以及消費者如何能減少食用含工業生產的反式脂肪的食物，從而保護心臟健康。

In the [last issue](#), we have illustrated how industrially-produced trans fats (IP-TFAs) could doubly jeopardise your heart health by lowering the “good” cholesterol and increasing the “bad” cholesterol. In this issue, we will explain how the trade could reduce the use of IP-TFAs from the food supply and how consumers could consume less foods with IP-TFAs to protect heart health.

業界可以如何減少食品中的工業生產的反式脂肪？

脂肪在食物中擔當功能及感官上的重要角色。舉例來說，脂肪能夠提升和帶出其他配料的味道；與其他配料產生相互作用時，脂肪使食物具有特殊的質感及口感。油脂亦有防腐作用，可降低食物的水活性、抑制微生物生長和延長產品的保質期。此外，在煎炸食物時，脂肪可作為傳熱媒介將食物煮熟。讓我們引用上一期的酥皮忌廉湯例子，來看看業界可以如何減少整體食品中之工業生產的反式脂肪。

要減少食品中的工業生產的反式脂肪，關鍵在於首先了解它們在食品中的作用及來源，然後以較健康的材料取代。為此，我們要列出用於生產食品的所有材料，並找出哪些含有工業生產的反式脂肪。它們通常存在於含部分氫化油的產品，例如人造牛油或植物起酥油。在酥皮忌廉湯的例子中，便有可能在麵團中使用了含部分氫化油的植物起酥油，使之質感酥脆。

為了取代含工業生產的反式脂肪的材料，世界衛生組織在其《[REPLACE](#) 行動方案》中建議，使用含豐富多元不飽和脂肪或單元不飽和脂肪的油脂。食物安全中心(中心)發出的《[減少食物中反式脂肪業界指引](#)》列出一些油脂產品的脂肪酸分布情況(例如芥花籽油含豐富單元不飽和脂肪)，亦臚列如何應用反式脂肪含量較低的油脂產品(例如使用以芥花籽油及紅花油混合製成的非氫化起酥油烘培餡餅皮)。業界宜考慮採用這些產品來改良食品配方。此外，應採購不含工業生產的反式脂肪的材料(向供應商查詢)，現時市面上已有供應這些材料，以迎合不斷增長的需求和照顧消費者的利益。

消費者如何能避免食用含工業生產的反式脂肪的食物？

反式脂肪常見於烘焙食品(例如麵包、蛋糕、曲奇餅)、油炸食品(例如薯條、炸雞、油條)，以及人造牛油類產品。消費者宜保持均衡飲食，少吃這些食品，以減少攝取工業生產的反式脂肪。中心自二零零七年起一直進行風險評估研究及聯同消費者委員會進行聯合研究，評估和監察食品中的反式脂肪含量。消費者可善用網上[專題報告](#)及[營養資料查詢系統](#)中的食品反式脂肪含量資料，從而避免食用含反式脂肪的食物。

此外，營養資料標籤制度自二零一零年七月起實施，強制規定預先包裝食品必須標示反式脂肪含量。消費者可參閱食物標籤上的資料(例如營養標籤、成分表及不含反式脂肪的聲稱)，以選擇不含反式脂肪的食品。如食品標示了「氫化」、「部分氫化」、「起酥油」及「人造牛油」等字眼，要加倍留意。



業界(透過取代食品成分)及消費者(透過參閱食物標籤)要合力把關，才能保護心臟健康，免受工業生產的反式脂肪危害

Traders (by replacement) and consumers (by reading food label) both play a role in protecting heart health against industrially-produced trans fats.

How Can the Trade Reduce IP-TFAs in Foods?

Fats play important functional and sensory roles in food. For example, they are responsible for carrying, enhancing, and releasing the flavour of other ingredients, as well as for interacting with other ingredients to develop the texture and mouth feel characteristics of foods. Fats/oils also serve as a preservative to reduce the water activity of foods, prevent microbial growth and extend product shelf life. Furthermore, fats act as a heat transfer medium in frying. Using the cream soup with puff pastry quoted in the last issue as an example, let's see what the trade could do to reduce the IP-TFAs in it.

The key to reduce IP-TFAs in foods is, first, realising the role and source of IP-TFAs in your products, then, replacing them with healthier alternatives. So, list out all the ingredients used in producing the food and spot those containing IP-TFAs. They are usually found in partially hydrogenated oil (PHO) products, such as margarine or vegetable shortening. In the cream soup with puff pastry example, it is possible that PHO-containing vegetable shortening was used in the dough for providing the crispy texture.

For replacing ingredients containing IP-TFAs, the World Health Organization's [REPLACE action package](#) recommends the use of fats/oils high in polyunsaturated or monounsaturated fats. The "[Trade Guidelines on Reducing Trans Fats in Food](#)" issued by the Centre for Food Safety (CFS) lists out the fatty acid profiles of some oil/fat products (e.g. canola oil is high in monounsaturated fats). It also lists out various applications of oil/fat products containing reduced amount of TFAs (e.g. non-hydrogenated shortening blends of canola and safflower oils for baking pie crust). Consider using them when reformulating your food products. In addition, source for and purchase ingredients without IP-TFAs (ask the suppliers), which are now available in the market to cater for the increasing demand and address consumers' interest.

How Can a Consumer Avoid Foods with IP-TFAs?

TFAs are usually presented in bakery products (e.g. bread, cakes, cookies), deep fried food (e.g. French fries, fried chicken, fried fritters) and margarine/margarine-like spreads. Maintain a balanced diet and reduce the intake of IP-TFAs by consuming these foods less often. The CFS has been assessing and monitoring TFAs content in the food supply through conducting risk assessment studies or joint studies with the Consumer Council since 2007. Use the TFAs content in foods available online in the [designated reports](#) and the [Nutrient Information Inquiry System](#) to avoid foods with TFAs.

Moreover, the Nutrition Labelling Scheme came into force since July 2010 mandates the labelling of TFAs content on prepackaged foods. Use the information

共同努力才能保護心臟健康，免受工業生產的反式脂肪危害

食物業可以改變製造方式，使食品不含工業生產的反式脂肪；而消費者也可以多加了解食品資料，才作出選擇。另一方面，中心一直多管齊下，務求減少市民從食物中攝取工業生產的反式脂肪。除了監察食品中的反式脂肪含量，中心又一直透過不同的平台(例如業界諮詢論壇、業界指引、「臉書」、研討會)與業界溝通和教育消費者，推廣如何取代食品中的工業生產的反式脂肪，以及有何益處。

藉着推廣以較健康的油脂取代工業生產的反式脂肪，同時提高各持份者對反式脂肪的認識，了解對健康造成的壞影響，我們可望消除食品供應中工業生產的反式脂肪，保護市民心臟健康。

on the food label (e.g. nutrition label, ingredient lists, and TFA-free claim) to choose foods without TFAs. Pay more attention to foods with words such as “hydrogenated”, “partially hydrogenated”, “shortening”, and “margarine”.

Protecting Your Heart Health from IP-TFAs Requires a Concerted Effort

On the one hand, the food industry can change the manufacturing practices to produce foods without IP-TFAs, and consumers can be aware of food product choices. On the other hand, the CFS has been adopting a multi-prong approach to reduce the IP-TFAs intake in the population. Besides monitoring TFAs content in the food supply, the CFS has been communicating with the trade and educating consumers via different platforms (e.g. Trade Consultation Forum, trade guidelines, Facebook, seminars) on the ways and benefits of replacing IP-TFAs in foods.

Through promoting the replacement of IP-TFAs with healthier fats/oils, and together with creating awareness of the negative health impact of TFAs among various stakeholders, we could eliminate IP-TFAs from the food supply to protect your heart health.

食物事故點滴

Food Incident Highlight

選對麵包，飲食健康

Choosing Bread Wisely for Your Healthy Diet

麵包是本港成年人攝取鈉的第四大來源。食物安全中心與消費者委員會最近進行了聯合研究，檢測10種常見麵包的鈉、總脂肪及反式脂肪含量，包括白方包、芝麻包、牛角酥及腸仔包。在抽取的80個樣本中，部分白方包及麥方包樣本的鈉含量高於一些海外國家(例如美國、英國及加拿大)的減鈉標準，部分牛角酥及雞尾包樣本的總脂肪及反式脂肪含量偏高。某些種類麵包的鈉含量差異甚大，這反映業界以改良食品配方來減低麵包中的鈉含量是可行的。

消費者應注意不同種類麵包的鈉、總脂肪及反式脂肪含量，作出精明選擇。業界則應慎選材料，並透過改良食品配方減少這些成分，提供更健康的選擇。

Bread is the fourth major contributor of total sodium intake of the adult population in Hong Kong. Recently, the Centre for Food Safety conducted a joint study with the Consumer Council to test the sodium, total fat and trans fat contents in 10 common bread types including white bread, sesame roll/bun, croissant and sausage bun. Among 80 samples collected, the sodium content of some white bread and wholemeal bread samples were greater than some overseas standards for salt reduction (e.g. United States, United Kingdom and Canada). Some croissant and cocktail bun samples were high in total fat and trans fats. A wide variation of sodium was observed in certain bread types, which reflects the possibility of the trade to reduce its content by product reformulation.

Consumers should be aware of the contents of sodium, total fat and trans fat in different types of bread and choose wisely. The trade is advised to choose ingredients and to reduce these contents through product reformulation for healthier choices.

蘿蔓生菜與O157:H7型大腸桿菌

Romaine Lettuce and E. coli O157:H7

美國及加拿大最近爆發O157:H7型大腸桿菌疫情，美國有關當局懷疑產自加州若干地區的蘿蔓生菜是引發疫情的原因。食物安全中心(中心)因而暫停加州出產的蘿蔓生菜進口及在港出售，並呼籲市民不要食用來自加州或來源不明的蘿蔓生菜。

感染O157:H7型大腸桿菌的常見徵狀包括胃痙攣、腹瀉(往往帶血)及嘔吐，但幼童及長者出現致命腎衰竭的風險較大。污染蔬菜的細菌可能源自糞肥、灌溉水及清洗用水。含有生的蔬菜的菜式(例如沙律)屬高風險食品，因為未經烹煮步驟殺死可能存在的有害細菌。孕婦、幼童、長者及免疫力較弱人士不應食用預製或預先包裝的沙律；如要品嚐沙律，宜自行配製，並盡快食用。

中心會一直監察包括美國其他地區的蘿蔓生菜，以保障食物安全。

Recently, authorities in the United States (US) suspected romaine lettuce harvested in certain areas in California was the cause of the recent E. coli O157:H7 outbreaks in the US and Canada. As such, the Centre for Food Safety (CFS) suspended the importation and sale of romaine lettuce harvested in California and urged the public not to consume romaine lettuce from California or unknown sources.

Common symptoms of E. coli O157:H7 infection include stomach cramps, diarrhoea (often bloody) and vomiting but young children and the elderly have a greater risk of developing a life-threatening form of kidney failure. Possible sources of bacterial contamination in vegetables are manure, irrigation water and wash water. Dishes containing raw vegetables (e.g. salads) are high risk foods as there is no cooking step to kill harmful bacteria that might be present. Pregnant women, young children, the elderly and immunocompromised individuals shall not eat pre-prepared or pre-packaged salads; if salad is wanted, they are advised to prepare their own salad and consume it as soon as possible.

The CFS has been conducting surveillance of romaine lettuce including those from other areas of the US to safeguard food safety.

風險傳達工作一覽 (二零一八年十一月)

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