

食物安全焦點

Food Safety Focus



食物安全中心
Centre for Food Safety

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科學主任馬嘉明女士報告

Reported by Ms. Janny MA, Scientific Officer,

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近年網上購物漸趨流行，消費者足不出戶，只須動一動按鍵，便可在網上訂購並收到來自本港以至海外的各種食品／食材，包括生肉、刺身和三文治等。本文將探討網購食品的微生物風險，以及採取有效措施確保食物安全的重要性。

高風險食物

細菌在周圍環境中無處不在，幾乎任何食物都可藏有細菌。腐敗細菌令食物的味道和氣味改變，影響食品品質；而致病細菌則會引致疾病，造成食物安全問題。

一般而言，水分含量高的高蛋白食物如果未經防菌處理，細菌會繁殖得很快(一個細菌只需15分鐘便可翻一番，六小時內更可增至1600萬個以上!)因此，易腐食品如果沒有盡快以適當的方式貯存、冷藏和處理，很容易變壞。

近期有多宗食物中毒事故涉及三文治和醃製生蟹等即食的易腐食品。由於這類食品在食用前沒有經過加熱去殺滅食物中可能存在的有害微生物，故存在很大的食物安全隱憂，無論是購自互聯網還是傳統的店鋪，均屬高風險食物。

管控措施

消費者在網上訂購食品後，網商便把食品付運，距離或僅數里，亦可是千里之遙。為確保食物安全，網店應採取有效的措施避免食品受交叉污染，以及防止食品在長途運輸過程中滋生細菌，但消費者均難以核實。

網商須採取充分的措施確保食物安全。易腐食品(例如肉類和家禽)須包裝嚴密以保持品質及避免

Online shopping has become popular; food/ food ingredients ranging from raw meats, sashimi to sandwiches can be delivered to consumers, from Hong Kong or even abroad, by simply clicking a button. This article addresses the increasing concerns over the microbiological risk associated with food purchased online and the importance of effective control to ensure food safety.

High-risk Foods

Bacteria are ubiquitous in the environment; virtually any food can harbour bacteria. While spoilage bacteria cause taste and smell changes in food which affect the quality, pathogenic bacteria can cause illness and lead to food safety problems.

In general, bacteria can grow rapidly (i.e. one bacterium can double in just 15 minutes and can multiply to over 16 million within six hours!) in high moisture, high protein foods that have not been processed to prevent their growth. Perishable foods are thus prone to deterioration if they are not stored, refrigerated and handled properly within a short period of time.

No matter they are purchased online or from traditional retail stores, ready-to-eat perishable foods, including sandwiches and marinated raw crabs which have been implicated in recent food poisoning outbreaks, are generally of great food safety concern. It is because they will not be subject to further heat treatment before

consumption to inactivate any harmful microorganisms that may be present.

Control Measures

Upon ordering online, food products are delivered to individual buyers, from miles to thousand miles away. Effective measures to protect food from cross-contamination and prevent bacterial growth particularly during long distance transport are essential to ensure food safety. It is rather difficult for consumers to verify though.

Food must be adequately protected. Perishable foods such as meat and poultry should be wrapped securely to maintain quality and to prevent meat juices from getting onto other foods. Containers for transporting foods should be kept in an



包括涉及近期多宗食物中毒事故的高風險網購食品

High-risk foods purchased online including those implicated in previous foodborne outbreaks

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焦點個案
Incident in Focus

肉汁滴到其他食物上。運載食品的容器應保持清潔，維修妥善和狀況良好。如用同一容器盛載不同的食物，每次載貨之間應把容器徹底清潔和消毒。如有需要，尤其是在大量運輸的情況下，應安排專門運載食物的容器，並加上標記。運載食物的容器不能用以運載其他貨物。

食物的溫度控制不當是導致食源性疾病或食物腐壞最常見的原因之一。因此，必須有制度確保溫度控制得宜(冷凍食物存於4°C或以下，冷藏食物存於-18°C或以下)。視乎情況需要，易腐食品應放在具備冷源的保溫箱或冰袋內，以提供適切的貯存環境。易腐食品不應長時間放在4°C至60°C的環境中，若超過4小時，便應把食品棄掉。

注意要點：

1. 即食的易腐食品，無論是購自互聯網還是傳統店鋪，均屬高風險食物。
2. 網上出售的易腐食品應與在傳統店鋪售賣的一樣避免受到污染，並在整個供應鏈均採取嚴格的時間/溫度控制。
3. 食物業如涉及配製食物出售或售賣限制出售食物(如刺身、壽司、供不經烹煮而食用的蠔和冰鮮肉類)，須向食物環境衛生署(食環署)申領相關的牌照/售賣限制出售食物許可證。

給市民的建議

- 在網上購買食物時要留意食物的性質和潛在風險。長者、幼童、孕婦和免疫力較弱的人等高危人士更應加倍注意。
- 購買食物，特別是供不經烹煮而食用的蠔、壽司和刺身等高風險食物時，應光顧可靠及領有牌照/售賣限制出售食物許可證的食物業處所。並要求營運者提供其牌照狀況或證明，並於食環署網頁核實有關資料。
- 考慮網上購買的高風險食物在運送途中能否一直保持於安全溫度。
- 應留意在香港以外所進行的交易或會帶有風險，例如海外給予消費者的保障範圍可能跟香港的有所不同。

給業界的建議

- 網上的銷售活動與傳統的銷售業務模式一樣受到香港法例監管，包括與進口、宣傳及銷售食品相關的食物安全及食物業規例。
 - 所有出售的食物必須適宜供人食用。
 - 從外地進口冰鮮/冷藏肉類或冰鮮/冷藏禽肉，須向食物安全中心(中心)申請進口許可證。
 - 從外地進口奶類、奶類飲品或冰凍甜點，亦須向中心申請，才可輸入已獲批准的來源地的產品。
 - 如果網店出售的是預先包裝食物，商戶便應確保在銷售、宣傳或展示該食品時符合《食物及藥物(成分組合及標籤)規例》(第132W章)中有關食品標籤的規定。
 - 任何從事食物進口或分銷業務的人士，都必須根據《食品安全條例》(第612章)的規定，登記成為食物進口商或分銷商，並備存食物進出紀錄。
 - 任何人配製食物出售而未持有食環署簽發的有效食物製造廠或其他有關的牌照，即屬違法。
 - 任何人未經食環署准許售賣或要約出售限制出售的食物(例如冰鮮/冷藏肉類、家禽和魚類；供不經烹煮而食用的蠔；刺身和壽司等)，即屬違法。

appropriate state of cleanliness, repair and condition. Effective cleaning and disinfection should take place between loads if the same container is used for transporting different foods. Where appropriate, particularly in bulk transport, containers should be designated and marked for food-use only and be used only for that purpose.

Noting that inadequate food temperature control is one of the most common causes of foodborne illness or food spoilage, systems should be in place to ensure that temperature is controlled effectively i.e. keep refrigerated foods at 4°C or below, frozen foods at or below -18°C. Pack perishable foods in an insulated box with a cold source or in a cool bag to maintain a proper storage environment where necessary. Make sure perishable foods are not held at 4°C-60°C for a prolonged period i.e. for more than 4 hours. If they are, they should be discarded.

Key Points to Note:

1. Ready-to-eat perishable foods, regardless they are purchased online or from traditional retail stores, are of high food safety risk.
2. Like those sold in the tradition manner, it is essential to protect perishable foods sold online from contamination and follow strict time/ temperature control throughout the supply chain.
3. Food businesses involved in the preparation of food for sale or the sale of restricted foods such as sashimi, sushi, oysters to be eaten raw and chilled meat are required to obtain relevant licences/restricted food permits from the Food and Environmental Hygiene Department (FEHD).

Advice to the Public

- Pay attention to the nature and potential risks associated with the food items if you intend to purchase online. Susceptible populations, e.g., the elderly, young children, pregnant women and people with weakened immune systems should take extra precautions.
- Patronise reliable licensed food premises/holders of restricted food permits, especially when buying high-risk foods such as oysters to be eaten raw, sushi and sashimi etc. Ask the operator to provide information about their licensing status or identity and verify such information through the [website of the FEHD](#).
- Consider whether the high-risk foods purchased online can be kept at a safe temperature during transportation.
- Transactions made outside Hong Kong might be subject to risk. For instance, the coverage of consumer protection abroad can be different from that in Hong Kong.

Advice to the Trade

- Sale activities online, like in the conventional business mode, are regulated by relevant legislation in Hong Kong, including food safety and food business regulations pertaining to the importation, advertisement and sale of food products.
 - All food for sale must be fit for human consumption.
 - An import licence from the Centre for Food Safety (CFS) is required for the importation of chilled/frozen meat or chilled/frozen poultry meat.
 - Application to the CFS for importation of milk, milk beverage or frozen confection from approved sources of manufacture outside Hong Kong is also required.
 - Ensure the requirements on food labelling under the Food and Drugs (Composition and Labelling) Regulations (Cap. 132W) regarding the sale, advertisement and display of food are complied with, if prepackaged foods are to be sold online.
 - Any person who carries on a food importation or distribution business must register as a food importer or a food distributor and keep records relating to the movements of food as stipulated in the Food Safety Ordinance (Cap. 612).
 - It is an offence to prepare food for sale without a valid food factory or other forms of licences issued by the FEHD.
 - It is an offence to sell or offer to sell restricted food, such as chilled/frozen meat, poultry and fish, oysters to be eaten raw, sushi and sashimi, without relevant permission granted by the FEHD.

再談油脂 — 品質與安全

More About Fats and Oils – Quality and Safety

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,
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上期我們探討了油脂的特性和加工過程，這期我們會談談這些產品的品質和安全問題。

品質問題

用油脂煮食能令食物呈金黃色，食物變得香脆可口，風味獨特。不過，油脂可能會出現酸敗，伴隨“油膩”味，令品質下降。

目前，評定油脂品質的方法有很多，其中較常用的指標包括“酸度”和“過氧化值”。一般來說，酸度和過氧化值愈低，表示油脂的品質愈好。

油脂變質的程度取決於溫度、光照、氧氣和濕度等多項因素。把油脂貯存於陰涼乾燥的地方有助保存其品質。有些產品亦加入抗氧化劑，以延遲酸敗的發生。

安全問題

各種食物中的金屬雜質近來愈來愈受到關注。油脂中出現金屬雜質(例如砷和鉛)大多是受到環境污染所致。

長期攝入無機砷會對人體健康造成不良影響，可引致癌症、皮膚病、心血管系統疾病、神經系統中毒和糖尿病。兒童長期攝入鉛，可引致神經系統和智力受損。成年人如長期接觸鉛，或會導致貧血、血壓上升和腎臟受損。

值得慶幸的是，精煉過程能消除油脂中的砷和鉛。市面上妥為精煉的油脂所含有害污染物理應不多。此外，市民亦無須擔心以錫罐裝油的安全問題，因為錫不會遷移到油脂中。

除了金屬雜質外，市民亦關注到部分植物油的芥酸含量偏高所引起的安全問題。芥酸其實是一種天然存在的脂肪酸。早期的菜籽油的芥酸含量的確很高(佔總脂肪酸30-60%)。在動物實驗中發現，攝入過量芥酸可損害動物的心臟組織，但在人類這結果並未得到證實。因此，人們開始選擇性地培育一些低芥酸的品種。

In the last issue, we discussed the nature of fats and oils as well as their processing. Now let's talk something about the quality and safety concerns associated with these products.

Quality Concerns

Cooking food with fats and oils not only gives crispy texture and golden appearance but also brings distinctive tastes to food. Nevertheless, fats and oils may get rancid, accompanying with “off” flavours and smells, which degrades their quality.

Currently, there are various ways to measure the quality of fats and oils, with the common ones include “acid value (AV)” and “peroxide value (PV)”. In general, the lower the AV and PV, the better the quality they have.

The rate of degradation depends on various factors such as temperature, light, oxygen and moisture. Storing fats and oils in a dark, cool, dry place is a way to preserve their quality while some products have also used antioxidants to delay the onset of rancidity.

油脂的酸度與過氧化值 Acid Value VS Peroxide Value of Fats and Oils

酸度顯示游離脂肪酸(包括那些經水解作用從三酸甘油酯中分解出來的游離脂肪酸)含量的多寡。

AV is a measurement of free fatty acids, including those cleaved from their parent molecules (i.e. triglycerides) by hydrolysis (water breakdown).

過氧化值是指氫過氧化物(初級氧化產物)的含量。

PV is an indication of the amount of hydroperoxides (i.e. products of primary oxidation).

Safety Concerns

Currently, there are increasing concerns over metallic contamination in various foods. Generally speaking, the presence of metallic contaminants (e.g. arsenic and lead) in fats and oils is mostly due to environmental contamination.

The main adverse effects in human after long-term ingestion of arsenic (inorganic form) are cancer, skin lesions, cardiovascular disease, neurotoxicity and diabetes. For lead, chronic exposure can cause neurological impairment and reduction of intelligence quotient (IQ) in children and may result in anaemia, increased blood pressure and kidney damage in adults.

Fortunately, both arsenic and lead can be removed by oil refining. Properly refined fats and oils available in the market should have low levels of these harmful contaminants. Besides, there is no need to worry about fats and oils in tin cans as they do not experience tin migration.

Apart from metallic contaminants, there is also safety concern over certain vegetable oils due to their high erucic acid levels. In fact, erucic acid is a naturally present fatty acid. Early rapeseed varieties were indeed very high in erucic acid (30-60% of the total fatty acids). Tests on experimental animals found that excessive intake of erucic acid may damage their heart tissues, but this link has not yet been established in humans. This has resulted in the selective breeding of low erucic acid varieties.



芥花籽油從經改良的低芥酸菜籽提煉而成，只含少量芥酸

Canola oil contains only low levels of erucic acid as canola is developed from selective breeding of low erucic acid rapeseed plant

heart tissues, but this link has not yet been established in humans. This has resulted in the selective breeding of low erucic acid varieties.

芥花籽改良自菜籽，是使用傳統的雜交技術除去不良特性而培植出來的品種。有別於芥酸含量高的傳統菜籽油，芥花籽油只含少量芥酸(佔總脂肪酸少於2%)。

下一期我們會深入探討油脂中的黃曲霉毒素和苯並[a]芘這些致癌化學物。

Canola is developed from traditional cross breeding of the rapeseed plant with unwanted traits removed. Hence, canola oil has only low levels of erucic acid (below 2% total fatty acids), contrary to rapeseed oil which may contain high levels of erucic acid.

In the next issue, we will take a deeper look on some carcinogenic chemicals i.e. aflatoxin and benzo(a)pyrene associated with fats and oils.



食物事故點滴
Food Incident
Highlight

黑糖中的丙烯酰胺

台灣有報道指一些黑糖產品含有可能令人患癌的**丙烯酰胺**。部分產品的含量(每公斤超過1000微克)與烘焙類食物和油炸類食物的不遑多讓。食物在高溫加熱(一般120°C以上)時，游離氨基酸天門冬酰胺與還原糖(特別是葡萄糖和果糖)產生反應，形成**丙烯酰胺**。黑糖的製作流程是把新鮮甘蔗汁反覆熬煮，由於甘蔗汁中天然含有天門冬酰胺和還原糖，兩者碰在一起加熱，便會產生**丙烯酰胺**。

很多經過高溫處理的食物，例如薯條、薯片、餅乾、早餐穀類食品等和部分炒菜的**丙烯酰胺**含量較高(每公斤數百至數千微克)。據估計，在本港成年人**丙烯酰胺**總攝入量中，本港市面上的黑糖(**丙烯酰胺**含量由每公斤28至860微克不等)僅佔不足1%，而炒菜(包括炸薯)則佔52%，可見黑糖並非我們從膳食攝入**丙烯酰胺**的主要來源。

有些人認為黑糖比白砂糖健康，在配製飲料或糖水時愛用黑糖。食物安全中心建議消費者減少攝入**游離糖**(包括黑糖)，因為攝取過多糖分會導致肥胖症和蛀牙。

Acrylamide in Dark Brown Sugar

It has been reported in Taiwan that some dark brown sugars were found to contain **acrylamide**, a potentially carcinogenic substance. Some were at levels (>1 000µg/kg) comparable to baked and fried foods. Acrylamide is formed in foods at high temperatures (usually >120°C) when the free amino acid asparagine reacts with reducing sugars, especially glucose and fructose. During the production of dark brown sugars, repeatedly boiling the raw ingredient sugar cane juice which contains natural asparagine and reducing sugars will cause acrylamide formation.

Many high-temperature processed foods such as French fries, crisps, biscuits, breakfast cereals and certain stir-fried vegetables contain relatively high levels (from several hundreds to thousands of µg/kg) of acrylamide. It is estimated that locally available dark brown sugars (detected acrylamide level ranged from 28 to 860µg/kg) contribute to less than 1% of total acrylamide intake in Hong Kong adults. Comparing to fried vegetables (including fried potatoes) which contribute to 52% of acrylamide intake, dark brown sugars are unlikely a major source of acrylamide.

In preparing beverages or sweet soups, some people may use dark brown sugars in the belief that they are healthier than granulated white sugar. The Centre for Food Safety advises consumers to limit the intake of **free sugars** including dark brown sugars as excessive sugar intake may lead to obesity and tooth decay.

孔雀石綠與魚類

食物安全中心(中心)上月公布在兩個**罐頭鯪魚**樣本中驗出極微量孔雀石綠。根據《食物內有害物質規例》(第132AF章)，所有在本港出售的食物均不能含有孔雀石綠。

孔雀石綠除了是一種工業染料，可用於絲綢和紙張等物料外，也被世界各地的水產養殖業用於治療魚類的寄生蟲、真菌和原蟲疾病。但由於有研究結果顯示孔雀石綠會令實驗動物患癌，主要的農業經濟體系，例如內地、歐盟、加拿大和美國均禁止在食用魚身上使用這種化學物質。

業界應確保所出售的食物適宜供人食用，並符合本港的法定標準。中心已知會涉事商舖上述違規情況，並會繼續跟進事件。

Malachite Green and Fish

Last month, the Centre for Food Safety (CFS) announced that two samples of **tinned fried dace** were found to contain trace amounts of malachite green. The Harmful Substances in Food Regulations (Cap. 132AF) do not allow the presence of malachite green in any food sold in Hong Kong.

Malachite green is an industrial dye used to colour materials such as silk and paper. Worldwide, malachite green has also been used in aquaculture for the treatment of parasitic, fungal and protozoan diseases in fish. However, due to its ability to cause cancer in experimental animals, major agricultural economies such as the Mainland, the European Union, Canada and the United States prohibit the use of malachite green in food fish.

The trade shall ensure that the foods they sell are fit for human consumption and comply with local legislations. The CFS has informed the vendor concerned of the irregularity and will continue to follow up on the incident.

風險傳達 工作一覽 Summary of Risk Communication Work

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