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梳乎厘班戟與沙門氏菌 Soufflé Pancakes and *Salmonella*

食物安全中心風險傳達組
研究主任鄭基慧女士報告

Reported by Amy CHENG, Research Officer,
Risk Communication Section, Centre for Food Safety

本年八月中，食物安全中心（食安中心）就多宗與進食來自一家本地餐廳的梳乎厘班戟有關的懷疑食物中毒個案進行調查。調查結果顯示，涉及的病原體可能是沙門氏菌。調查時亦發現，製作梳乎厘班戟的過程有不當的情況，即混合蛋漿的貯存溫度不當、沒有妥為監控烘焙溫度，以及在配製過程中使用未經巴士德消毒的有殼蛋。

In mid-August this year, the Centre for Food Safety (CFS) conducted an investigation of suspected food poisoning cases related to the consumption of soufflé pancakes from a local restaurant. The investigation revealed the causative pathogen was likely *Salmonella*. The investigation also found irregularities in the course of soufflé pancakes, namely improper storage temperature of pooled eggs, baking temperature of the soufflé pancakes not properly monitored and the use of unpasteurised whole shell eggs in preparation.

進食未經煮熟蛋類菜式存有的風險

雞蛋可在其形成過程中受到沙門氏菌污染，若蛋類貯存不當，更會助長其繁殖。沙門氏菌能在未經煮熟的食物中存活，構成很高的食物安全風險，因為熱處理不足，未能徹底消滅病原體，進食後或會引致食物中毒。除沙門氏菌外，未經煮熟的蛋類菜式也可能含有已產生抗菌素耐藥性的細菌。

Potential Risk of Consuming Undercooked Egg Dishes

Salmonella can contaminate eggs during egg formation, facilitating proliferation if they are stored improperly. It can also survive in undercooked foods, which pose a very high risk of food safety as an inadequate heat treatment cannot eliminate pathogens completely and may cause food poisoning upon consumption. Besides *Salmonella*, undercooked egg dishes may also contain bacteria with antimicrobial resistance (AMR).

如何安全地貯存蛋配料和配製梳乎厘班戟？

食安中心的現場調查發現，涉事餐廳貯存以生蛋製成的混合蛋漿的溫度高於攝氏10度，屬於危險溫度範圍內（即攝氏4至60度）。食物存放在危險溫度範圍內，容易迅速滋生各種細菌。已開封的蛋粉應貯存在密封容器中，並置於陰涼乾燥的地方。雪櫃應設有顯示溫度的裝置，時刻檢查並每天記錄溫度最少兩次。如發現溫度偏差多於攝氏1度，應盡快安排檢查跟

How to Store Egg Ingredients and Prepare Soufflé Pancakes Safely?

Field investigation by the CFS found that the storage temperature of raw pooled eggs in the concerned restaurant was above 10°C, which was within the Temperature Danger Zone (i.e. between 4°C and 60°C). Storing food at the Temperature Danger Zone allows various types of bacteria to grow rapidly. Dried egg powder, once opened, should be stored in airtight containers placed in a cool and dry place. Refrigerators should include temperature displays, which are constantly monitored and reported at least twice a day. If any deviations higher than 1°C are identified, checking of the



圖1: 良好衛生規範的個人、環境及食物衛生範疇
Figure 1: Personal, environmental and food hygiene aspects of Good Hygiene Practices (GHPs)

進。此外，按照先入先出的原則使用蛋配料，對保持蛋類菜式安全尤為重要。雪櫃內未使用的蛋製品應以有蓋容器分開貯存，預防交叉污染。

梳乎厘班戟的烘焙溫度缺乏妥善監控，可解釋為何在本個案中沙門氏菌等有害致病菌能夠存活。要預防食物中毒，應把蛋類菜式徹底煮熟至中心溫度達攝氏75度或以上或至蛋製品完全凝固。已煮熟的蛋製品在室溫下存放得太久也是食物中毒的常見原因。因此，熱食應存放於攝氏60度以上，凍食應存放於攝氏4度或以下，並預先計劃，以免過早烹製食物。

善用經巴士德消毒的蛋製品

選擇安全的蛋配料是確保食物安全最重要的一步，建議使用經巴士德消毒的有殼蛋和蛋漿，因為巴士德消毒過程把蛋類加熱至特定溫度並保持一段時間，以防止變壞，延長保質期。巴士德消毒可減低食源性疾病的風險，特別是在配製無需徹底煮熟以達到理想質感的蛋類菜式時。最近發生與蛋製品有關的食物中毒個案清楚說明，使用未經巴士德消毒的有殼蛋配製此等蛋類菜式的風險。備用的經巴士德消毒蛋製品應以密封的容器貯存在雪櫃內，使用時只取出所需分量。經巴士德消毒的蛋製品應即日用完，不應將新舊配製的蛋製品混合使用。

遵從良好衛生規範，做個盡責的食物處理人員

良好衛生規範是指為了確保食物安全及適宜食用，就食物鏈各個階段所需的條件及措施而制定的守則。遵循良好衛生規範有助食物業經營者控制食物安全危害，包括生物危害（例如細菌）、化學物危害（例如除害劑）及物理危害（例如外來物質），確保他們所供應的食物可安全食用。

在配製梳乎厘班戟時，良好衛生規範涵蓋個人及環境衛生範疇，包括配戴適當的手套並穿上清潔的保護衣物以免污染麵糊和蛋液、實施定期的防治蟲鼠計劃及進行廚房清潔行動，確保生產流程免受蟲鼠滋生影響。此外，良好衛生規範還強調持續培訓的需要。

注意事項

- 未經煮熟蛋類菜式或含有沙門氏菌等致病菌和抗菌素耐藥性菌株，進食後可分別引致食物中毒和抗菌素耐藥性傳播。
- 妥善貯存蛋配料，並烘焙蛋類菜式至熟透。
- 使用經巴士德消毒的蛋配料去製作無需徹底煮熟的蛋類菜式，並遵從良好衛生規範。

給業界的建議

- 避免過早烹製蛋製品。
- 蛋配料應於攝氏4度或以下冷藏。
- 監控蛋配料和菜式的貯存和烹煮溫度。
- 遵從良好衛生規範。

給市民的建議

- 從可靠的店鋪購買蛋製品並立即食用。
- 高危人士，例如孕婦、嬰幼兒、長者及免疫力較低人士應避免進食生或未經煮熟的菜式。

devices is warranted. In addition, applying [first-in-first-out \(FIFO\)](#) principle for egg ingredients is essential to keeping egg dishes safe. Unused egg products in the refrigerator should be stored in covered containers separately to avoid cross-contamination.

Lack of proper monitoring of the baking temperature of soufflé pancakes may explain the survival of harmful pathogens like *Salmonella* in this case. To prevent food poisoning, it is advisable to cook egg dishes thoroughly until the core temperature reaches 75°C or above, or the whole egg products are firm. Prolonged storage of cooked egg products at room temperature is also a common cause of food poisoning. Therefore, it is important to store hot dishes at above 60°C and cold dishes at 4°C or below, and plan ahead to avoid preparing them too far in advance.

Use Pasteurised Egg Products Wisely

Choosing safe egg ingredients is the priority step to ensure food safety. Pasteurised shell or liquid eggs are recommended as the [pasteurisation process](#) involves heating eggs to a specific temperature for a set time, aiming to prevent spoilage and extend their shelf-life. It can reduce the risk of foodborne illness especially when preparing egg dishes that are not intended to be cooked thoroughly for achieving the required texture. The occurrence of recent food poisoning cases related to egg products clearly illustrates the risk of using unpasteurised whole shell eggs for preparing these types of egg dishes. If pasteurised egg products are to be used later, store them in sealed containers in the refrigerator and only take out the amount required. Use all of them on the same day and do not top up with new batches of pasteurised egg products.

Be a Responsible Food Handler by Observing Good Hygiene Practices (GHPs)

GHPs refer to all practices regarding the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain. Practising GHPs helps food business operators to control food safety hazards including biological (e.g. bacteria), chemical (e.g. pesticides) and physical (e.g. extraneous materials) hazards so as to make sure that the food they serve is safe to eat.

When soufflé pancakes are prepared, GHPs will include personal and environmental hygiene aspects, ranging from wearing suitable gloves and clean protective clothing to avoid contamination of the batter and the egg solution, the implementation of a regular pest control programme and to conduct kitchen cleansing operations for ensuring the production flow is free from pest and rodent infestations. In addition, GHPs emphasise the need for on-going training.

Key Points to Note

- Undercooked egg dishes may contain pathogens like *Salmonella* and AMR strains that could lead to food poisoning and AMR transmission upon consumption respectively.
- Store egg ingredients properly and bake egg dishes thoroughly.
- Use pasteurised egg ingredients to prepare egg dishes that are not intended to be cooked thoroughly and observe GHPs.

Advice to the Trade

- Avoid preparing egg products too far in advance.
- Refrigerate egg ingredients at 4°C or below.
- Monitor the storage and cooking temperatures of eggs ingredients and dishes.
- Observe GHPs.

Advice to the Public

- Purchase egg products from reliable shops and consume them immediately.
- Susceptible populations such as pregnant women, infants, young children, the elderly and people with weakened immunity should avoid consuming raw or undercooked dishes.



在惡劣天氣及極端情況下確保食物安全

Securing Food Safety During Adverse Weather and Extreme Conditions

食物安全中心風險傳達組
科學主任葉景新先生報告

Reported by Mr. Kenneth YIP, Scientific Officer,
Risk Communication Section, Centre for Food Safety

香港經常會遭遇熱帶氣旋和風暴潮帶來的惡劣天氣和極端情況，特別是在夏季，可引致水浸和停電。市民或會囤積食物以應對這些緊急狀況的同時，水浸和停電可能令食物置於不當的貯存環境中，引致食物變壞和受到污染。本文將討論預備貯存食物的策略，並會闡述面對水浸及停電時保障食物安全的步驟。

Hong Kong often experiences adverse weather and extreme conditions due to tropical cyclones and storm surges particularly in summer, which could result in flooding and power outages. While the public may stock up food in preparation of these emergencies, flooding and power outage could expose food to improper storage conditions, causing spoilage and contamination. This article will discuss the strategy to prepare for food storage, and will highlight steps to secure food safety when facing flooding and power outage.

明智地計劃並貯存適量食物

部分人或會考慮在惡劣天氣及極端情況來襲前購買並貯存多於所需的食物。食物必須適當貯存以防變壞，較可取的做法是只買所需的分量。購買前，預備一份菜式及食材清單，並預留足夠的貯存空間。不要購買到期日快到或已過的食物。

Plan and Store Suitable Amount of Food Wisely

Some may consider buying and storing food more than required before the approaching adverse weather and extreme conditions. It is essential to store the food properly to avoid spoilage and it is preferable to purchase only the quantity needed. Before purchase, keep a running list of meals and their ingredients and reserve sufficient storage capacity. Do not buy food that is near or past its [expiry date](#).

購買後，食物應按照貯存指示存放，例如放入攝氏4度或以下的雪櫃冷凍或冷藏於攝氏-18度或以下。熟食和易腐壞的食物如鮮肉和家禽、水產及奶類須在2小時內放進雪櫃。生的食物應與即食食物或熟食分開存放在有蓋或密封的容器內，以防止生與熟的食物接觸。不要貯存過多食物於雪櫃內，以保持冷空氣流通暢順。可在室溫貯存的食物應存放在陰涼位置。

After purchase, food should be kept according to storage instructions like keeping them refrigerated at $\leq 4^{\circ}\text{C}$ or frozen at $\leq -18^{\circ}\text{C}$. Cooked and perishable foods like fresh meat and poultry, aquatic products and milk should be refrigerated within 2 hours. To prevent contact between raw food and ready-to-eat or cooked food, they should be stored separately in covered or sealed containers. Do not overload the refrigerator to maintain proper cold air circulation. For non-perishable food items, they should be kept in a cool and dry place.

水浸後挽救食物—安全嗎？

所有因為停電而未能妥為冷凍或冷藏的易腐壞食物均應丟棄。水浸期間，食物可能會被洪水淹浸。洪水可能帶有致病菌，能污染食物。因此，重要的是切勿進食任何曾被洪水淹浸但並非以防水容器包裝的食物。所有非預先包裝的食物，以及不屬防水包裝的食物如果已被洪水浸過，都應棄掉。只有商業生產的雙縫蓋金屬罐及殺菌軟袋才屬防水包裝的食物，經徹底清洗、消毒和加上標籤後可以挽救。任何有不尋常的氣味、顏色或質感的食物均應丟棄。

Salvage Food after Floods – Safe or Not?

All perishable food that has not been refrigerated or frozen properly due to power outages should be discarded. During flooding, food may become submerged in floodwater. Floodwater may contain pathogens and can contaminate food. It is important not to consume any food that has been submerged in floodwater and has not been packaged in waterproof containers. All non-prepackaged foods and those not in waterproof packaging that have come into contact with floodwater should be discarded. Only foods packed commercially in metal cans with double-seamed lids and retort pouches are regarded as waterproof and may be salvageable after they are thoroughly cleaned, sanitised and labelled. Any food with an unusual odour, colour or texture should be thrown away.

水浸後如何清洗和消毒用具？

可能接觸食物的容器和餐具若以防水物料製造，在徹底清洗和消毒後可再次使用，包括金屬平底鍋和瓷碟，可以肥皂和水清洗，然後沖洗。已清潔的用具應放在清潔的水中煮沸或以1:99的稀釋家用漂白水浸泡15分鐘消毒，然後風乾。如砧板等木製及膠製用具被洪水浸過，便無法安全清潔，應將之棄掉。

How to Wash and Disinfect Utensils after Flooding?

For those containers and dishware made of waterproof materials that may come in contact with food, they can be reused after thorough washing and sanitising. These include metal pans and ceramic dishes. They can be washed with soap and water and then rinsed accordingly. Sanitise the cleaned utensils by boiling in clean water or immersing them in 1:99 diluted household liquid bleach for 15 minutes, and then allow them to air dry. Wooden and plastic utensils like cutting boards should be discarded if they contacted with flood water as they cannot be safely cleaned.



圖2: 可以挽救和不可以挽救的食物例子
Figure 2: Examples of food items eligible and not eligible for food recovery

停電期間保持食物安全

大部分雪櫃和冰格均沒有後備電源，在電力中斷後會停止冷空氣循環，有可能令食物置於不安全的溫度。停電前在雪櫃內備有冰墊、冰塊及乾冰，有助在安全溫度貯存食物較長時間。在雪櫃內放置溫度計顯示溫度，能有助事後判斷存放的食物是否仍可安全食用。如沒有溫度計，我們仍可計算斷電的時間來協助我們判斷所存放的食物是否仍然安全。保持雪櫃及冰格的門關閉能維持低溫。若門沒有打開，冷凍櫃可安全保存食物2至4小時；半滿和全滿的冰格則可分別保存24小時和48小時。



圖3: 惡劣天氣和極端情況前、水浸後和停電後的食物安全提示
Figure 3: Food safety tips before adverse weather and extreme conditions, after flooding and after electric outage

can help to store food at [safe temperature](#) for a longer period of time. It is advisable to have a thermometer in the refrigerator to indicate the temperature to help determine if the stored foods are still safe to consume afterwards. If no thermometer is available, we can still keep track of the downtime to help us to determine if the stored foods are still be safe. Keeping refrigerator and freezer doors closed can maintain cold temperature. The food stored in chillers will stay safe for 2 to 4 hours if doors have been unopened, and food can be kept for 24 hours and 48 hours in half-full and full freezers respectively.

Keeping Food Safe in Case of Power Outage

Most refrigerators and freezers do not have backup power supply. They will stop circulating cold air when the electricity is lost, which could expose food to unsafe temperatures. Keeping frozen gel packs, ice cubes and dry ice in refrigerators before power outage

在電力恢復後，應立即查看雪櫃和冰格的溫度，並檢查容易腐壞的食物如鮮肉和家禽有否置於攝氏4度至60度的危險溫度範圍。對於存放在危險溫度範圍的高危食物，應遵從**2小時 / 4小時原則**。部分冷藏食物或仍有冰晶，可以再安全冷藏或烹煮，然而，即使雪糕感覺像冷藏下般冰冷，仍然應該丟棄。切勿以試吃來判斷食物是否可供安全食用，因為即使食物已經變壞，也未必會有不正常的味道或氣味。

在惡劣天氣和極端情況下確保食物安全是至關重要的。除了預備食物庫存外，業界和市民應做好應對水浸和停電的準備。食物業經營者應確保食物適宜供人食用，並棄置變壞的食物。市民應小心分辨可以挽救的食物，並在食用前加以正確挽救。

Once the power returns, check the temperature of refrigerators and freezers and investigate if perishable foods like fresh meat and poultry are exposed in the Temperature Danger Zone between 4°C and 60°C. For high-risk food stored within the Temperature Danger Zone, follow the **2-hour/4-hour rule**. Some frozen foods may still contain ice crystals and could be safe to refreeze or cook. However, ice-cream should be discarded even if it feels cold as if refrigerated. Never taste foods to determine whether they are safe to eat, as they might not give off an abnormal taste or odour even if they are spoiled.

Securing food safety during adverse weather and extreme conditions is essential. In addition to getting ready for the food reserve, the trade and the public should be set to handle flooding and power outage. Food business operators should ensure that food is fit for human consumption and discard spoiled food. The public should be vigilant in identifying food items eligible for recovery and salvage them properly before consumption.

非熱食雞肉食品的微生物研究 Microbiological Study on the Quality of Non-hot Served Dishes with Chicken Meat

雞肉是很多本地非熱食即食食品的常見配料，部分食肆為使肉質達到最鮮嫩的狀態，或不會把雞肉徹底煮熟，讓雞隻體內的致病菌（例如沙門氏菌）得以存活。煮熟的雞隻或會再經人手處理而不再翻熱，因此有可能在烹煮後受致病菌（例如金黃葡萄球菌）污染，在個人及環境衛生欠佳時尤甚。

食物安全中心（食安中心）曾進行一項**風險評估研究**，以評估這些非熱食雞肉食品的微生物質素。儘管所有樣本均符合微生物含量方面的食物安全準則，食安中心也提醒業界在配製食物時遵守良好衛生規範、保持良好衛生並妥善控制冷卻時間溫度。食物業應為員工提供持續的食物安全培訓，並參考食安中心的**需烹煮後處理的雞肉菜餚（水煮雞和手撕雞適用）—給食物業的食物安全指引**。市民購買可供即時食用的非熱食雞肉食品後應盡早食用，如非立即食用，應在攝氏四度或以下冷藏。

Chicken meat is a common ingredient in many non-hot served ready-to-eat dishes. To achieve optimal meat tenderness, some restaurants may not cook chicken thoroughly, which can allow pathogens present in chicken carcasses (e.g. *Salmonella*) to survive. Cooked chicken may also undergo additional manual handling without further re-heating, which could allow opportunities for post-cooking contamination with pathogens (e.g. *Staphylococcus aureus*), especially if there is a lack of good personal and environmental hygiene practices.

A **risk assessment study** was conducted by the Centre for Food Safety (CFS) to gauge the microbiological quality of such non-hot served chicken dishes. While all samples complied with the microbiological food safety criteria for pathogenic bacteria, the trade is reminded to observe Good Hygiene Practices, maintain good hygiene and implement proper time-temperature control during preparation. Food businesses should provide ongoing food safety training to their staff, and make reference to the CFS' **Food Safety Guidelines on Chicken Dishes with Post-cooking Handling (Applicable to Shredded Chicken and Poached chicken)**. The public is advised to consume non-hot served ready-to-eat chicken dishes as soon as possible after purchase and refrigerate them at 4°C or below if they are not to be consumed immediately.

進食野芋引致的食物中毒 Food Poisoning Caused by Consumption of Wild Taro

二零二三年八月，一名病人在進食野芋後出現氣喘、口部麻痺及口腔灼熱等病徵，懷疑**草酸鈣針晶體**中毒，在本地醫院接受治療。

芋頭是一種受歡迎的食物配料。然而，野芋可能含有針狀的草酸鈣針晶體。清洗或烹煮均不能清除這些針晶體，在咀嚼過程中針晶體可從植物細胞脫落，刺穿口腔和咽喉內的敏感組織，即時引發刺激症狀。包括疼痛及腫脹等迅速出現的症狀通常會限制中毒者進一步進食以至對身體的影響。其他形狀的草酸鈣引起刺激的可能性則較低。

切勿採食野芋等野生植物，以免中毒。市民應向可靠的供應商購買蔬菜。

In August 2023, a patient received medical treatment at a local hospital for suspected **calcium oxalate raphide** poisoning after consuming wild taro and developed symptoms including shortness of breath, oral numbness and burning sensation of the mouth.

Taro is a popular food ingredient. However, wild taro may contain needle-shaped calcium oxalate raphide crystals. The raphides cannot be destroyed by washing or cooking and can become dislodged from the plant cells when chewed, causing instant irritation by puncturing the sensitive tissues in the mouth and throat. The rapid onset of symptoms including pain and swelling usually limits further intake, and therefore its effect on the body. Calcium oxalate in other shapes are less likely to cause irritation.

To avoid poisoning, do not pick and eat wild plants, including wild taro. Purchase vegetables from reliable suppliers.



風險傳達工作一覽（二零二三年九月）

Summary of Risk Communication Work (September 2023)

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