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## 從食物安全角度看 本地餐廳處理漢堡包的情況

### Handling of Burgers in Local Restaurants – From a Food Safety Perspective

食物安全中心風險傳達組  
科學主任陳蓉蓉女士報告

Reported by Ms. Melva CHEN, Scientific Officer,  
Risk Communication Section, Centre for Food Safety

在本港，近年興起「美食風格」的漢堡包餐廳。有些餐廳供應並非完全煮熟的漢堡肉餅，認為在味道及口感上與全熟的截然不同。不過，進食未經煮熟的漢堡肉可導致食源性疾病或感染抗菌素耐藥性微生物。食物安全中心(食安中心)最近進行了一項研究，探討食物處理人員對烹製漢堡牛肉的知識、態度及做法。本文將綜述這項研究的結果。

In Hong Kong, 'gourmet-style' burger restaurants have become a recent food trend. Some of them sell less than fully cooked burger patties that give a taste and mouthfeel considered to be distinct from their well-done counterparts. However, eating undercooked burgers can result in foodborne illness or contracting antimicrobial resistance (AMR) microorganisms. The Centre for Food Safety (CFS) has recently conducted a study to explore the knowledge, attitudes and practices of food handlers on the preparation of beef burgers. This article will share the findings of the study.

### 餐廳供應未經煮熟的漢堡肉並非鮮見

無論在海外及本地，都曾接報出現與未煮熟的漢堡肉或碎牛肉有關的食物中毒個案。當肉絞碎時，生肉表面的有害細菌，例如致病性大腸桿菌、沙門氏菌及抗菌素耐藥性細菌(「超級細菌」)，會散布至整塊肉餅。如果沒有徹底煮熟，這些細菌仍可在肉餅中存活。不論這些「超級細菌」是否會引致急性症狀，都有可能把抗菌素耐藥性基因轉移到人體內的其他細菌，日後使用抗生素治病時，藥效便會受到影響。

### Serving Undercooked Burgers at Restaurants is not Uncommon

Food poisoning outbreaks associated with undercooked burgers or minced beef have been reported overseas and locally. Upon mincing, harmful bacteria such as pathogenic *Escherichia coli* and *Salmonella* as well as AMR bacteria ('superbugs') from the raw meat's surface can be mixed throughout the whole piece of meat patty. Without thorough cooking, these bacteria can remain alive on the inside. Whether or not 'superbugs' cause acute symptoms, they may transfer their antimicrobial resistance genes to other bacteria inside the human body, hampering the effectiveness of antibiotics when needed in the future.

食安中心在二零二一年進行了一項電話調查，訪問了千多間供應漢堡包的餐廳，包括快餐店及餐桌服務式餐廳。調查顯示，超過四成的餐廳會按顧客要求提供未煮熟的漢堡肉餅。餐廳收取的價格越高，便越有可能提供未煮熟的漢堡肉餅。

A telephone survey was conducted by the CFS in 2021, interviewing over 1000 restaurants that provided burgers, including fast-food and table-service restaurants. It revealed that more than 40% of restaurants provided undercooked burger patties upon request. Undercooked burger patties were more likely to be served at higher-priced restaurants.

### 烹製漢堡肉的錯誤觀念及不安全做法

此外，食安中心隨機抽取了24間餐廳進行面對面訪談及觀察，發現食物處理人員對「食物安全五要點」及未煮熟肉類的微生物風險普遍缺

中心溫度 Internal temperature	時間(分鐘) Time (minutes)
60°C	45
65°C	10
70°C	2
75°C	0.5 (30秒 secs)
80°C	0.1 (6秒 secs)

圖1：足以殺滅漢堡肉餅中大部分細菌的安全中心溫度/時間組合  
Figure 1: Safe internal temperature-time combinations that are sufficient to kill most bacteria in burger patties

### Misconceptions and Unsafe Practices of Preparing Burgers

Following face-to-face interviews and observations of 24 randomly selected restaurants, it was discovered that food handlers, in general, lacked comprehension of the '5 Keys to Food Safety', as well as the microbiological risks of undercooked meats. Some food

乏理解。一些食物處理人員認為，優質的漢堡牛肉餅無須煮熟也可食用。部分食物處理人員則認為，全熟的漢堡肉餅在肉汁、質感及味道方面較差，因此不會把漢堡肉餅煮熟，以迎合顧客的口味。大多數食物處理人員都不知道安全的中心溫度/時間組合(圖1)。

大部分食物處理人員沒有使用食物溫度計來檢查煮熟程度，而是根據質感及顏色等主觀指標。在實地量度餐廳按要求所烹製的漢堡肉溫度時，發現所有五成熟及大多數七成熟的漢堡肉都未煮熟，也即是說沒有達到任何一個安全的中心溫度/時間組合。在受訪餐廳按要求烹製全熟的漢堡肉時，發現約有五分之一的漢堡肉仍未煮熟。此舉可能會危及無意中吃了未熟漢堡肉的顧客。另一方面，若干食物處理人員在按要求烹製全熟的漢堡肉時，把肉餅煮得過熱，例如中心溫度高於攝氏85度數分鐘。這解釋了為何他們認為全熟的漢堡肉較乾，因而食客不會接受。事實上，徹底煮熟並不代表要犧牲肉餅的味道及多汁的口感。業界及市民可參考下文的一些實用烹調貼士(圖2)。

食物處理人員使用食物溫度計不僅可以防止肉未有煮熟，同時還有助他們不會把肉煮得過熱。研究顯示，食物處理人員憑感官來判斷煮熟程度和確保食物安全是不太可靠的。熟肉的颜色主要是由於肌紅蛋白(一種肌肉的紅色素)變性及梅納褐變(轉成啡色)所形成。碎肉在烹煮前外露於空氣中的時間、酸鹼度及終點溫度都可影響碎肉產品烹煮後的內部顏色。在煎煮肉餅時，如果內部在達到可殺死有害微生物所需的溫度前看起來已呈暗褐色或熟透，肉的表面便可能發生了過早褐變的情況。因此，如果食物處理人員僅以褐色作為煮熟的指標，便有可能因過早褐變而導致碎牛肉未有煮熟。

### 有何方法可以降低風險？

了解食物衛生欠佳的影響，有助更嚴格遵循食物安全建議，降低食物污染及食源性疾病的風險。食安中心已為食物處理人員編製《安全烹製牛肉漢堡業界指引》，當中包含「食物安全五要點」及良好衛生規範的概念。為了保障食物安全，食物處理人員應使用食物溫度計，以確保食物的中心溫度在指定時間內達到安全水平。在餐廳點菜時，消費者宜要求全熟的漢堡肉。如果上菜時漢堡肉未有煮熟，應要求餐廳將之徹底煮熟，確保安全才食用。

在下一期，我們將討論食物處理人員對未煮熟的肉類所持有的一些常見誤解。

handlers thought that high-quality beef patties could be eaten undercooked. Since food handlers believed that well-done burger patties were inferior in terms of juiciness, texture and flavour, some of them undercooked their burger patties by default to meet customers' tastes. The majority of food handlers were unaware of the safe internal temperature-time combinations (Figure 1).

Most food handlers did not use a food thermometer to verify doneness, relying on subjective indicators such as texture and colour instead. When the temperatures were measured on site, all medium and most medium-well burgers as ordered were found to be undercooked, in other words not achieving any one of the safe internal temperature-time combinations. When the interviewed restaurants were requested to prepare well-done burgers, about one-fifth of them were still found undercooked. As a result, this might endanger customers who unintentionally ate the undercooked burgers. On the other hand, several food handlers overcooked their patties, say the internal temperature reaching over 85°C for a few minutes, while asked to prepare a well-done burger. This explains why they thought well-done burgers were dry and would be, therefore, refused by diners. In fact, thorough cooking does not mean sacrificing the flavour and juiciness of the patty. There are some practical culinary tips that both the trade and the public could consider (Figure 2).

Using a food thermometer not only can prevent food handlers from undercooking the meat, but also help them not to overcook at the same time. The study showed that sensory cues used by food handlers are not very reliable in determining doneness and securing food safety. Cooked meat colour is primarily due to the denaturation of myoglobin, a type of red pigment of muscles, and the Maillard browning. The amount of time minced meat exposed to air before cooking, pH and end-point temperature can influence the interior colour of cooked minced meat products. Premature browning of the meat surface may occur when the inside of fried patties looks dull brown or well-done before reaching the required temperature for killing harmful microorganisms. Consequently, premature browning may contribute to undercooking of minced beef if food handlers use brown visual colour alone as a doneness indicator.

### What Can be Done to Reduce the Risk?

Knowing the repercussions of poor food hygiene can help people follow food safety recommendations more closely, reducing the risk of food contamination and foodborne illness. The CFS has published the [Trade Guidelines on Safe Preparation of Beef Burgers](#), incorporating the concepts of the '5 Keys to Food Safety' and Good Hygiene Practices, for food handlers. To safeguard food safety, food handlers should use a food thermometer to ensure that the food's core temperature reaches a safe level for a specific time. When ordering burgers in restaurants, consumers are recommended to request for well-done. If a restaurant serves an undercooked burger, send it back to be thoroughly cooked such that it is safe to eat.

In the next issue, we will talk about some common misunderstandings of food handlers concerning undercooked meat.



圖2：漢堡肉徹底煮熟但保持多汁的貼士  
Figure 2: Tips for making thoroughly cooked yet juicy burgers

# 廚世界，徹底洗手吧！

## Clean Hands Well to Eat Well

食物安全中心風險傳達組  
科學主任游天頌先生報告

Reported by Mr. Arthur YAU, Scientific Officer,  
Risk Communication Section, Centre for Food Safety

手部衛生對食物安全至關重要。食物處理人員透過不潔的雙手，有可能將致病微生物和抗藥性「超級細菌」從他們的身體和生的食物傳播到用具、廚房表面和即食食品。除了不乾淨的雙手，使用不潔的抹布抹手以及不恰當使用即棄手套，也是過去食肆出現大規模食物中毒個案的原因。正確的手部衛生有助減少食源性疾病的傳播，並對抗食物鏈中抗菌素耐藥性的問題。

### 何時要洗手？

食物處理人員用梘液和清水洗手以保持良好手部衛生，是減少可預防的傳染病傳播的最有效方法。在處理食物或佩戴即棄手套前後，以及在烹製食物的過程中弄污雙手時，例如接觸臉部、咳嗽、打噴嚏、擤鼻涕、如廁、吸煙、完成清潔工作、處理金錢、垃圾、手提電話、化學品或生的食物後，都應徹底洗手。

隨著手提電話成為生活中不可或缺的一部分，電話上的細菌有更大機會轉移到雙手，然後傳到食物上。由於手提電話可能會被污染，亦會使食物處理人員分心，因此不應在值班期間使用，而是應限制在休息時間或更衣室內才可使用。

### 如何正確洗手

食物處理人員應以梘液及清水洗手，搓手20秒，因為梘液及清水能更有效去除油脂污垢和殺死食源性微生物。為方便員工正確洗手，食肆應在洗手盆位置為員工提供以下設施：梘液、感應式或非觸式設計水龍頭(例如腳踏或手肘操作)、持續供應的清潔自來水(天氣寒冷時提供暖水可鼓勵洗手)、用於抹乾雙手的即棄紙巾，以及免觸式有蓋垃圾桶。食肆管理層還可張貼[洗手指引海報](#)，來提醒員工正確的洗手程序。

### 佩戴即棄手套不能代替洗手

正確使用即棄手套有助安全處理食物，特別是當手上有傷口或處理即食食品(例如三文治、沙律)時，但不能替代正確洗手。

#### 要正確使用即

棄手套烹製食物，應在戴上手套前、除下手套後及更換手套時徹底清洗雙手。使用過的即棄手套要棄掉，不可重用。適時更換手套，包括在處理生熟食物之間、手套被手汗弄濕時、手套出現破損或弄污時、完成每項工作(例如處理垃圾)後，以及轉換工作崗位或換班時。同樣地，使用食物鉗等工具也可減少徒手接觸食物。

Hand hygiene is essential to food safety. Food workers' unclean hands may spread disease-causing microorganisms as well as antimicrobial-resistant 'superbugs' from their bodies and raw food to utensils, kitchen surfaces and ready-to-eat food. Other than unclean hands, using dirty towels for drying hands and inappropriate usage of disposable gloves have also been recognised as probable causes of large-scale food poisoning outbreaks in restaurants in the past. Proper hand hygiene helps reduce the transmission of foodborne diseases and battle antimicrobial resistance along the food chain.

### When to Wash Your Hands?

Maintaining proper hand hygiene through cleaning one's hands with liquid soap and water is the most effective way for food workers to reduce the spread of preventable infectious diseases. One should wash hands before and after handling foods or wearing disposable gloves; and in the course of food preparation when hands get contaminated, such as after touching the face, coughing, sneezing, blowing the nose, going to the toilet, smoking, done with cleaning and handling money, wastes, mobile phones, chemicals or raw food.

As mobile phones have become an indispensable part of our lives, bacteria on the phone are becoming more likely to be transferred to our hands and then onto our food. Since mobile devices may become contaminated and also cause distractions for food handlers, they should not be used during shifts. Their use should be restricted to during breaks or in the changing room.

### How to Wash Your Hands Properly

Food handlers are recommended to [wash their hands](#) with liquid soap and water, rubbing hands for 20 seconds, as they work more effectively at removing grease and dirt and killing foodborne microorganisms. To facilitate proper and efficient hand washing, food establishments should provide the following items at the washing basin for their staff: liquid soap, tap with sensor or non-touch design (e.g. operated with foot or elbow), a continuous supply of clean running water (warm water can encourage hand washing in cold weathers), disposable tissues for drying hands and rubbish bin with a hands-free lid. Management of food establishments can also remind staff of proper hand washing procedures by displaying a [hand-washing instruction poster](#).

### Wearing Disposable Gloves Cannot Replace Hand Washing

While proper use of disposable gloves aids in the safe handling of food, particularly when there are wounds or cuts on hands, or when handling ready-to-eat food such as sandwiches and salads, it cannot substitute proper hand washing.

To [properly use disposable gloves](#) in food preparation settings, one should wash hands thoroughly before wearing, after removing and between changing gloves. Used disposable gloves should be discarded and not be reused. Gloves should be changed at the appropriate times, including between handling raw and cooked foods, when gloves are thoroughly wet with hand sweat, when gloves are torn or soiled, after completing each task such as handling garbage and when switching jobs or shifts. Similarly, using tools like food tongs can also minimise any bare-hand contact with foods.



圖3：食物處理人員如何正確洗手  
Figure 3: How to wash hands properly for food handlers

為配合六月七日世界食品安全日的主題「食品更安全，身體更健康」，食物安全中心(食安中心)藉此機會宣傳手部衛生對加強食物安全的重要性，並以此為食安中心食物安全日2022的年度主題。食物處理人員保持雙手清潔，大大有助保障食物安全，同時令顧客滿意。就讓我們一同好好洗手，養成良好的手部衛生習慣！

In support of the theme of the [World Food Safety Day](#) on 7 June, "Safer food, better health", the Centre for Food Safety (CFS) is taking this chance to [promote the importance of hand hygiene](#) in enhancing to food safety as the theme of the CFS' [Food Safety Day 2022](#). Keeping food handlers' hands clean is an important component to safe food and satisfied customers. Let's clean hands well to eat well, and practise good hand hygiene together!

## 預先包裝糖果及朱古力營養標籤專項食品調查

### Targeted Surveillance on Nutrition Labelling of Prepackaged Candies and Chocolates

營養標籤是告知消費者食品所含營養量的工具。為此，食物安全中心(食安中心)一直進行專項食品調查，以查核市面上食品的營養標籤是否符合法例規定和準確。今年五月，食安中心公布了預先包裝糖果及朱古力的營養標籤專項食品調查結果。

在40個樣本中，有三個樣本鈉含量的檢測值與其營養標籤上的標示值不符，其餘樣本全部通過檢測。食安中心早前已公布此違規情況，並指令有關商戶停售受影響的批次。業界必須遵守法例，確保營養標籤正確無誤。市民應查閱營養標籤，以按健康需要作出知情的食物選擇。

Nutrition labels are a tool informing consumers about the nutrition content of food. To this end, the Centre for Food Safety (CFS) has all along been conducting targeted surveillance for checking the compliance with legal requirements as well as the accuracy of nutrition labels of food items on the market. In May, the CFS released the test results of a targeted food surveillance project on the nutrition labelling of prepackaged candies and chocolates.

Three out of 40 samples were found to have discrepancies between the tested values and declared values of the sodium content on their nutrition labels. All the other samples passed the test. The CFS had announced the irregularities earlier and instructed the vendors concerned to stop selling the affected batch. The trade is reminded to comply with the law and ensure the nutrition labels are correct. The public is advised to read nutrition labels so as to make informed food choices based on their health needs.

## 暑熱下適當地運送雪糕回家

### Bring Ice-cream Home Properly Under the Summer Heat

你有沒有想過如何把雪糕等冰凍甜點從商店帶回家才是適當的做法？隨著夏季來臨，天氣漸熱，如果雪糕運送不當，偶爾在家享用雪糕便可能會受到食源性病原體的實質威脅。

雪糕營養豐富，為防細菌滋長，在運送過程中應盡可能遠離危險溫度(即攝氏4度或以上)，儘管冷藏不能殺死存在的細菌。除了防止融化外，在運送時保持雪糕冰凍的好處還包括保持品質，因為雪糕中之軟滑的氣泡會在融化時消散，令帶回家的雪糕在重新冷藏後變硬，口感欠佳。

為了確保雪糕的安全及品質，應向信譽良好的供應商購買雪糕。使用保冷袋及冰墊把雪糕帶回家，並盡快存放在雪櫃冰格內。如非一次吃完，用乾淨的雪糕勺取出想吃的分量。避免重新冷藏已融化的雪糕。

Have you ever wondered how to properly bring home frozen confections like ice-cream from the store? As summer approaches and the weather gets warmer, foodborne pathogens can be a real threat to an occasional indulgence in an ice-cream at home if not properly delivered.

Rich in nutrients, ice-cream should be kept out of dangerous temperatures (i.e. 4°C or above) as much as possible during transportation to prevent bacteria from multiplying, while freezing cannot kill the bacteria present. Aside from preventing melting, the perks of keeping the ice-cream frozen during transit include preserving quality, since air bubbles in the ice-cream that make the dessert soft and creamy will dissipate while melting. As a result, the ice-cream will become undesirably firm after re-freezing at home.

To ensure the safety and quality of ice-cream, purchase from reputable sources. Use a chiller bag and ice packs to carry ice-cream home, and store it in the freezer as soon as possible. If not consumed all at once, use a clean scoop to take out the portion you want to consume. Avoid re-freezing melted ice-cream.



## 風險傳達工作一覽 (二零二二年五月)

### Summary of Risk Communication Work (May 2022)

事故/ 食物安全個案 Incidents/ Food Safety Cases: 282	公眾查詢 Public Enquiries: 65	業界查詢 Trade Enquiries: 357	食物投訴 Food Complaints: 250	給業界的快速警報 Rapid Alerts to Trade: 3
給消費者的食物警報 Food Alerts to Consumers: 2	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: 42	上載到食物安全中心網頁的新訊息 New Messages Put on the CFS Website: 41	