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在後疫情時代格外注重 商用廚房的食物安全

Paying Extra Attention to Food Safety in Commercial Kitchens in the Post-pandemic Era

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,
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隨着與2019冠狀病毒病相關的限制措施取消，堂食的顧客數目回升。這使食物安全對食肆來說尤為重要，特別是在疫後技術及經驗員工出現短缺的情況下。與在家煮食時通常只有一個人為一戶人配製食物的情況不同，商用廚房內可有多個包括廚師、廚房幫工和侍應在內的食物處理人員一起工作，為多人供應膳食。為防止食物中毒事故，商用廚房必須得到妥善管理，確保遵從食物安全規定。

With the lifting of COVID-19 related restrictions, more customers are returning to dine-in restaurants. This makes food safety more essential than ever for food premises especially when skilled and experienced workers are in short supply following the pandemic. Unlike home kitchens where usually only one person prepares the food for a household, commercial kitchens may have many food handlers such as chefs, kitchen helpers and waiters working together to cater for a large number of people. To prevent food poisoning, commercial kitchens must be well managed to ensure adherence to food safety requirements.

準備好重投業務了嗎？

檢視最近的食物中毒個案後，便會發現主要成因有進食生的食物、沒有徹底煮熟食物、存放食物的度及時間不當，以及包括食物至食物、設備至食物及人至食物在內的交叉污染。如果能讓食物處理人員接受能增進知識並改善態度和做法的合適食物安全培訓，這些問題便全都可以避免。

Ready to be Back to Business?

Examining the recent food poisoning cases related to restaurants, the major contributing factors were consumption of raw food, inadequate cooking, time and temperature abuse, and cross-contamination including food to food, equipment to food, and person to food. All of these problems can be avoided with appropriate food safety training that improves the knowledge, attitudes and practices of food handlers.



圖1：食物安全中心（食安中心）的「安樂食飯」網頁旨在向食物處理人員傳達最新的知識，保障消費者健康。
Figure 1: The “Safe Kitchen” website of the Centre for Food Safety aims to update food handlers’ knowledge and protect consumers’ health.

培訓是食物安全的關鍵

從部分食物業經營者的食物安全培訓模式可見，他們仍把食物安全視作常識的延伸。然而，為市民大眾供應食物時，單憑常識並不足夠。一些調查結果顯示，相較2019冠狀病毒病疫情爆發前，顧客把良好衛生視作選擇食肆時更重要的考慮因素。遵從良好衛生規範可保障顧客免受包括化學物質、玻璃碎片、塑膠碎片、昆蟲、細菌、毒素等食物危害。良好衛生規範是在食物鏈任何環節為提供安全及合乎衛生的食物而施加的基本措施和條件。舉例來說，食物業界要確保其處所清潔，特別是廚房、用具及接觸食物的設備，並採取措施防治蟲鼠和妥善處理廢物。食物處理人員必須先洗手才處理食物、處理即食食物時配戴即棄手套、穿著清潔的衣服，並遵照[食物安全五要點](#)工作。如感染疾病，便不應處理食物。為提升食物安全同時對餐飲業帶來長遠裨益，食物處理人員得到適當培訓至關重要。食物處理人員無論是全職、兼職或臨時員工，均應按其工作接受適當的食物衛生培訓。

食物處理人員不應僅受訓一次；定期接受再培訓能鞏固行為模式，讓人員有更多機會接觸並運用新學到的技巧。食物業經營者可為員工每年最少提供一次食物安全培訓。此外，衛生經理要清楚定期查考食物處理人員對保證食物安全的重要性。

廚房井然有序，風險自然更低

對本地食肆來說，交叉污染在其他風險因素中也許特別難以應對。食物業經營者需要在有限的空間配製多款菜式，應仔細考慮廚房的布置和清潔安排，以防交叉污染。商用廚房應使用獨立的雪櫃分開貯存生的食物和熟食或即食食物。工作枱面空間也應配合從烹煮到上碟的配製模式而設計。備製生的食物應使用指定的砧板和器具，並與熟食分開。銼盆不可處於污水有可能飛濺到清潔的器具、食物或處理食物空間的地方。在狹窄的空間或要在銼盆與工作枱面之間安裝屏障。砧板和器具使用後須立即清洗。配製下一道菜式前，應徹底擦拭清潔工作枱面。所有垃圾桶均應有蓋，垃圾應每天清倒。

食物業界應留意可能源自食物處理人員和環境的污染。洗手間和廚房的牆壁上可張貼海報或貼紙等視覺警報物品，提醒員工正確的手部衛生習慣和處理食物的正確方法。此外，地面、牆壁、天花和設備必須經常及定期清潔、消毒和保養，以清除食物污染物。業界應訂立時間表，列出須進行定期清潔的項目。

為協助業界遵從良好衛生規範並推廣在職培訓，食安中心推出了新的專題網站，名為「[安樂查飯](#)」。網站內有多種教育材料，包括指南、短片、提示卡等等。食物業經營者可鼓勵員工到訪有關網站。

Training is Key to Food Safety

Some food business operators (FBOs) still view food safety as an extension of common sense, as evidenced by their food safety training practices. However, a common sense approach alone is insufficient when serving food to the general public. Some surveys reported that good hygiene would be more of a factor in choosing a restaurant by customers than before the COVID-19 pandemic. Adhering to Good Hygiene Practices (GHPs) can protect customers from hazards in food, including chemicals, broken glass, plastic fragments, insects, germs, toxins, etc.. GHPs are fundamental measures and conditions applied at any step within the food chain to provide safe and wholesome food. For example, food businesses need to make sure their premises, especially kitchens, utensils and food contact equipment, are clean, and have pest control and proper waste disposal in place. Food handlers should wash their hands before handling food, wear disposable gloves when handling ready-to-eat food, wear clean clothing, and follow the [Five Keys to Food Safety](#) when working. They should refrain from handling food if they are sick. It is critical that food handlers receive appropriate training in order to improve food safety and add to long-term benefits in the catering industry. Whether full-time, part-time, or temporary, food handlers should receive food hygiene training suitable to their operations.

Training should not take place just once. Regular retraining sessions can enhance behaviour. This provides food handlers with repeated exposure and more chances to practice newly acquired skills. FBOs may provide food safety training to staff at least once a year. Additionally, hygiene managers need to be conscious of the importance of regularly checking on their food handlers to guarantee food safety.

Well-organised Kitchen, Lower Risk

Among other risk factors, cross-contamination may be especially hard for local restaurants to deal with. With a wide variety of dishes being prepared in a limited space, FBOs should carefully consider their kitchen setting and its cleaning to prevent cross-contamination. Commercial kitchens should use separate refrigerators for storing raw food and cooked food or ready-to-eat food. Worktop areas also need to be designed to follow a pattern of preparation, from cooking to plating up. Cutting boards and utensils should be designated for the preparation of raw foods and separate from cooked foodstuffs. Kitchen sinks must never be in an area where there is potential for contaminated water to splash on clean utensils, food or food preparation areas. In tight areas, a barrier may need to be installed between the sink and worktop area. Cutting boards and utensils should go straight into the wash, and worktops should be rigorously wiped and cleansed before preparation of the next dish. All rubbish bins should have covers and garbage should be disposed of on a daily basis.

Food businesses should pay attention to potential sources of contamination from food handlers and the environment. They can post visual alerts such as posters or stickers on the walls of toilets and kitchens to remind staff about proper hand hygiene and correct food preparation. In addition, frequent and regular cleaning, sanitising, and maintenance of floors, walls, ceilings and equipment are necessary for the removal of food contaminants. Food businesses should have a schedule which lists the items that require cleaning regularly.

To facilitate the adherence to GHPs by food businesses and promote on-the-job training, the CFS has launched a new thematic website called "[Safe Kitchen](#)", where various educational materials including handbooks, short videos, cues, etc. can be found. FBOs may wish to encourage staff to visit the website.



食物中的「超級細菌」

“Superbugs” in Foods

食物安全中心風險評估組
科學主任莊梓傑博士報告

Reported by Dr. Ken CHONG, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

抗菌素耐藥性構成全球性健康威脅，需要不同界別，包括從事食物業的人士迅速作出回應，因為食物，特別是食用動物能成為抗菌素耐藥性微生物傳播的源頭及媒介。多重耐藥性細菌（又稱「超級細菌」）會引發沒有或甚少抗菌素可用以治療的感染個案，其快速傳播特別值得關注。本文將討論食物內發現「超級細菌」的問題，以及如何能減低感染風險。

Antimicrobial resistance (AMR) is a threat to global health that necessitates quick cross-sectoral responses, including those from people involved in the food industry because food, especially food animals, can be sources of and vehicles for the spread of AMR microorganisms. The rapid spread of multidrug-resistant bacteria, or “superbugs”, which cause infections with few or no available antimicrobials for treatment, is of special concern. In this article, we will discuss the finding of “superbugs” in food, as well as what we can do to lower the risk of contracting them.

監察和監測食物中的「超級細菌」

Monitoring and Surveillance of “Superbugs” in Foods

人類可通過多個途徑受到抗菌素耐藥性微生物感染，當中包括其他人、受污染的食物、水、動物及環境。「健康一體」方式利用綜合監察監測系統，讓不同界別的數據可以作出比較，從而進行全面分析，以確定各種感染途徑佔抗菌素耐藥性在人類疾病中的確實負擔比例，並能作為以實據為本的措施的理據。

People can be exposed to AMR microorganisms through a variety of sources, including other people, contaminated food, water, animals, and the environment. Under the [One Health Approach](#), thanks to an [integrated monitoring and surveillance system](#), data comparison across sectors and comprehensive analyses to ascertain the contribution of various sources to the actual burden of AMR in human diseases is possible, which can support evidence-based measures.

在食物安全的環節上，該系統涵蓋食源性抗菌素耐藥性，兼顧收集數據以進行風險分析，以及趨勢分析、流行病學研究、食物來源解析研究及研究。一般來說，驗出抗菌素耐藥性微生物跟食物中毒個案中驗出病原體的處理方式不同，方式主要為收集數據以分析整體情況，然後採取相應的風險管理行動。此外，還要根據該綜合系統判斷人類感染個案的抗菌素耐藥性有否因著食源性抗菌素耐藥性的改變而產生變化，有關資料對制定對抗抗菌素耐藥性的策略非常重要。

For food safety components, the system covers foodborne AMR, which includes collection of data for risk analysis, as well as trend analysis, epidemiological studies, food source attribution studies, and research. In general, the detection of AMR microorganisms would not be handled in the way as the detection of pathogens in food poisoning cases, but more in the way of collating data for analysis of the whole picture followed by taking proportional risk management action. In addition, it is important to determine if there is a change in AMR among human infections in response to change in foodborne AMR, under the integrated system. Such information is important for the formulation of a strategy to tackle AMR.

要判斷食源性抗菌素耐藥性的狀況，需要收集食物樣本分析當中致病細菌和共生細菌。由於在隨機抽樣中發現「超級細菌」的情況並不常見，要以靈敏度較高的方法用以辨識「超級細菌」，方法是利用某種抗生素來篩檢抽取的樣本中特定的「超級細菌」。其他並不屬於「超級細菌」的細菌會被抗生素殺死，於是即使超廣譜乙內胺酶(ESBL)耐藥及耐碳青霉烯類腸桿菌科細菌等目標「超級細菌」的數量很少也會被發現。ESBL對至關重要的抗微生物藥物具有抗性，而具有此耐藥性特徵的細菌必須以碳青霉烯等僅存有效的抗生素對付。然而，碳青霉烯耐藥性也正在持續上升，因此密切關注這些「超級細菌」的趨勢（如發現特定的耐藥性特徵菌株或基因的個案有所增加）便十分重要。

To determine the state of foodborne AMR, food samples are gathered and analysed for bacteria, both pathogenic and commensal. A more sensitive method is also used to identify “superbugs”, which are infrequently discovered by random sampling. This is accomplished by using a particular antibiotic to screen collected samples for designated “superbugs”; other bacteria, but not “superbugs”, will be killed by the antibiotic. As a result, even though they are present in very low amounts, targeted “superbugs” like extended-spectrum β -lactamase (ESBL)-producing and carbapenem-resistant Enterobacteriaceae can be detected. ESBLs confer resistance to critically important antimicrobial drugs and bacteria carrying the resistance trait

must be treated with antibiotics of last resort, like carbapenem antibiotics. Yet, resistance to carbapenem is on the rise too. As such, it is important to keep an eye on the trends of these “superbugs”, for example, increase in the prevalence of specific strains or the genes of resistant traits.

即食食物的「超級細菌」風險

要追蹤接近食物鏈末端的食源性抗菌素耐藥性，收集動物產品外也會收集即食食物。在即食食物發現「超級細菌」的風險在於「超級細菌」是否食源性致病菌，即通過進食食物感染疾病。屬食源性致病菌的「超級細菌」感染症狀與可用抗生素消滅或抑制的致病菌感染症狀相似，但病情嚴重的感染個案或難以治療。另一方面，無論所發現的「超級細菌」有否致病性，抗菌素耐藥性基因也有可能傳播至人體腸道內的其他細菌。然而，基因轉移純屬偶然，加上細菌不一定會停留在人體內，因此難以斷定這種傳播狀況相隔多久會出現。目前還沒有證據表明，長期進食受「超級細菌」污染的食物會導致人體內抗菌素耐藥性的種類增加。即便如此，市民也應盡量減少接觸抗菌素耐藥性微生物，尤其是高危人士，因為他們較易因食源性感染而患病。

Risk of “Superbugs” in Ready-to-eat Foods

To track foodborne AMR near the end of the food chain, ready-to-eat foods can be collected along with animal products. The risk of ready-to-eat foods found with “superbugs” depends on whether they are foodborne pathogens, i.e. causing disease through the consumption of food. For “superbugs” that are foodborne pathogens, symptoms of infections will be similar to those caused by pathogens that can be killed or inhibited by antibiotics, while the infections can be difficult to treat in serious cases. On the other hand, no matter if the “superbug” found is pathogenic or not, there could be the possibility of the spread of AMR genes to other bacteria in the human gut. However, determining how frequently it occurs is difficult because gene transfer is a random occurrence and bacteria do not always stay in the body. There is currently no conclusive evidence that long-term consumption of food

食物安全五要點 Five Keys	建議 Advice(s)	為何重要？ Why important?
精明選擇 Choose 	<ul style="list-style-type: none"> 避免食用生或未煮熟的食物，尤其是高危人士 Avoid eating raw or undercooked food, especially for susceptible populations 	<ul style="list-style-type: none"> 生或未煮熟的食物未經熱處理，可能含有「超級細菌」 Without heat treatment, raw or undercooked food can contain “superbugs”
保持清潔 Clean 	<ul style="list-style-type: none"> 徹底清洗蔬果 處理食物前清潔雙手和食物準備區 Wash fruit and vegetables thoroughly Clean hands and food preparation areas before handling foods 	<ul style="list-style-type: none"> 水洗可去除部分食物表面的「超級細菌」 防止食物被「超級細菌」交叉污染 Washing can partially remove superbugs from food’s surface Prevent cross-contamination of foods with “superbugs”
生熟分開 Separate 	<ul style="list-style-type: none"> 將熟食或即食食物與生的食物分開存放 用不同工具分開處理熟食或即食食物和生的食物 Store cooked or ready-to-eat foods and raw foods separately Handle cooked or ready-to-eat foods and raw foods with separate utensils 	<ul style="list-style-type: none"> 防止熟食或即食食物受到「超級細菌」交叉污染 Prevent cross-contamination of cooked or ready-to-eat foods with “superbugs”
煮熟食物 Cook 	<ul style="list-style-type: none"> 徹底煮熟食物 Cook food thoroughly 	<ul style="list-style-type: none"> 烹煮可有效殺死「超級細菌」 Cooking is effective to kill “superbugs”
安全溫度 Safe Temperature 	<ul style="list-style-type: none"> 如不立即食用，應將凍食保持在攝氏4度或以下，熟食則抱持在攝氏60度以上 Keep cold food at 4°C or below and hot food over 60°C if not consumed at once 	<ul style="list-style-type: none"> 安全溫度可避免細菌滋生 Safe temperatures can prevent bacterial growth

圖2: 運用食物安全五要點對抗「超級細菌」
Figure 2: Combating “superbugs” with 5 Keys to Food Safety

我可如何避免接觸食物中的「超級細菌」？

食源性抗菌素耐藥性增加，無疑會提高感染抗菌素耐藥性細菌的風險，但我們不應以斷定細菌是否具有耐藥性來決定採取什麼行動。抗菌素耐藥性微生物跟食源性致病菌同樣存在於環境中，因此食物從農場到餐桌均有可能受污染。要減低感染「超級細菌」和食源性致病菌的風險，應在日常生活中遵循[食物安全五要點](#)。此外，高危人士，例如孕婦、嬰幼兒、長者及免疫力較低人士（包括長期病患或正接受抗生素治療、使用抗胃酸藥、長期服用類固醇或抗排斥藥物等人士）的風險較高，故應避免進食未經過充分烹煮來殺死「超級細菌」和食源性致病菌的生或未煮熟即食食物。

contaminated with “superbugs” results in an increased range of AMR in a person. That said, exposure to AMR microorganisms should be minimised, particularly by vulnerable populations who are more susceptible to foodborne infections.

What Can I Do to Avoid “Superbugs” in Food?

The rise in foodborne AMR would undoubtedly raise the risk of contracting AMR bacteria, but we do not act by determining whether or not bacteria are resistant. The contamination of food may occur from farm to fork as AMR microorganisms exist in the environment like foodborne pathogens. To reduce the risk of contracting both “superbugs” and foodborne pathogens, we can adhere to the [5 Keys to Food Safety](#) in our everyday lives. On the other hand, susceptible populations such as pregnant women, infants and young children, the elderly and people with weakened immunity (i.e. people with chronic diseases or those on antibiotics treatment, antacid and long-term steroids or drugs given to prevent transplant rejection, etc.) are of higher risk and should therefore avoid eating raw and undercooked ready-to-eat foods that have no sufficient cooking to kill “superbugs” and foodborne pathogens.

碘含量豐富的食物 — 你吃得足夠嗎？ Iodine-rich Foods - Are You Having Enough?

碘是人體產生甲狀腺激素甲狀腺素所必需的營養素。甲狀腺素有助神經系統生長，因此攝入足夠的碘對孕婦、授乳的母親、嬰兒和幼童尤其重要。一項由衛生署於2021年在本地進行的研究顯示，本港學童從膳食攝入的碘量足夠。然而，沒有服用碘補充劑的授乳母親及孕婦則碘攝入量不足。

Iodine is a nutrient essential for the production of the thyroid hormone, thyroxine, in the body. Thyroxine facilitates the development of the nervous system, so it is especially important for pregnant women, breastfeeding mothers, infants and children to have enough iodine intake. A [local study in 2021](#) by the Department of Health suggested that schoolchildren in Hong Kong are getting enough iodine through their diets. However, lactating mothers and pregnant women who do not take iodine supplements do not have enough iodine intake.

人體需要少量但持續每日攝入碘。在均衡飲食中，進食碘含量豐富的食物如乾海帶及紫菜、藻類（紫菜）零食、介貝類水產、海魚、蛋及奶類製品可達到[建議每日攝取量](#)。此外，世界衛生組織建議使用碘鹽解決缺碘的情況。懷孕或授乳的婦女應就額外碘量要求徵詢醫護人員的意見。

The human body only requires a tiny but consistent daily intake of iodine. Within a balanced diet, one can consume iodine-rich food like dried kelp and laver, seaweed (nori) snacks, shellfish, marine fish, eggs and dairy products to meet the [daily recommended intake](#). The World Health Organization also advises using iodised salt to address iodine insufficiency. Women who are pregnant or lactating should obtain advice from healthcare professionals regarding additional iodine requirements.

確保冰凍甜點的食物安全 Securing Food Safety of Frozen Confections

冰凍甜點屬高風險食物，因為在食用前無須經過額外的熱處理來殺滅致病菌，而且酸鹼值接近中性，營養成分豐富，是利於微生物滋生的環境。微生物污染可以在多個生產階段產生，例如加入受污染的堅果、水果和果汁等配料和使用不潔的調配分售機等。貯存度不當也會為細菌滋生提供有利的環境。

Frozen confections are high-risk food as they do not require further heat treatment to eliminate pathogens before consumption. Their nearly neutral pH and nutrient-rich constituents also make them a good growth medium for microorganisms. Microbial contamination can occur at various stages of production, such as adding contaminated ingredients like nuts, fruits and juices, and using unclean dispensing machines. Improper storage temperatures also provide a favourable environment for bacterial growth.

巴士德消毒法能減少冰凍甜點的微生物數量。因此，加進製成品的配料應在使用前進行巴士德消毒或適當的熱處理。調配分售機及用具應定期清潔和消毒，以減低微生物危害。冰凍甜點在貯存及運輸過程中應存放於適當溫度，以抑制細菌滋生。市民購買冰凍甜點時，應留意食物標籤，包括致敏物資訊和到期日。

Pasteurisation decreases the number of microorganisms in frozen confections. Ingredients added to finished products should therefore be pasteurised or properly heat-treated before use. Dispensing machines and utensils should be regularly cleaned and disinfected to reduce microbiological hazards. Frozen confections should be kept at proper temperatures during storage and transportation to inhibit bacterial growth. When buying frozen confections, the public is advised to pay attention to food labels, including allergen information and expiry dates.

如需更多資料，請參考以下相關食物安全指引：[《批發層面製造的冰凍甜點 - 給食物業的食物安全指引》](#)和[《在零售點配製即時食用的冰凍甜點 - 給食物業的食物安全指引》](#)。

For more information, please refer to the set of food safety guidelines on “[Frozen Confections Manufactured at Wholesale Level - Food Safety Guidelines for Food Businesses](#)” and “[Frozen Confections Prepared at Points of Sale for Immediate Consumption - Food Safety Guidelines for Food Businesses](#)”.



風險傳達工作一覽（二零二三年三月）

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