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焦點個案 Incident in Focus

二零一六年有關食肆及食物業的食源性 疾病個案回顧

Review of Foodborne Disease Outbreaks Related to Food Premises and Food Business in 2016

食物安全中心
食物事故應變及管理小組
丘瀨慈醫生報告

Reported by Dr. Stella YAU, Medical & Health Officer,
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本文就食物安全中心(中心)在二零一六年接獲有關本地食肆及食物業的食物中毒個案作出回顧。

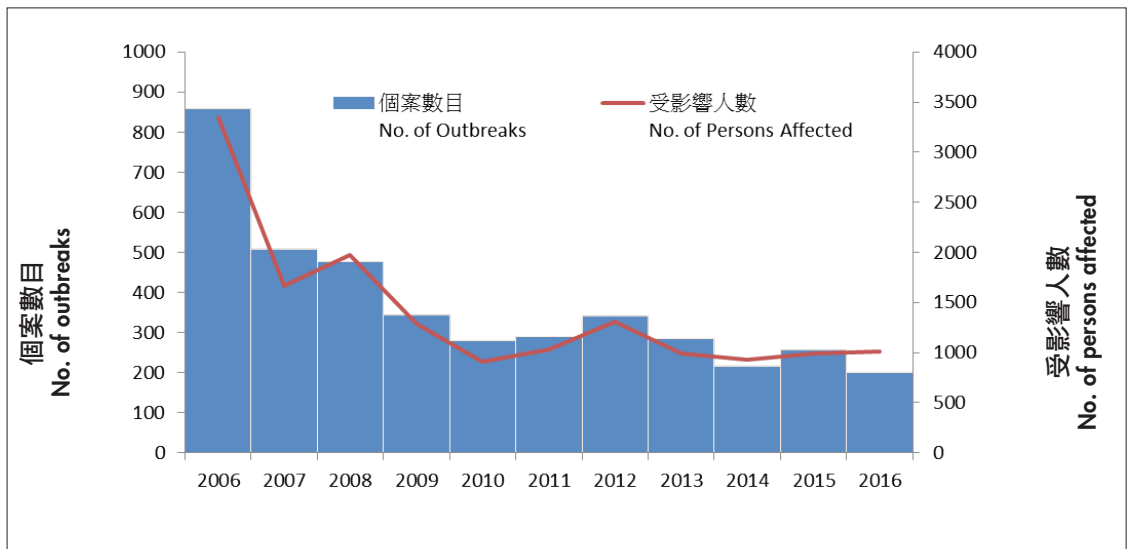
與本地食肆及食物業相關的食源性疾病個案

中心的職責之一是與衛生署合作調查及監控有關本地食肆及食物業的食源性疾病個案。這些個案均是由衛生署衛生防護中心轉介。在二零零六至二零一零年,該類轉介個案逐年下降,之後有關數字保持平穩(見圖)。在二零一六年,中心接獲201宗由衛生防護中心轉介的該類個案,為記錄最低。在該201宗個案中,共有1 011人受影響。

This article reviews the food poisoning outbreaks related to local food premises and food business reported to the Centre for Food Safety (CFS) in 2016.

Foodborne Disease Outbreaks Related to Local Food Premises and Food Business

In collaboration with the Department of Health (DH), the CFS is responsible for the investigation and control of foodborne disease outbreaks related to local food premises and food business that are referred from the Centre for Health Protection (CHP) of DH. The annual number of referrals decreased generally from 2006 to 2010 and has since remained relatively stable (see Figure). In 2016, the CFS received 201 such referrals from CHP, a record low. These 201 cases affected 1 011 persons.



2006至2016年有關食肆 / 食物業的食源性疾病個案數目及受影響人數。
Number of foodborne disease outbreaks related to food premises and food business and the corresponding number of persons affected from 2006 to 2016.

病原體及成因

就微生物病原體的懷疑個案,中心在二零一六年進行調查的所有食源性疾病個案中,由細菌引起的仍然佔大多數(73%),排在頭三位的是沙門氏菌、副溶血性弧菌及蠟樣芽孢桿菌。至於病毒所引起的食源性疾病個案,因進食生的或未徹底煮熟的雙殼貝類而受感染的個案,諾如病毒是唯一的病毒性病原體,佔轉介個案總數約18%。

Causative Agents and Contributing Factors

For the cases with the suspected microbiological causative agents being identified, bacterial foodborne agents remained the leading causes (73%) of all foodborne disease outbreaks investigated by the CFS in 2016, with *Salmonella*, *Vibrio parahaemolyticus* and *Bacillus cereus* being the top three incriminated bacterial pathogens. For the viral causes, norovirus, associated with the consumption of raw/undercooked bivalves, was found to be the only incriminated viral agent causing around 18% of all the outbreak referrals.

Of the 201 cases investigated last year, the most

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在去年調查的201宗食源性疾病個案中，最常見的成因分別是進食生吃的食物(例如受諾如病毒污染的蠔)、食物處理人員或用具造成污染，以及食物未經徹底煮熟。

我們會於下文討論二零一六年發生的兩宗大型食物中毒事故，說明具有良好衛生和食物安全守則對保障食物安全的重要性。

12宗醬料引致集體食物中毒的個案

二零一六年四月，中心接獲涉及一間食肆的12宗集體食物中毒報告，共32人受影響。四名患者的糞便樣本檢出對D組沙門氏菌呈陽性反應。根據這些個案的流行病學調查顯示，有關的食物中毒個案涉及進食以酸忌廉作配料的四款不同食品。其中一個酸忌廉樣本的檢測結果顯示對D組沙門氏菌呈陽性反應。除了酸忌廉外，有關人員在調查期間還收集了牛油果醬進行檢測，結果顯示對D組沙門氏菌呈陽性反應。在供應層面進一步收集的樣本，檢測結果對沙門氏菌及其他導致食物中毒的有機體均呈陰性反應。兩名食物處理人員的糞便樣本分別檢出對B及C組沙門氏菌呈陽性反應，但均被視為與事故無關。

所有食物中毒個案均是在食物及環境衛生署進行巡查前的連續四天內發生。我們在現場調查時發現，食肆在期間曾把一大瓶酸忌廉重新分裝為小瓶，並在重新分裝過程中經多重處理。涉事的酸忌廉可能是導致是次食物中毒事故的傳播媒介。食物處理人員沒有遵行食物衛生守則，與其他食物交叉污染，以及重新分裝和不斷添加酸忌廉，均對食物構成交叉污染風險。

中心已向食肆東主及其僱員作出衛生建議。涉事食品及所有有關醬汁(包括酸忌廉)即時暫停出售，以防止再發生食物中毒事故。其後，中心再無接獲食物中毒個案報告。

進食自助餐引致食物中毒的個案

二零一六年六月，中心接獲22宗涉及在一間食肆進食自助餐的集體食物中毒報告，共108人受影響。六名患者提供了糞便樣本，以供檢測，全部樣本均檢出對副溶血性弧菌呈陽性反應。副溶血性弧菌是一種常見，可導致致食物中毒的有機體，常見於海洋環境及海產。

流行病學評估及現場調查顯示，自助餐所提供的一些冷食類海產可能是致病源頭。現場調查發現，即食冷藏熟食龍蝦放在一個洗滌盆解凍，旁邊的洗滌盆則用作清洗生海產。食物被生海產交叉污染，可能是導致發生食物中毒事故的原因。然而，在食肆及供應層面收集的即食冷食類海產樣本，包括龍蝦、凍蝦及凍蟹，檢測結果顯示對副溶血性弧菌呈陰性反應。

中心已向食肆東主及其僱員就食物、環境及個人衛生作出衛生建議，並進行跟進巡查，以確保該食肆已採取適當的食物安全措施。在採取監控措施後，中心並沒有接獲新的個案。

上文所述的兩宗食物中毒事故顯示交叉污染對食物安全構成很大風險。不過，只要加強對食物處理人員提供培訓，便可避免食物交叉污染，繼而導致食物中毒。培訓是員工得以遵行食物安全守則的其中一個重要元素。

結語

雖然食物中毒個案數目在過去數年一直維持在相對較低的水平，但不容掉以輕心。政府仍會一如既往努力保障食物安全，而業界及市民亦應實踐及遵守“食物安全五要點”，以預防日後發生食物中毒個案。此外，食肆管理人員應向員工提供更多培訓和監察員工，以加強食物安全。

frequently identified contributing factors are consumption of raw food (e.g. oyster with norovirus), contamination by food handlers or utensils and inadequate cooking.

We discuss below are two major food poisoning outbreaks that occurred in 2016 to illustrate the importance of good hygiene and food safety practices in safeguarding food safety.

12 Clusters of Food Poisoning Outbreaks Related to the Sauces

In April 2016, 12 clusters of food poisoning outbreaks in relation to a restaurant affecting a total of 32 persons were reported to the CFS. Stool samples of four of the victims were tested positive for group D *Salmonella*. Epidemiological investigation of these clusters suggested that food poisoning was related to the consumption of four different incriminated food items, all of them contained sour cream sauce as ingredient. A food sample of this sauce was tested positive for group D *Salmonella*. In addition to sour cream sauce, samples of guacamole sauce collected during investigation were also tested positive for group D *Salmonella*. Further sample collected at the supplier level were tested negative for *Salmonella* and other food poisoning organisms. Stool samples of two food handlers were tested positive for *Salmonella* group B and group C respectively, but they were regarded as incidental findings.

All the clusters happened within four consecutive days and before the visit of the Food and Environmental Hygiene Department (FEHD). Our field investigation revealed that during this period, one large bottle of sour cream sauce was re-packed into smaller bottles and multiple handling occurred during the re-packing procedure. The incriminated sour cream sauce was the probable vehicle for transmission of this food poisoning outbreak. Lapse of food hygienic practices by food handlers, cross contamination with other foods, re-packing and continual topping-up of sour cream sauces posed a risk of cross-contamination.

Health advice was given to the restaurant operators and their staff. Sale of the incriminated food items and all related sauces including the sour cream sauce was suspended immediately to curb further cases. No further outbreaks were received afterwards.

Food Poisoning Outbreaks Related to Consumption of Buffet Meals

In June 2016, 22 clusters of food poisoning outbreaks related to consumption of buffet meals in a restaurant were reported to the CFS, a total of 108 persons reported to be affected. Six victims had submitted stool specimens for testing and all were tested positive for *Vibrio parahaemolyticus* (VP). VP is a common food poisoning organism and often found in the marine environment and seafood.

Epidemiological assessment and field investigation indicated that some cold served seafood provided at the buffets were possible illness sources. On-site investigation revealed that the ready-to-eat frozen cooked lobster was defrosted in a basin next to another basin for washing raw seafood. Cross-contamination by raw seafood might have contributed to the outbreak. However, the cold served RTE seafood samples, including lobsters, cold shrimps and cold crabs collected at the restaurants and supplier level showed negative results.

Health advice on food, environmental and personal hygiene was given to the restaurant operators and their staff. Follow up visits were also conducted to ensure proper implementation of food safety measures. No additional cases have been reported after the control measures were implemented.

Both food poisoning outbreaks discussed above demonstrated that cross-contamination posed high risk to food safety. Cross-contamination and the resulting food poisoning could, however, be prevented by improving the training to food handlers, one of the key elements of good food hygiene practice.

Conclusion

Although the number of food poisoning outbreaks remains at a relatively low level over the past few years, there is no room for complacency. While the government will continue to be vigilant in safeguarding food safety, the trade and the public are advised to adopt and adhere to the “Five Keys to Food Safety” in order to prevent the occurrence of future outbreaks. Moreover, the management of food premises is encouraged to provide more training and monitoring to staff to enhance food safety.

在肉類中使用食物添加劑 The Use of Food Additives in Meats

食物安全中心
風險評估組
科學主任陳家茵女士報告

Reported by Ms. Michelle CHAN, Scientific Officer,
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肉類是蛋白質、維他命及礦物質的來源，可用作烹調不同的肉類菜式或製成加工肉製品。為加強食物安全和提高食物質素，在加工處理肉類時安全地使用食物添加劑是沿用多時的做法。然而，一些消費者對食物添加劑的使用仍有疑慮。我們將於本文介紹若干添加在肉類中的食物添加劑的應用與安全，以及相關規例。

什麼是食物添加劑？

一般而言，食物添加劑是刻意添加在食物中的物質，用作發揮一些技術用途，例如改善食物的味道、外觀、質感或穩定性，以及延長食物的保質期。

為何在肉類中使用食物添加劑？

肉類是容易腐爛的食品，若沒有妥善保存，可能會助長細菌、酵母菌及霉菌等微生物滋長，繼而令肉類腐壞，更甚者或會產生毒素。此外，肉類易受脂肪氧化影響，可能會出現酸敗，伴隨“油膩”味。為了延長肉類的保質期和減少浪費，肉類可能會加入防腐劑作為抗菌劑，以防止或抑制微生物滋長；又或使用抗氧化劑防止肉類因氧化作用而變壞。

同時，肉類亦可能加入用作提高質量的其他食物添加劑，例如增味劑以提升肉味，或穩定劑以改善肉類製品的質感。

可能添加在肉類的食物添加劑

磷酸鹽在肉類加工方面有多種用途，除了抑制微生物在肉類中滋長，亦可減少肉類出現酸敗。此外，磷酸鹽可令肉類保存更多水分，增加肉汁，易於咀嚼。磷酸鹽亦可令肉類製品(例如香腸)產生堅實的肌肉蛋白結構以穩定肉質，即使肉類製品加熱後，仍能凝聚在一起。

亞硝酸鈉添加在加工肉類(例如午餐肉)，可發揮多種技術用途，包括：令加工肉類在加熱後仍能呈紅色和給予其獨特的醃製肉風味以吸引部分消費者；減慢氧化過程；而最重要的是，抑制細菌(肉毒桿菌)滋長。肉毒桿菌所產生的孢子在環境中廣泛存在，容易污染肉類/食物，並在無氧環境下生長，產生神經性肉毒桿菌毒素。進食處理不當而受肉毒桿菌毒素污染的加工食物可能會引致致命疾病。另一方面，經進食而攝入的亞硝酸鹽，在某些情況下，或會在人類的消化腸道內轉化為N-亞硝基化合物。N-亞硝基化合物是可致癌物質。鑑於現時並無其他替代品可取代亞硝酸鈉在加工肉類所帶來的相同多種效用，要達到這些效用，亦只需使用極少量亞硝酸鹽而亞硝酸鈉的好處超過其風險，故多個國家/地方容許在多種加工肉類使用少量亞硝酸鈉。

使用食物添加劑的一般原則

一般而言，食物添加劑的使用必須是有利的或能發揮特定的技術用途。更重要的是，按建議使用量加入食物添加劑不應對消費者的健康帶來可見風險，亦不得誤導消費者。例如，二氧化硫常用於多種食物作防腐劑，但不得添加在新鮮肉類，理由是二氧化硫可減慢肉類的氧化過程，令肉類保持吸引人的新鮮色澤(紫紅色或鮮紅色)，而不會轉為褐紅色，誤導消費者以為有關肉類是新鮮的。

Meat is a source of protein, vitamins and minerals. It can be used to prepare different meat dishes and processed meat products. To improve food safety and quality, food additives had been safely used in meat processing for long time. But some consumers still have concerns over the use of food additives. In this article, we will introduce the application, safety and regulation of certain food additives in meats.

What are Food Additives?

Generally speaking, food additives are substances intentionally added to food to serve certain technological functions, such as to improve taste, appearance, texture or stability, and to prolong shelf life of foods.

Why Food Additives are Used in Meats?

Meat is a perishable commodity. If it is not kept properly, it may support growth of microorganisms such as bacteria, yeasts and moulds which can spoil the meat and, even worse, produce toxins. Meat is also susceptible to fat oxidation and may become rancid with off-flavour. In order to extend the shelf life of meat and reduce wastage, preservatives are added as antimicrobials to prevent or retard the growth of microorganisms whereas antioxidants are used to act against deterioration of meat due to oxidation.

Meanwhile, other additives may be applied in meats to improve sensory quality, e.g. flavour enhancer to intensify meat flavour or stabiliser to enhance texture of meat products.

Food Additives that may be Added to Meats

Phosphates have wide application in meat processing. They can retard microbial growth and reduce rancidity in meat. In addition, phosphates increase the water-holding capacity of meats making them juicy and easily chewable. They also stabilise the texture of meat products like sausages by creating a strong muscle protein structure that hold the product together after heat treatment.

Sodium nitrite may be added in processed meat such as luncheon meat to serve various technological functions including impart heat resistant red colour and specific curing flavour which is attractive to some consumers, retard oxidative process and most importantly, inhibit growth of the bacterium, *Clostridium botulinum*. Spores produced by *Clostridium botulinum* exist widely in the environment, easily contaminate the meat and may grow and excrete neurotoxic botulinum toxin in the absence of oxygen. Consumption of improperly processed food contaminated with botulinum toxin can lead to life-threatening disease. Ingested nitrite, on the other hand, may be transformed to N-nitroso compounds in human digestive tract under certain conditions. N-nitroso compounds are probable carcinogens. In view that no alternatives have been identified to replace sodium nitrite for bringing the same multifunctional effects in processed meat, such effects are achieved with extremely small amount of nitrite, and that the advantages outweigh the risks, sodium nitrite is allowed to be used in some types of processed meat at low levels across different countries/places.

General Principles for Using Food Additives

Overall speaking, the use of food additives is justified only when such use has an advantage or serves particular technological function(s). More importantly, it should not present an appreciable health risk to consumers at the intended level of use and their uses should not mislead consumers. For example, sulphur dioxide, a common preservative in many foods, is prohibited to be added to fresh meat as it can delay oxidative process that keeps the desirable fresh meat colour (purplish-red or cherry-red) from changing to brownish-red colour, giving consumers the false impression that the meat is still fresh.



香港的消費者可享用來自世界不同地方的各式各樣肉類及肉類製品。香港已制定規管及監察制度，以確保這些食品可供安全食用。
Consumers in Hong Kong enjoy a wide range of meat and meat products imported from various places around the world. Regulatory and surveillance system is in place to ensure they are safe for consumption.

此外，業界應按照《優良製造規範》內的規定使用食物添加劑，所添加的分量只限於在食物中達到預期技術效用所需的最低分量。

香港如何規管有關的食物添加劑？

在香港，有出售的食物必須適合人類食用。在本地法例中，《食物內防腐劑規例》(第132BD章)訂明在指明食物(包括肉類)可使用的防腐劑及抗氧化劑的種類及最高准許含量。

食物業界應注意，不同國家/地方就肉類可使用的食物添加劑可能有所分別，故須確保產品符合當地的法規。

透過閱讀食物標籤作出知情選擇

消費者可閱讀包裝上的食物配料表，得知有關食物有否加入食物添加劑並作出知情的選擇。

總的來說，要獲得由進食肉類而帶來的好處，必須時刻緊記：向可靠的店舖購買肉類並將其徹底煮熟；而作為均衡飲食的一部分，進食肉類的分量亦要適中。

Moreover, food additives should be used under conditions of Good Manufacturing Practice, when the amount added to food is limited to the lowest possible level necessary to accomplish the desired technological effect.

How are Relevant Food Additives Regulated in Hong Kong?

In Hong Kong, all foods for sale must be fit for human consumption. In the local legislation, the Preservatives in Food Regulation (Cap. 132BD) specifies the types of permitted preservatives and antioxidants and their respective maximum permitted levels in specified foods including meats.

Food trade should be aware that the use of food additives in meats may vary between countries/places. They must make sure that their products comply with relevant local regulations.

Make Informed Choices by Reading Food Labels

For consumers, they can make informed choices and check if food additives are present by reading the ingredient list on the food package.

All in all, in order to enjoy the benefits of consuming meat, it is always prudent to purchase meats from reliable shops, cook them thoroughly and consume in moderation as part of a balanced diet.



巴西肉類事件

二零一七年三月二十一日，因應巴西肉類事件的報道，食物安全中心(中心)採取預防措施，暫時禁止來自巴西的所有冷藏及冰鮮肉類及禽肉進口。由於情況不斷變化，巴西當局其後通知香港，表示巴西已把禁止出口範圍擴大至21間接受調查的廠房。經考慮最新的資料(包括巴西當局所提供的資料)後，中心在二零一七年三月二十八日調整暫時禁止進口的措施，把範圍收窄至巴西當局早前公布的21間被調查的廠房。

自實施暫時禁止進口措施以來，中心已加強監察來自巴西的肉類。截至四月十八日，中心在進口及零售層面共抽取了202個樣本作肉類腐壞及其他食物安全指標(例如金屬雜質)檢測。所有樣本均通過檢測。在過去三年，透過恆常的食物監察計劃，中心曾抽取17 060個肉類及禽肉樣本進行檢測，其中36個樣本不合格，但全部不是來自巴西。

然而，不論來源地，生肉往往含有有害生物，例如，沙門氏菌可存在於生禽肉，難以消滅。為免患上食源性疾病，消費者應徹底煮熟生肉，處理生肉後徹底清潔和抹乾雙手，並確保曾接觸生肉的所有用具均已清洗和抹乾，以避免交叉污染。

香港與巴西當局一直就此事件保持密切聯繫，並會因應最新情況適當調整進口限制及其他跟進行動。

Brazilian Meat Incident

On 21 March 2017, in view of the reports of the Brazilian meat incident, the Centre for Food Safety (CFS) has, as a precautionary measure, temporarily suspended all import of frozen and chilled meat and poultry meat from Brazil. As the case evolved, the Brazilian authorities informed Hong Kong later that Brazil has extended its scope of export ban to the 21 plants which were under investigation. Taking into consideration the latest information available including those provided by the Brazilian authorities, the CFS on 28 March 2017 has adjusted its import suspension by narrowing the restriction to the 21 plants under investigation as announced by the Brazilian authorities earlier.

Since the import suspension, the CFS has enhanced surveillance on meats from Brazil. As of 18 April, 202 samples were taken at the import and retail level for testing of meat deterioration and other food safety indicators (such as metallic contaminants). All samples passed the tests. In the past three years, under the routine food surveillance programme, the CFS took 17 060 samples of meat and poultry meat for testing and all the 36 unsatisfactory samples identified were not from Brazil.

Nevertheless, raw meats, regardless of their origins, often contain harmful organisms. In particular, *Salmonella* can be found in raw poultry which is hard to be eliminated. To prevent foodborne illnesses, consumers should cook all raw meats thoroughly, wash and dry hands thoroughly after handling raw meats, and ensure all utensils that have been in contact with the raw meats are properly washed and dried to avoid cross-contamination.

Hong Kong has been maintaining close liaison with the Brazilian authorities on the issue and will suitably adjust the import restriction and other follow-up action in response to the latest development.

風險傳達 工作一覽 Summary of Risk Communication Work

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