

食物安全焦點

Food Safety Focus



食物安全中心
Centre for Food Safety

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食物中的李斯特菌

Listeria monocytogenes in food

食物安全中心 Reported by Ms. Janny MA, Research Officer,

風險評估組 Risk Assessment Section,

研究主任馬嘉明女士報告 Centre for Food Safety

近日有關受李斯特菌污染食品的回收行動

二零零七年二月十八日,美國農業部轄下食物安全及檢察局宣布,食物製造商 Carolina Culinary Foods 回收可能受李斯特菌污染的全熟即食雞柳產品。二月二十八日,該公司進一步擴大回收的產品項目。食物安全中心(中心)因應事件立即與美國當局聯絡,又呼籲零售商停售及市民停吃受影響批次的產品。中心會繼續留意有關情況,並在有需要時採取行動。

李斯特菌的特點

李斯特菌是一種致病細菌,普遍存在於環境中,特別是泥土、植物、動物飼料和人類及動物糞便。這種細菌能在低至攝氏零度的溫度下生存及繁殖,但可在正常烹煮溫度下輕易殺死。其他有利李斯特菌繁殖的條件見於表一。進食受李斯特菌污染的食物可令人患上李斯特菌病。

表一:有利李斯特菌繁殖的條件

Table 1: Conditions supporting the growth of *Listeria monocytogenes*

溫度* Temperature*	0°C - 45°C
酸鹼值 pH	4.4 - 9.4
水活性 Water Activity	≥ 0.92

食源性李斯特菌病是一種較罕見但死亡率高(20%至30%)的嚴重疾病。李斯特菌主要影響初生嬰兒、長者和免疫力較低的人(例如愛滋病、糖尿病、癌症和腎病人)。患者通常會在進食受污染食物後三至七十天(預計潛伏期中位數為三星期)內出現病徵,包括類似感冒症狀、嘔心、嘔吐、腹部痙攣、腹瀉、頭痛、便秘及持續發燒。大部分人在感染此病後多數是全無症狀的。不過,嚴重感染個案會出現敗血病和腦膜炎。

孕婦須特別留意避免受李斯特菌感染。因為即使症狀可能較輕微,但細菌或會透過胎盤傳染給胎兒,可能引致流產、死胎、圍產期敗血病和初生嬰兒腦膜炎。

較高危食物

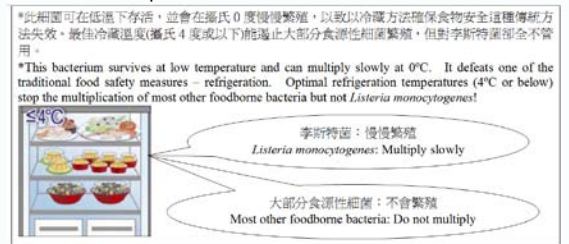
李斯特菌散布於不同的環境和食物中。如時間充裕,李斯特菌可在冷藏溫度下大量繁殖,因此保質期較長的即食食物如軟芝士和即食家禽及肉類為最高危(圖一)。不過,結冰環境卻不利李斯特菌繁殖。

Recent Recall on *Listeria monocytogenes* contaminated food

On 18 February 2007, the Food Safety and Inspection Service of the US Department of Agriculture announced that the food manufacturer, Carolina Culinary Foods, was recalling a fully cooked ready-to-eat (RTE) chicken breast strips product that might be contaminated with *Listeria monocytogenes*. The company further expanded the recall on 28 February 2007. The Centre for Food Safety (CFS) promptly contacted the US authority and made an appeal to retailers and the public to stop selling or consuming the affected batches of products. The CFS would continue to monitor the situation and take actions as necessary.

Features of *Listeria monocytogenes*

Listeria monocytogenes is a pathogenic bacterium. It is universally found in the environment, particularly in soil, vegetation, animal feed, and in human and animal faeces. Such bacterium can survive and multiply at temperature as low as 0°C, but can be easily destroyed under normal cooking temperature. Other conditions supporting the growth of *Listeria monocytogenes* are listed in Table 1. Consuming *Listeria* contaminated food may lead to the development of a disease called listeriosis.



Foodborne listeriosis is a relatively rare but serious disease with high fatality rates (20%–30%). *Listeria* predominantly affects newborns, elderly and immunocompromised individuals such as patients with AIDS, diabetes mellitus, cancer or kidney disease. Symptoms usually appear within 3 to 70 days (estimated median incubation period is three weeks) after consuming contaminated food. The disease symptoms include flu-like symptoms, nausea, vomiting, abdominal cramps, diarrhoea, headache, constipation and persistent fever. Asymptomatic infection probably occurs in most people. However, serious infections of *Listeria monocytogenes* are manifested by septicaemia and meningitis.

Prevention of *Listeria* infections is of major concern in pregnant women. Even though symptoms may be relatively mild in mothers, the passage of *Listeria monocytogenes* through the placenta may cause miscarriage, stillbirth or perinatal septicaemia and meningitis in the newborns.

Foods at Higher Risk

Listeria monocytogenes is widely dispersed in the environment and foods. RTE foods with long shelf lives under refrigeration such as soft cheeses and RTE poultry and meat pose the greatest risk as *Listeria monocytogenes* may grow to significant numbers at refrigeration temperatures when given sufficient time (Figure 1). However, the growth of *Listeria monocytogenes* is not supported under freezing condition.

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焦點個案
Incident in Focus

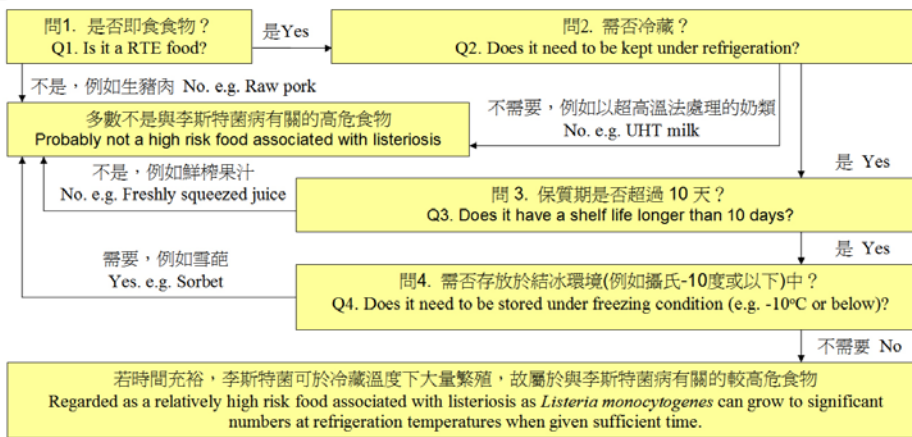
李斯特菌病的故事

李斯特菌病無分國界，卻是一種並不常見的傳染病。世界各地爆發的大規模李斯特菌病事故中涉及的食物，全是可讓該病菌繁殖至對消費者構成危險水平的產品。李斯特菌病過去曾與人們進食軟芝士、塗醬、已經煮熟的凍食雞肉、經加工的熟火雞肉、凍煙燻魚類及未經酸化的豬舌肉凍等食物有關。

本港的李斯特菌病證實個案一向較少，根據衛生防護中心所提供的資料，在二零零四年六月至二零零七年二月共有二十一宗，當中接近一半患者為長者，約三分之二本身患有慢性疾病(如糖尿病及缺血性心臟病)或導致免疫能力較低的疾病(如癌症及系統性紅斑狼瘡)。

圖一：分辨與李斯特菌病有關的較高危食物的流程

Figure 1: Decision tree for identification of relatively high risk foods associated with listeriosis



給業界的建議

1. 在食品生產廠房、食物業處所和零售店鋪奉行良好的衛生習慣和處理食物方法。
2. 避免即食食物(尤其是有較長保質期的即食食物)在烹煮後受污染。

給消費者的建議

1. 保持食物及個人衛生。
2. 查看食物包裝是否完好無缺，以及食物標籤上的食用日期是否已經過期，尤其是保質期較長的冷藏即食食物。
3. 盡快進食容易變壞的預先煮熟即食食物。
4. 徹底翻熱吃剩的食物，然後才進食。

對高危人士的其他建議

避免進食高危食物(例如保質期超過十天的冷藏即食食物或曾令人感染李斯特菌病的食物)，除非這些食物已經徹底煮熟。

更多資料

如欲獲得有關近日回收受李斯特菌污染食物一事及此病菌的更多資料，請瀏覽下列網頁：

- [中心發出的新聞公報](#)
- [中心發出的食物警報](#)
- [中心編製有關李斯特菌的單張](#)

Occurrence of Listeriosis

Listeriosis is an uncommonly diagnosed infection that occurs worldwide. The foods implicated in major outbreaks of listeriosis worldwide are all products in which *Listeria monocytogenes* can grow to levels that could present a risk to consumers. Human listeriosis have been linked to the consumption of foods like soft cheeses, pate, cooked cold chicken, processed deli turkey meat, cold-smoked fish and unacidified jellied pork tongue.

In Hong Kong, there have been relatively few confirmed cases of listeriosis. According to the Centre for Health Protection, there were 21 listeriosis cases during June 2004 to February 2007. Almost half of the cases were elderly and two-thirds had underlying chronic illnesses (e.g. diabetes mellitus and ischaemic heart disease) or immunocompromised conditions (e.g. cancer and systemic lupus erythematosus).

Advice to the Trade

1. Maintain good hygienic and food handling practices in food manufacturing plants, food service and retail establishments.
2. Avoid post-cooking contamination of RTE foods particularly those with long shelf lives.

Advice to the Consumers

1. Maintain good food and personal hygiene.
2. Check whether the food package is intact and the expiry date on the label is not overdue especially RTE foods under refrigeration with long shelf lives.
3. Consume perishable foods that are precooked and ready-to-eat as soon as possible.
4. Reheat leftovers thoroughly before consumption.

Additional Advice to the Groups at Risk

Avoid high risk foods, such as RTE items with shelf lives longer than 10 days under refrigeration or items that have been implicated in human listeriosis, unless cooked thoroughly.

Further Information

Further information about the recent recall on *Listeria* contaminated food and the bacterium can be obtained from the following webpages:

- [The CFS Press Release](#)
- [The CFS Food Alert](#)
- [The CFS Pamphlet on Listeria](#)

風險傳達
工作一覽
Summary of
Risk Communication Work

風險傳達工作一覽 (二零零七年二月) Summary of Risk Communication Work (February 2007)	數目 Number
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公眾查詢 Public Enquiries	160
食物投訴 Food Complaints	979
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食物中的甜味劑

Sweeteners in Food

食物安全中心風險傳達組
科學主任郭麗儀女士報告

Reported by Ms. Joey KWOK, Scientific Officer,
Risk Communication Section, Centre for Food Safety



插圖：常見的低熱量無糖產品包括口香糖、汽水及糖果

Illustration: Commonly available low-calorie sugar-free products including chewing gum, carbonated soft drink and candies

甜味可以增添人們進食的樂趣。在消費者追求保持健康體重的年代，對低熱量的甜味食品需求不斷上升。

過去數十年，另類甜味劑的應用日廣，除了用作餐桌甜味劑外，還是汽水、糖果、口香糖、乳酪和甜品等不少食物和飲品中的常見配料。

什麼是甜味劑？

從廣義而言，甜味劑是用作添加甜味的物質，不論其會否提供熱量。傳統甜味劑指各式各樣的糖，當中最為人熟悉的是蔗糖。糖屬於碳水化合物，經消化和新陳代謝過程後可產生每克4千卡熱量。另一方面，糖醇(又稱為多元醇或多羥醇)亦屬於碳水化合物，但不會為人體完全吸收和分解，因而每克提供較少熱量(通常介乎每克1.5至3.0千卡熱量)。糖醇的甜味通常較糖低，常見例子有山梨糖醇、甘露糖醇及木糖醇。

低熱量甜味劑(例如天冬酰胺、糖精和醋磺內酯鉀)由於只含很少甚或不含熱量，故又稱為非營養性甜味劑，其甜味大大高於糖，在食物中使用極少量便能提供足夠的甜味，並減少食品的熱量。舉例來說，1克天冬酰胺可取代200克蔗糖，前者只提供4千卡熱量，而後者則產生800千卡熱量。

根據本港食物法例的定義，“甜味劑”並不包括糖或其他碳水化合物或多羥醇。下文將會集中論述低熱量甜味劑。

為什麼使用低熱量甜味劑？

低熱量甜味劑有助消費者減少攝入熱量和控制體重。由於這類甜味劑不會影響胰島素和葡萄糖水平，因此可有助控制糖尿病等長期病患。有專家認為，在食物中以低熱量甜味劑代替糖不會引致蛀牙問題。

現時，市面上有不少低熱量甜味劑，常見例子的一般資料撮列於表一。不同的低熱量甜味劑經常會混合使用，這樣可產生協同作用以達至更高的甜度，並能調製出最為消費者接受的味道。舉例來說，低熱量汽水便經常混合使用了天冬酰胺、醋磺內酯鉀和環己基氨基磺酸。

表一：低熱量甜味劑的一般資料

Table 1: General information on low-calorie sweeteners

項目 Item	天冬酰胺 Aspartame	環己基氨基磺酸及其鹽類 Cyclic amide acid and its salts	糖精及其鹽類 Saccharin and its salts	醋磺內酯鉀 Acesulfame potassium	三氯半乳糖 Sucralose
與相同分量蔗糖的甜度比較 Approximate sweetening power compared with that of sucrose	高 200 倍 200 times sweeter	高 30 倍 30 times sweeter	高 300 倍 300 times sweeter	高 200 倍 200 times sweeter	高 600 倍 600 times sweeter
熱量值(千卡/克) Caloric value (kcal/g)	4	0	0	0	0
穩定性 Stability	經高溫加熱後失去甜味；烹煮時宜最後才加進食物 Loses sweetness when exposed to high heat; adds to foods at end of cooking cycle	加熱後化學性質穩定，並可與其他人造糖產生協同作用 Heat-stable and works synergistically with other sweeteners	非常穩定；可用於烹煮及烘焗的食物 Highly stable; can be used in cooking and baking	非常穩定；可用於烹煮及烘焗的食物 Highly stable; can be used in cooking and baking	非常穩定；可用於烹煮及烘焗的食物 Highly stable; can be used in cooking and baking

Sweetness adds to the pleasure of eating. In the era when consumers are striving to maintain a healthy body weight, the demand for low-calorie sweet-tasting food products is ever increasing.

The use of alternative sweeteners has been expanding during the past few decades. Besides being used as table-top sweeteners, they are now common ingredients in a wide range of food and beverages such as soft drinks, candies, chewing gum, yoghurt and desserts.

What are Sweeteners?

In a broader sense, sweeteners are substances that are used to impart a sweet taste with or without providing energy. Traditional sweeteners refer to sugars that exist in many forms, the most familiar of which is sucrose. Sugars are carbohydrates; they give out 4 kilocalories (kcal) per gram upon digestion and metabolism. On the other hand, sugar alcohols (also known as polyols or polyhydric alcohols) are also carbohydrates but they are not fully absorbed and metabolized by the body and in turn provide fewer calories per gram (typically range from 1.5 to 3.0 kcal per gram). Sugar alcohols are generally less sweet than sugars. Common examples include sorbitol, mannitol and xylitol.

Low-calorie sweeteners (e.g. aspartame, saccharin and acesulfame potassium) are also known as non-nutritive sweeteners because they have very little or no caloric values. They are substantially sweeter than sugars and can be applied at very low levels in foods to give enough sweetness, resulting in calorie-savings. For instance, 1 gram of aspartame (providing 4 kcal) can replace 200 grams of sucrose (providing 800 kcal).

In legal terms defined by the food legislation in Hong Kong, “sweetener” does not include any sugars or other carbohydrates or polyhydric alcohols. The following paragraphs will focus on low-calorie sweeteners.

Why Use Low-calorie Sweeteners?

Low-calorie sweeteners can help consumers cut down on calories and control weight. As low-calorie sweeteners do not affect insulin or glucose levels, they can also help to manage chronic conditions like diabetes. Replacing sugars with low-calorie sweeteners in foods is considered not to promote tooth decay.

Nowadays, a range of low-calorie sweeteners is available on the market. General information on a few commonly used ones is summarized in Table 1. Low-calorie sweeteners are often used in combination. Blending can produce a synergistic effect, it also facilitates the development of a taste profile that is most acceptable to consumers. For instance, aspartame, acesulfame potassium and cyclamic acid are often used in combination in low-calorie carbonated soft drinks.

Are Low-calorie Sweeteners Safe?

Before low-calorie sweeteners are permitted for use in foods, they have been assessed by the Joint Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives (JECFA) for safety, with corresponding Acceptable Daily Intakes (ADIs) allocated. The local studies on dietary exposure to selected low-calorie sweeteners from beverages and confectionary products, respectively, among secondary school students revealed that the exposures for both average and high consumers were below the respective ADIs as established by the JECFA.

There has been controversy over the safety of some low-calorie sweeteners. For example, there has been concern in the past that saccharin can cause



低熱量甜味劑安全嗎？

低熱量甜味劑須經聯合國糧食及農業組織／世界衛生組織聯合食物添加劑專家委員會(專家委員會)評估其安全性，並訂定相關的每日可攝取量，然後才獲准在食物中使用。有關中學生從飲品及糖果類產品中攝入指定低熱量甜味劑的**本港研究**顯示，攝入量一般及偏高的中學生所攝取到的甜味劑分量都低於專家委員會訂定的每日可攝取量。

過去某些低熱量甜味劑的安全曾引起爭論。舉例來說，糖精就曾因可令實驗室動物患膀胱癌而受人關注。世界各地不少科學機構(包括國際癌症研究機構)在九十年代對糖精重新作出評估，認為那些質疑糖精安全性的動物數據並不適用於人類。現時，超過100個國家准許在食物中使用糖精。

不過，有些特定人士須留意天冬酰胺等甜味劑。天冬酰胺經人體消化後，會分解為苯丙氨酸和天冬氨酸兩種氨基酸及甲醇。苯丙酮酸尿症是一種罕見的遺傳疾病，患者由於體內不能正常分解苯丙氨酸，故須限制飲食中的苯丙氨酸(包括天冬酰胺)攝取量。

如何規管甜味劑？

《食物內甜味劑規例》(第132U章)訂定了八種現時獲准在本港食物中使用的低熱量甜味劑，即醋磺內酯鉀、縮二氨酸基酰胺、天冬酰胺、天冬氨酸-醋磺內酯鹽、環己基氨基磺酸(和鈉、鈣鹽)、糖精(和鈉、鉀、鈣鹽)、三氯半乳糖和索馬甜。由二零零七年七月起，本港市面上的預先包裝食物如含有甜味劑等食物添加劑，必須在食物標籤上列明其作用類別及本身所用名稱或識別編號。

bladder cancer in experimental animals. Many scientific authorities around the world including the International Agency for Research on Cancer re-evaluated saccharin in the 1990s and considered that the animal data which had raised questions about saccharin were not relevant to humans. Saccharin is permitted for food use in more than 100 countries to date.

Some special groups, however, should be aware of particular sweeteners like aspartame. Upon digestion, aspartame breaks down into amino acids phenylalanine and aspartic acid, as well as methanol. Individuals with phenylketonuria (PKU), a rare genetic disease in which the body cannot metabolize phenylalanine properly, should restrict phenylalanine intake from all dietary sources, including aspartame.

How are Sweeteners Regulated?

The Sweeteners in Food Regulations (Cap. 132U) stipulate eight types of low-calorie sweeteners currently permitted for food use in Hong Kong, namely acesulfame potassium, alitame, aspartame, aspartame-acesulfame salt, cyclamic acid (and sodium, potassium, calcium salts), saccharin (and sodium, potassium, calcium salts), sucralose and thaumatin. Starting from July 2007, the presence of food additives including sweeteners in prepackaged food available in Hong Kong must be listed by their functional classes and specific names or identification numbers on the food label.



蠔中的鎘

近日，某本地報章指，從深圳和本港店鋪購買的部分蠔豉樣本發現含百分之四點一至九點八的鎘。

鎘是存在於地殼的天然金屬，也是生產顏料、塑料穩定劑和鎘鎢電池，電鍍和採礦等工業活動產生的污染物。

對於一般不吸煙的人而言，食物是攝取鎘的主要來源。雖然急性鎘中毒可導致腸胃道受損，影響肝功能，但從膳食中攝取鎘以致出現急性中毒的機會微乎其微。此外，有關中學生從食物攝取到重金屬情況的**本港研究**顯示，攝入量一般及偏高的中學生所攝取的鎘分量均遠低於專家委員會訂定的暫定每周可容忍攝入量，即每公斤人體體重可攝取7微克。

至於上述的蠔豉，在計入曬乾過程所引致的濃度增加效應後，蠔的鎘水平並沒有超出本港規管水平(即百萬分之二)。不過，消費者應保持均衡飲食，以免因偏食少種類食物而攝取過量污染物，同時應避免進食大量蠔。

明列子(羅勒種子)的安全性

近日，傳媒報道有人於餐前進食明列子以控制體重，而其含有的草蒿腦可能會影響健康。

羅勒是一種香草，葉子常用作調味品，而油則可在食物中用作調味劑。明列子是羅勒的種子，浸於水中會變成膠糊狀，在亞洲飲品和甜品中可用作配料，並在泰國食品中用作增稠劑。此外，羅勒的葉子和種子一直是傳統藥物。

草蒿腦是羅勒、月桂、茴香和八角等不少常見食用植物中天然存在的化學物，以往曾有研究指這種物質可令動物患上肝腫瘤。根據海外機構進行的評估，按建議劑量服用的草藥產品，以及進食含草蒿腦作調味劑的食物攝取到的草蒿腦分量而引致患病的機會均不大。

不過，草蒿腦是一種可能會破壞基因的致癌物，每天進食明列子對健康造成的影響至今不明，市民應限制其攝取量。

Cadmium in Oysters

Recently, a local newspaper reported that certain dried oyster samples purchased in Shenzhen and Hong Kong were found to contain cadmium ranged from 4.1 to 9.8 parts per million (ppm).

Cadmium is a metal that exists naturally in the earth's crust. It is also a pollutant caused by industrial activities like production of pigments, plastic stabilizers and nickel-cadmium batteries, electroplating and mining.

For the non-smoking general population, food is the main source of exposure. Although acute intoxication may damage gastrointestinal tract and affect liver function, such dietary exposure is very unlikely. Furthermore, the [local study](#) on dietary exposures to heavy metals of secondary school students suggested that the exposures for both average and high consumers were well below the Provisional Tolerable Weekly Intake of 7 micrograms per kilogram of body weight as established by the JECFA.

As for the above dried oysters, the cadmium levels, after taking the concentration effect caused by drying into account, do not exceed the local regulatory level of 2 ppm for oysters. Nevertheless, consumers should maintain a balanced diet so as to avoid excessive exposure to contaminants from a small range of food items. Indulged consumption of oysters should be avoided.

Safety of Basil Seeds

Recently, there have been media reports concerning the possible health implication of estragole in basil seeds which are consumed before meals for weight control purpose.

Basil is a herb. Its leaves have been commonly used for seasoning, and oils thereof can be used as flavouring agents in food. Its seeds become gelatinous when soaked in water and are used as an ingredient in Asian drinks and desserts, as well as thickening agent in Thailand. The leaves and seeds of basil have also been used as traditional medicine.

Estragole is a chemical naturally occurring in many common food plants including basil, bay leaf, fennel and star anise. It has been shown to cause liver tumours in animals. Based on the evaluations conducted by overseas authorities, the intake of estragole resulting from consumption of herbal medicinal products at recommended dosage and food containing estragole as a flavouring agent is considered not to pose a significant cancer risk.

Nevertheless, estragole is a potential genotoxic carcinogen and the resulting health risk upon consumption of basil seeds on a daily basis is not yet clear, the public is recommended to restrict their intake.



插圖：蠔豉

Illustration: Dried oysters



插圖：明列子(上圖：乾種子；下圖：經浸水的種子)

Illustration: Basil seeds (Above: Dry seeds. Below: Rehydrated seeds)

