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## 焦點個案 Incident in Focus

## 食物安全與免疫力較低人士 Food Safety and People with Lower Immunity

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

今年二月十一日，瑪麗醫院報告，有幾名血癌病人出現由毛霉菌目根霉菌屬引致的腸道毛霉菌病。毛霉菌病是指由毛霉菌目引致的數種不同疾病的統稱。當局仍在調查這些個案是否由同一感染源引致。

免疫力是指個人抵禦感染的能力。上述病人因免疫力嚴重地受抑制而需住院。此外，還有其他免疫力較低但程度未及上述病人的羣組。本文將集中探討免疫力較低人士的一般食物安全建議。對於免疫系統受到嚴重抑制的病人(例如正在接受抑制免疫治療的血癌病人)，則應尋求主診醫生的特別建議。

### 免疫力較低人士的感染

一些病人可能會因下列原因而出現免疫系統功能較低的問題：患有免疫系統疾病，例如愛滋病和一些慢性疾病(如癌症)；或接受了減低身體免疫反應的抑制免疫治療，例如服用預防移植手術後出現排斥的藥物。這些病人屬於高危羣組，容易感染一些對身體健康的人沒有影響或只會造成輕微健康問題的微生物。這些微生物可以是環境或食物中的細菌、真菌、病毒或寄生蟲，例如腸桿菌和曲霉菌。這些致病菌可令免疫系統功能較低的病人出現嚴重併發症。

此外，與身體健康的成年人比較，長者、孕婦、幼童及嬰兒亦是較容易受影響的羣組。他們一旦感染常見的食源性致病菌，可能會出現較嚴重病徵，而不只是腹瀉和嘔吐等輕微症狀。

人體自身防禦或抵抗感染的功能會隨年齡增長而逐漸下降。部分長者如患有糖尿病等慢性疾病，其免疫系統的功能可能會因這些疾病或有關治療而進一步被削弱。

懷孕期內荷爾蒙和免疫力的改變會削弱孕婦的免疫系統功能，因此她們較易感染食源性疾病。另一方面，發育中的胎兒易受一些不會令孕婦出現病徵的食源性致病菌影響。廣為人知的李斯特菌正是危害這個羣組的致病菌。

嬰兒及幼童對食源性致病菌的自身防禦功能較弱，因為他們的免疫系統尚未發育成熟，同時腸道內的菌羣所起的保護作用可能不如成年人有效。初生嬰兒的胃部酸性較成年人為低，故細菌和其他致病菌較易在其體內生存。此外，按體重比例計算，嬰兒及幼童較成年人進食更多食物，因此假若食物含有毒素或污染物，他們的相對攝入量會較高。

On 11 February 2009, the Queen Mary Hospital reported several cases of intestinal mucormycosis caused by *Rhizopus* species under the order Mucorales in blood cancer patients. Mucormycosis is the collective name given to several different diseases caused by Mucorales. Investigation is still ongoing to find out whether there is a common source of infection.

Immunity is one's ability to defend against infection. The patients stated above are severely suppressed in their immunity and needed to be hospitalised. There are other population groups with lower immunity though not to the same degree as the above patients. In this article, we shall focus on the general food safety advice for those people with lower immunity. As for patients whose immune systems are severely suppressed, e.g. blood cancer patients undergoing immunosuppressive treatments, special advice should be sought from the attending doctor.

### Infections in People with Lower Immunity

Some patients may have weakened immune system due to immunological disorders, such as HIV infection and some chronic diseases (e.g. cancer), or immunosuppressive therapy they receive that are used to decrease the body's immune responses, such as drugs given to prevent transplant rejection. These patients are at high risk of infections caused by microorganisms which will not lead to any or only minor adverse health effects in healthy persons. These microorganisms can be bacteria, fungi, viruses or parasites from either the environment or food, for example, *Enterobacter* bacteria and *Aspergillus* fungi. These pathogens may result in serious complication in patients with weakened immune system.

Elderly, pregnant women, young children and infants are also relatively susceptible populations in comparison to healthy adults. These people, if infected by some common foodborne pathogens, may develop more severe symptoms than just mild ones such as diarrhoea and vomiting.

The natural defences against or ability to withstand an infection decline gradually as people age. The immune system of some elderly may further be weakened if they suffer from certain chronic diseases, such as diabetes, as a result of the disease or its therapy.

Hormonal and immunological changes during pregnancy result in weakening of mother's immune system and hence she is more prone to foodborne disease. On the other hand, the developing foetus is susceptible to foodborne pathogens that may not cause symptoms in the mother. Listeriosis is a well-known risk in this group of people.

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## 高危人士的食物安全問題

高危人士要預防可致病的微生物，必須嚴格遵從食物安全及衛生守則。“食物安全五要點：精明選擇、保持清潔、生熟分開、煮熟食物及安全溫度”是安全配製和處理食物的基本原則。此外，免疫力較低人士應小心選擇食物(包括預先包裝食物)。下表列出他們應避免進食或可考慮進食的食物：

食物類別	避免進食的食物	風險較低的選擇
奶製品	• 以未經巴士德消毒的奶類製成的芝士	• 經巴士德消毒的奶類 • 以經巴士德消毒的奶類製成的芝士
肉類及家禽	• 未經徹底煮熟或生的肉類及家禽 • 凍食肉類	• 徹底煮熟的肉類及家禽 • 徹底翻熱的凍食肉類
海產	• 未經徹底煮熟或生的海產(例如刺身) • 冷藏的煙燻海產 • 預先煮熟的海產	• 徹底煮熟的海產 • 徹底翻熱的煙燻海產及預先煮熟海產 • 罐頭魚類及海產
水果及蔬菜	• 沒有清洗的新鮮水果及蔬菜(包括生菜/沙律)	• 徹底清洗的新鮮水果及蔬菜 • 已煮熟的蔬菜
蛋類	• 使用生蛋/未經徹底煮熟的蛋類製成的食物	• 以經巴士德消毒的蛋類代替生蛋/未經徹底煮熟的蛋類製成的食物 • 徹底煮熟的蛋類

資料來源：美國農業部為高危羣組編製的便覽(只有英文版)

免疫力較低人士(及其照顧者)應依從醫生或營養師作出的特別食物安全建議，尤其是免疫系統功能受到嚴重抑制的病人，需要更嚴格遵守有關建議。

### 注意重點：

1. 愛滋病、一些慢性疾病以及正接受抑制免疫治療的病人的免疫力亦較低。
2. 此外，長者、孕婦、幼童及嬰兒的免疫力亦較低。
3. 為避免食源性疾病，免疫力較低人士應嚴格遵從食物安全及衛生守則。

### 給免疫力較低人士的建議

- 徵詢醫生或營養師有關特別的飲食建議及預防措施。
- 小心選擇食物。
- 留意預先包裝食物所示的食用日期及貯存條件，棄掉已過保質期或食用日期的食物。
- 切勿購買擺放在不安全或不潔環境中的食物，例如明顯發霉的食物。
- 進食已徹底煮熟的食物。

### 給業界的建議

- 確保所出售或進口的食物適宜供人食用，並在性質、物質和品質上均符合購買者的要求。
- 奉行優良製造規範。

The natural defences of infants and young children against foodborne pathogens are weaker, because the immune system is not well developed and the protection afforded by resident gut flora may not be as effective as that in adults. The stomach of newborns is less acidic than that of adults; bacteria and other pathogens survive relatively easier in newborns. In addition, infants and young children consume more food in proportion to their weight than adults. Hence, they can proportionately consume more toxins or contaminants if present in food.

### Food Safety for People at Risk

Strict observance on food safety and hygiene is important to prevent exposure to pathogens that can cause disease in people at risk. The “5 Keys to Food Safety: Choose, Clean, Separate, Cook and Safe Temperature” are fundamental to safe preparation and handling of food. In addition, people with lower immunity should choose food including prepackaged food carefully. Below are examples of food that they should avoid or consider:

Food type	Food to Avoid	Lower Risk Choice
Dairy Products	• Cheeses made from unpasteurised milk	• Pasteurised milk • Cheeses made from pasteurised milk
Meat and Poultry	• Undercooked or raw meat and poultry • Cold meats	• Thoroughly cooked meat and poultry • Cold meats reheated thoroughly
Seafood	• Undercooked or raw seafood e.g. sashimi • Refrigerated smoked seafood • Precooked seafood	• Thoroughly cooked seafood • Smoked seafood and precooked seafood reheated thoroughly • Canned fish and seafood
Fruits and Vegetables	• Unwashed fresh fruits and vegetables, including lettuce/salads	• Thoroughly washed fresh vegetables and fruits • Cooked vegetables
Eggs	• Food that contain raw/undercooked eggs	• Use pasteurised egg for recipes that call for raw or undercooked eggs • Fully cooked eggs

Source: USDA Fact Sheets for At-Risk Populations

People with lower immunity (and their caregivers) should follow specific food safety advice given by doctors or dietitians. In particular, patients who are severely suppressed in their immune system should follow the advice strictly.

### Key Points to Note:

1. People with HIV infection, some chronic diseases, immunosuppressive therapy have lower immunity.
2. Immunity of elderly, pregnant women, young children and infants is also lower.
3. People with lower immunity should strictly observe proper food safety and hygiene practices to avoid foodborne diseases.

### Advice to People with Lower Immunity

- Consult doctors or dietitians on specific dietary advice and precaution.
- Choose food carefully.
- Check the expiry date and storage conditions listed on prepackaged food. Discard food that has past its “Use-by” or expiry date.
- Never buy food that is displayed in unsafe or unclean conditions, such as food visibly covered with moulds.
- Cook food thoroughly before consumption.

### Advice to Trade

- Ensure that food sold or imported are fit for human consumption and are of the nature, substance, and quality of the food demanded by purchasers.
- Adopt good manufacturing practice.

## 營養素與健康：脂肪 Nutrient and Health - Fats

食物安全中心  
風險傳達組  
科學主任馮慧中女士報告

Reported by Ms. Jacqueline FUNG, Scientific Officer,  
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介紹過蛋白質和碳水化合物後，我們在今期會探討最後一種常量營養素：脂肪。它屬於名為“脂類”的營養素。

我們在日常生活中會把甘油三酸脂通稱為“脂肪”。事實上，食物中的脂肪有98%是甘油三酸脂。甘油三酸脂包含一個甘油分子作骨幹，並連接着三個脂肪酸。脂肪酸以不同的化學結構存在。由於脂肪在結構上各異，故不同脂肪會有不同特性，因而對健康造成的影響亦有別。

### 飽和脂肪酸、單元不飽和脂肪酸及多元不飽和脂肪酸

脂肪酸可按其雙鍵數目，劃分為飽和脂肪酸、單元不飽和脂肪酸及多元不飽和脂肪酸三大類。飽和脂肪酸(SFA)沒有雙鍵，單元不飽和脂肪酸(MUFA)有一個雙鍵，而多元不飽和脂肪酸(PUFA)則有兩個或以上雙鍵。專家相信，脂肪酸中的雙鍵數目與罹患心血管系統疾病的風險成反比關係，即沒有雙鍵的飽和脂肪酸會增加罹患心臟病的風險。

一般而言，大部分動物脂肪會有較多飽和脂肪酸，在室溫下通常處於固體狀態。另一方面，橄欖油和芥花籽油含豐富的單元不飽和脂肪酸，而粟米油、大豆油、花生油及魚油則有豐富的多元不飽和脂肪酸。含有較多單元及/或多元不飽和脂肪酸的脂肪(經氫化過程的脂肪除外)在室溫下通常處於液體狀態。

$\alpha$ -亞麻酸及亞油酸均為必需脂肪酸，兩者同屬多元不飽和脂肪酸。人體可透過新陳代謝自行合成長鏈脂肪酸，例如 $\alpha$ -亞麻酸可代謝成二十二碳六烯酸(DHA)和亞油酸可代謝成花生四烯酸(ARA)。

### 順式及反式脂肪酸

“順式”及“反式”兩詞是指雙鍵所處的碳原子旁邊兩個氫原子的位置。順式脂肪酸的兩個氫原子同處一邊，反式脂肪酸的兩個氫原子則分處兩邊。順式結構的脂肪酸常見於天然食物中，而大部分反式脂肪酸則是在菜油的氫化過程中形成。反式脂肪酸並非必需的，現時未見其對健康有益處。事實上，反式脂肪酸與飽和脂肪酸類似，可能會增加罹患心臟病的風險。如欲了解更多，請參閱《食物安全焦點》有關反式脂肪的昔日文章。

### 脂肪的功能與攝入量

脂肪提供大量能量(1克脂肪=9千卡能量)。此外，脂肪在人體內有多種重要的功能，當中包括輸送脂溶性維他命(即維他命A、D、E及K)和構成細胞膜。

根據中國適宜攝入量，脂肪應佔20%至30%的能量攝入量，即2 000千卡的膳食應從各類食物中共攝取約44至67克脂肪。以健康飲食金字塔來說，我們應該“吃最少”脂肪及油(一茶匙油約重5克)，方法是避免吃肥肉和煎炸食物，以及選擇脂肪含量較低的同類食物(例如一盒250毫升的全脂奶最少含有8.75克脂肪，而一盒相同分量的低脂奶則含約5克脂肪。)

介紹過脂肪後，我們將會在下一期探討另一種脂類：膽固醇。

Previously, we introduced protein and carbohydrates; in this issue, we will take a look at the last macronutrient – fat, which belongs to a class of nutrients called lipid.

We often refer triglyceride as fat in our daily life. In fact, ninety-eight percent of dietary fat is in the form of triglyceride. Triglyceride has a glycerol as the backbone with three fatty acids attached. Fatty acids exist in different chemical structures. Due to the uniqueness in structures, different fats exhibit different properties and in turn have dissimilar health effects.

### Saturated, Monounsaturated or Polyunsaturated Fatty Acids

By the number of double bonds in fatty acids, we classify them as saturated, monounsaturated or polyunsaturated fatty acids. A saturated fatty acid (SFA) has no double bond, monounsaturated fatty acid (MUFA) has one double bond, whereas polyunsaturated fatty acid (PUFA) has two or more double bonds. It is believed that the number of double bonds in fatty acids is inversely related to the risk of cardiovascular diseases. As such, saturated fats, with no double bond, are associated with higher risk of heart diseases.

In general, most animal fats have higher percentage of saturated fatty acids and they tend to be in solid state at room temperatures. On the other hand, olive and canola oils are rich in monounsaturated fatty acids, whereas corn, soybean, peanut and fish oils are rich in polyunsaturated fatty acids. Fats that have higher percentage of mono- and/or polyunsaturated fatty acids (except those undergone hydrogenation) tend to be in liquid state at room temperatures.

Both essential fatty acids,  $\alpha$ -linolenic acid and linoleic acid, are polyunsaturated fatty acids. Metabolism in the body produces longer-chain fatty acids, such as docosahexaenoic acid (DHA) from  $\alpha$ -linolenic acid and arachidonic acid (ARA) from linoleic acid.

### Cis or Trans Fatty Acids

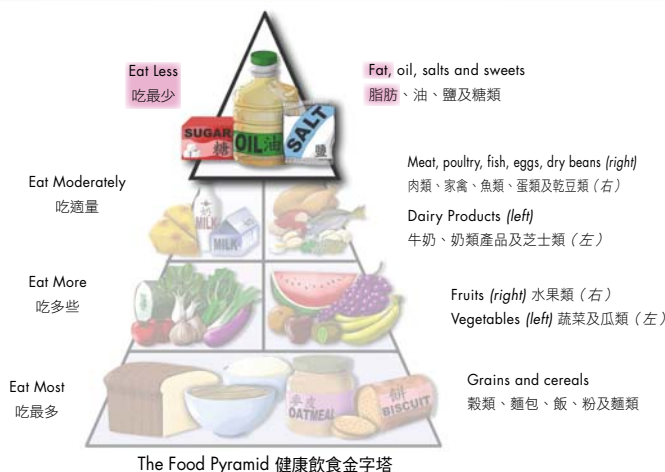
The term “cis” and “trans” describe the positions of the two hydrogen atoms located next to the carbon atoms where the double bond exists. Cis fatty acid has both hydrogen atoms located on the same side. On the contrary, trans fatty acid has the two hydrogen atoms on opposite sides. Fatty acids with cis configuration are typical in natural foods. Most of the trans fatty acids are formed during the process of hydrogenation of vegetable oils. Trans fatty acids are not essential and have no known health benefit. In fact, similar to saturated fatty acids, they may increase the risk of heart diseases. For more on trans fat, please look up previous Food Safety Focus articles on trans fat.

### Functions and Intake of Fat

Fat is the concentrated source of energy (1g of fat = 9kcal). Besides, among many important bodily functions, fat is the carrier of fat-soluble vitamins (i.e. vitamin A, D, E and K) and is the structural components of cell membrane.

According to the Chinese Adequate Intake (AI), 20-30% of energy contribution should come from fats, which means that there should be about 44-67g of fat from all food sources in a 2 000-kcal diet. Referring to the food pyramid, we should “Eat Less” fats and oils (one teaspoon of oil weighs about 5g) by avoiding fatty meats and fried foods, plus selecting foods in lower fat version (e.g. a 250mL-serving of whole milk has a minimum of 8.75g of fat as compared to about 5g fat in low-fat milk with the same serving size.)

After talking about fat, next time we will examine another lipid – cholesterol.



食物事故點滴  
Food Incident  
Highlight

## 油魚與腹瀉

今年二月初，一批學生在赤柱某餐廳進食所謂“鱸魚柳”餐後出現腹瀉。調查顯示，有關魚類是油魚。

油魚通常指蛇鯖科中的兩種魚類（學名：“棘鱗蛇鯖”和“異鱗蛇鯖”）。牠們的脂肪含量豐富，而且天然含有蠟酯。人們進食油魚後，蠟酯因在人體內難以消化而囤積在直腸中，可導致排油腹瀉，並出現胃痙攣以至急性腹瀉等不適。受影響的人一般會在24至48小時內痊癒。

在二零零七年的油魚事件發生後，食物安全中心已發出有關識別及標籤油魚／鱈魚的指引。業界應確保正確標示所出售的魚類，並宜採用“油魚”一名來標籤上述兩種魚類，以便顧客可把這兩種魚與其他魚類區別開來。

## Oilfish and Diarrhoea

In early February 2009, a group of students suffered from diarrhoea after consuming a meal of so-called “perch fillets” in a Stanley restaurant. Investigation revealed that the fish involved was oilfish.

Oilfish often refer to two species of fish (scientific names: *Ruvettus pretiosus* and *Lepidocybium flavobrunneum*) under the family Gempylidae. They are rich in fat and contain naturally present wax esters. The wax esters, which are indigestible by humans, can accumulate in the rectum after consumption of oilfish. It may cause oily diarrhoea and discomfort ranging from stomach cramps to rapid loose bowel movements. Recovery is usually within 24 to 48 hours in affected individuals.

In response to the 2007 oilfish incidents, the Centre for Food Safety issued guidelines on the [identification and labelling of oilfish and cod](#). The food trade should ensure that fish they sell are labelled correctly. It is recommended that the two species of fish be labelled as “oilfish” so that customers can distinguish them from other species.

## 在奶類中添加造骨牛奶蛋白

今年二月，傳媒報道某內地奶品公司在其奶製品中添加了造骨牛奶蛋白。根據中國法例，有關物質如未經事先批准不得使用。根據食物安全中心紀錄和進口商提供資料，有關產品並沒有輸港。此報道亦引起市民關注添加了造骨牛奶蛋白的奶類飲品安全問題。



牛奶 Milk

綜合內地有關當局和該奶品公司所發放的公開資料，造骨牛奶蛋白是從牛奶獲得的牛奶蛋白組分，主要成分為乳鐵蛋白和乳過氧化物酶。

根據國家衛生部的聲明，內地專家對造骨牛奶蛋白的食用安全性進行了研究，認為消費者飲用目前市場上添加了造骨牛奶蛋白的奶製品不會危害健康。

不過，製造商應確保其產品可供人安全食用。至於消費者，則應保持均衡飲食，切勿偏食。

## The Addition of Osteoblast Milk Protein in Milk

In February 2009, the media reported that a Mainland dairy company had added osteoblast milk protein (OMP) in its milk product, which was not permitted under Chinese laws without prior approval. According to records of the Centre for Food Safety and information provided by importers, the product has not been imported into Hong Kong. The local public showed concerns on the safety of milk with added OMP.

Summarising the public information released by the relevant authorities of Mainland China and the dairy company, OMP is the bovine milk protein fraction derived from milk and is composed primarily of lactoferrin and lactoperoxidase.

According to an announcement made by the Ministry of Health of Mainland China, Mainland experts have looked into the food safety aspects of OMP, and believed that milk products added with OMP currently available in the market do not pose adverse health effect to consumers.

However, manufacturers should ensure that their products are safe for human consumption and the consumers are advised to maintain a balanced diet and avoid overindulgence in food.

## 風險傳達 工作一覽 Summary of Risk Communication Work

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