

本期內容 IN THIS ISSUE

焦點個案

再談反式脂肪

食物安全平台

食物含持久性有機污染物引起的
食物安全問題

食物事故點滴

創傷弧菌與食物安全
肉毒桿菌與香草醬

風險傳達工作一覽

Incident in Focus

Trans Fats - Part 2

Food Safety Platform

Persistent Organic Pollutants in Food
- Food Safety Implication

Food Incident Highlight

Vibrio vulnificus and Food Safety
Clostridium botulinum and Pesto
Sauce

Summary of Risk Communication Work

編輯委員會 EDITORIAL BOARD

總編輯

何玉賢醫生

顧問醫生(社會醫學)(風險評估及傳達)

行政編輯

馮宇琪醫生 首席醫生(風險評估及傳達)

編輯委員

吳志翔醫生 首席醫生(風險管理)

竺湘瑩獸醫 高級獸醫師(獸醫公共衛生)

李偉正先生 高級總監(食物安全中心)1

譚志偉先生 高級總監(食物安全中心)2

李富榮先生 高級化驗師(食物化驗)

郭麗瓊醫生 風險評估組主管

肖穎博士 食物安全主任(風險評估)

Editor-in-chief

Dr. Y Y HO

Consultant (Community Medicine)
(Risk Assessment and Communication)

Executive Editor

Dr. Anne FUNG

Principal Medical Officer
(Risk Assessment and Communication)

Editing Members

Dr. Henry NG

Principal Medical Officer (Risk Management)

Dr. Shirley CHUK

Senior Veterinary Officer
(Veterinary Public Health)

Mr. W C LEE

Senior Superintendent
(Centre for Food Safety)1

Mr. C W TAM

Senior Superintendent
(Centre for Food Safety)2

Mr. F W LEE

Senior Chemist (Food Chemistry)

Dr. Priscilla KWOK

Head (Risk Assessment Section)

Dr. Y XIAO

Food Safety Officer (Risk Assessment)

焦點個案 Incident in Focus

再談反式脂肪 Trans Fats - Part 2

食物安全中心

風險評估組

科學主任馬嘉明女士報告

Reported by Ms. Janny MA, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

本地食物中的反式脂肪

鑑於愈來愈多證據顯示攝取反式脂肪會損害健康，而市民亦愈來愈關注食物中的反式脂肪，食物安全中心(中心)遂聯同消費者委員會(消委會)就本地食物中的反式脂肪進行了兩次研究，目的是測試市面上食物中的反式脂肪含量，同時提高消費者對反式脂肪及其引致的健康影響的認識。最新研究結果已於五月十四日公布，並詳載於五月的《選擇》月刊。(詳情見本文末的超連結)

兩次研究合共測試了165個預先包裝和非預先包裝的食品。雖然個別食品(例如一款冬甩和兩款椰絲奶油包)的反式脂肪含量偏高，但亦有個別食物完全不含或含較少反式脂肪。有關研究亦發現，同類食品的反式脂肪含量差異很大，可見減少食品中的反式脂肪是切實可行的。消費者可明智選擇食物，以減少攝取反式脂肪。

如何明智選擇食物?

有關反式脂肪的營養標籤

《2008年食物及藥物(成分組合及標籤)(修訂:關於營養標籤及營養聲稱的規定)規例》(下稱《修訂規例》)將於二零一零年七月一日起生效。根據《修訂規例》，反式脂肪屬於其中一種核心營養素，換言之，受《修訂規例》涵蓋的所有預先包裝食物必須在營養標籤上標示反式脂肪含量。如符合指明規定，食物亦可作出“不含反式脂肪”的聲稱。

把反式脂肪列為核心營養素可使《修訂規例》與國際趨勢接軌，長遠而言亦對市民健康有利。在營養標籤上提供準確的反式脂肪含量，以及規管食品的反式脂肪聲稱，均有助消費者明智選擇食物。要飲食健康，除反式脂肪外，我們亦應留意其他營養素(包括飽和脂肪)的攝取量。

哪一款食品是較好的選擇?

Food A 食品 A	Food B 食品 B	Food C 食品 C
Nutrition Information 營養資料	Nutrition Information 營養資料	Nutrition Information 營養資料
Per 100g 每 100 克	Per 100g 每 100 克	Per 100g 每 100 克
Energy/ 能量 550kcal/千卡	Energy/ 能量 750kcal/千卡	Energy/ 能量 430kcal/千卡
Total fat/ 總脂肪 61g/克	Total fat/ 總脂肪 83g/克	Total fat/ 總脂肪 48g/克
- Saturated fat/ 飽和脂肪 21g/克	- Saturated fat/ 飽和脂肪 12g/克	- Saturated fat/ 飽和脂肪 10g/克
-Trans fat/ 反式脂肪 0.84g/克	-Trans fat/ 反式脂肪 4.2g/克	-Trans fat/ 反式脂肪 0.12g/克

根據以上資料，在上述三款同類食物中，食品C是較好的選擇，因為反式脂肪及飽和脂肪含量是最低的。作為健康飲食的一部分，市民宜選

Trans Fats in Locally Available Foods

In view of growing evidence on the adverse health effects of trans fats intake and increasing concern of their presence in food, the Centre for Food Safety (CFS) and the Consumer Council (CC) have conducted two joint studies on trans fats in locally available foods. These studies aimed to assess trans fats levels in foods available in local market and enhance consumers' understanding of trans fats and their health implications. Results of the latest study were released on 14 May and published in the May issue of Choice magazine. (Please see the hyperlinks at the end of this article for details)

In these studies, the trans fats levels in a total of 165 prepackaged and non-prepackaged food products were evaluated. Although some individual products contained relatively high levels of trans fats, (e.g. a doughnut and two cream-filled breads with shredded coconut), some individual products contained no or relatively low levels of trans fats. Studies also revealed that the trans fats levels varied a lot among the same kind of food. Such results indicated that reduction of trans fats in food was feasible and practical. Consumers can reduce trans fats intake by making informed food choices.

How to Make Informed Food Choices?

Nutrition Labelling - Trans Fats

Under the Food and Drugs (Composition and Labelling) (Amendment: Requirements for Nutrition Labelling and Nutrition Claim) Regulation 2008 (Amendment Regulation), which shall come into operation on **1 July 2010**, trans fats are included as one of the core nutrients i.e. **all prepackaged foods** covered by the Amendment Regulation shall declare the trans fats content on nutrition label. "Trans fats free" claims are also permitted if the prescribed conditions are met.

To include trans fats as a core nutrient not only aligns the Amendment Regulation with the international trend, but also brings about health benefits to the public in the long run. Accurate trans fats value provided on nutrition label and control of trans fats claims on food products may help consumers make informed food choices. To maintain a healthy diet, the intake of trans fats as well as other nutrients including saturated fats has to be taken into account.

Which is a Better Choice?

Based on the above information of the three similar products, food C is a better choice as it contains the lowest level of trans and saturated fats. As part of a healthy diet, it



擇反式脂肪及飽和脂肪含量同樣偏低的食物。

反式脂肪與飽和脂肪

	反式脂肪	飽和脂肪
來源	<ul style="list-style-type: none"> 有少量會天然存在於牛和羊的奶和脂肪 有極少量會在精煉植物油時產生 主要在氫化進植物油的氫化過程中產生† 	<ul style="list-style-type: none"> 大部分動物脂肪（例如牛油、豬油、雞皮、全脂奶、芝士）和某些植物油（例如椰油和棕櫚油）含較多飽和脂肪
對健康的影響	<ul style="list-style-type: none"> 增加低密度脂蛋白膽固醇（即壞膽固醇） 降低高密度脂蛋白膽固醇（即好膽固醇） 增加罹患心血管系統疾病的風險 較飽和脂肪對健康造成更大損害 	<ul style="list-style-type: none"> 增加低密度脂蛋白膽固醇 增加罹患心血管系統疾病的風險
每天建議攝取限量	<ul style="list-style-type: none"> 少於每天所需能量‡的1%（以每天攝取2 000千卡能量的人為例，應少於2.2克） 	<ul style="list-style-type: none"> 少於每天所需能量的10%（以每天攝取2 000千卡能量的人為例，應少於22.2克）

is advisable to choose foods **low in both trans and saturated fats**.

Trans Fats vs Saturated Fats

	Trans Fats	Saturated Fats
Sources	<ul style="list-style-type: none"> Found naturally in small amounts in milk and fat of cow and sheep Formed in very low level during the refining of vegetable oils Formed mainly when hydrogen is added to vegetable oils under a process called "hydrogenation"† 	<ul style="list-style-type: none"> High proportion in most animal fats (e.g. butter, lard, chicken skin, full cream milk, cheese) and some vegetable oils (e.g. coconut oil, palm oil)
Health Effects	<ul style="list-style-type: none"> Increase low-density lipoprotein (LDL) cholesterol, the bad cholesterol Decrease high-density lipoprotein (HDL) cholesterol, the good cholesterol Increase the risk of cardiovascular disease More harmful than saturated fats 	<ul style="list-style-type: none"> Increase LDL cholesterol Increase the risk of cardiovascular disease
Daily Recommended Intake Limit	<ul style="list-style-type: none"> Less than 1% daily energy intake‡ (e.g. less than 2.2g in an individual with a daily energy intake of 2 000 kcal) 	<ul style="list-style-type: none"> Less than 10% daily energy intake (e.g. less than 22.2g in an individual with a daily energy intake of 2 000 kcal)

植物油的氫化過程†

在氫化過程中，不飽和脂肪酸的雙鍵會轉化為飽和單鍵，令油從液體轉化為半固體或固體，因而達到延長保質期和改善食物口感的目的。完全氫化過程可將所有不飽和脂肪酸轉化成飽和脂肪酸，而反式脂肪則會在部分氫化過程中產生。部分人造牛油和植物起酥油是以部分氫化植物油製成。

Hydrogenation† of Vegetable Oils

During the process of hydrogenation, double bonds in unsaturated fatty acids are turned into single saturated bonds. This process turns liquid oil into semi-solid or solid form and serves the purposes of prolonging shelf-life and changing food texture. Complete hydrogenation would yield 100% saturated fatty acids, however, trans fats would be produced in partial hydrogenation. Some margarines and vegetable shortenings are made of partially hydrogenated vegetable oils.

所需能量‡

身體健康的人所需能量視乎其年齡、性別、體重和運動量而定。根據世界衛生組織和聯合國糧食及農業組織，身體健康的成年人所需能量如下：

年齡 (歲)	男性 (假設體重為65公斤和運動量偏低)	女性 (假設體重為55公斤和運動量偏低；不包括需授乳或懷孕的婦女)
18-29	2 400千卡	1 900千卡
30-59	2 350千卡	1 850千卡
≥60	1 950千卡	1 700千卡

由於反式脂肪及飽和脂肪的每天建議攝取限量與每天建議所需能量成正比，因此，對於所需能量較低的人而言，其反式脂肪及飽和脂肪的最高攝取限量亦會按比例降低。

Energy Intake‡

The energy intake requirements for healthy individuals take account of age, gender, body weight and physical activity level. According to the World Health Organization and the Food and Agriculture Organization of the United Nations, the energy intake requirements in some healthy adults are as follows:

Age (Years)	Male (assuming body weight of 65kg & low physical activity level)	Female (assuming body weight of 55kg & low physical activity level; excluding lactating and pregnant women)
18-29	2 400 kcal	1 900 kcal
30-59	2 350 kcal	1 850 kcal
≥60	1 950 kcal	1 700 kcal

Since the daily recommended intake limits for trans and saturated fats are in proportion to the recommended daily energy intake requirement, the maximum intake limits for both nutrients are proportionally lower for individuals with a lower energy intake requirement.

反式脂肪：

- 主要在植物油的氫化過程中產生；
- 增加罹患心血管系統疾病的風險；以及
- 只應在飲食中攝取少量。

Trans Fats:

- are mainly formed during the process of hydrogenation of vegetable oils;
- increase the risk of cardiovascular disease; and
- should be kept low from dietary consumption.

選擇含較少反式脂肪及飽和脂肪食物的小貼士

- 留意營養標籤上的配料表，選擇不含“氫化植物油”、“部分氫化植物油”或“植物起酥油”的食物。
- 選擇以單元及多元不飽和脂肪酸含量較高的脂肪／油類製成的食物，避免以飽和脂肪酸含量較高的脂肪／油類製成的食物。

Quick Tips to Choose Foods with Relatively Low Trans and Saturated Fats

- Check the ingredient list on nutrition label and choose foods that do not contain “hydrogenated vegetable oil”, “partially hydrogenated vegetable oil” or “vegetable shortening”.
- Choose foods that contain fat/oil with a higher proportion of monounsaturated and polyunsaturated fatty acids rather than of saturated fatty acids.

更多資料

如需更多有關食物中的反式脂肪及本地食物中的反式脂肪研究的資料，請瀏覽下列網頁：

中心編製有關“認識反式脂肪”單張

- 《食物安全焦點》(二零零七年十一月)內的《食物中的反式脂肪》中心及消委會有關“揭露含反式脂肪的熱門食品”的合作研究報告
- 中心及消委會有關“81款熱賣食品含反式脂肪”的合作研究報告

Further Information

Further information about trans fats in foods and recent studies on trans fats in locally available foods can be obtained from the following webpages:

The CFS pamphlet on “Understanding Trans Fats”

“Trans Fats in Foods” in the Food Safety Focus (November 2007)

The CFS and CC joint study on “Trans Fats in Locally Available Foods (Part 1)”

The CFS and CC joint study on “Trans Fats in Locally Available Foods (Part 2)”

食物含持久性有機污染物引起的食物安全問題 Persistent Organic Pollutants in Food – Food Safety Implication

食物安全平台

Food Safety
Platform

食物安全中心
風險評估組
科學主任邱頌韻女士報告

Reported by Miss Joan YAU, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

我們在上一期淺談了持久性有機污染物，包括食物為何含有這些污染物和《斯德哥爾摩公約》。此國際公約的最初目標，是限制和杜絕俗稱為“骯髒的一打”的一組持久性有機污染物。在這12類污染物中，以滴滴涕和二噁英最廣為人知，有關此兩類污染物可能影響本港情況的報道亦時有所聞。我們將會在本期探討這些關注問題和持久性有機污染物的食物安全問題。

從食物過量攝取持久性有機污染物對健康有何影響？

持久性有機污染物對健康造成的影響取決於多項因素，例如個別持久性有機污染物的性質、攝取分量和時間長短。一般而言，一般市民就持久性有機污染物的主要關注，是從食物中長期攝取這些物質對健康可能造成的不良影響，包括會否令人患癌。動物研究顯示，有些持久性有機污染物可損害內臟及免疫系統，而有些則會影響生殖及發育。不過，有關人類從食物中攝取持久性有機污染物的數據並不多。

世界衛生組織（世衛）轄下國際癌症研究機構曾就“骯髒的一打”會否令人類患癌作出評估，並指出屬於二噁英類的TCDD可令人類患癌，但幸而有八類可令實驗動物患癌的持久性有機污染物不大可能會令人類患癌，其餘三類則只掌握有限或不充分的證據證明可令動物患癌。

本港食物中的持久性有機污染物含量如何？

持久性有機污染物在環境中無處不在，故此無可避免會存在於食物中，尤其是脂肪含量較高的動物源性食物（即魚類、貝類、奶類、肉類、家禽及前述食物的製品）。不過，這些食物的持久性有機污染物含量偏低，不會對人體健康構成即時風險。食物安全中心（中心）的日常食物監察計劃已差不多全部涵蓋“骯髒的一打”持久性有機污染物。

另一方面，食物環境衛生署曾進行兩項有關持久性有機污染物的風險評估研究，分別是在二零零二年進行的“中學生從食物攝取到二噁英的情況”及在二零零六年進行的“中學生從食物攝取到滴滴涕的情況”。攝取量一般和攝取量偏高的中學生從食物攝取到二噁英或滴滴涕的分量，遠低於世界衛生組織專家小組制定的相關安全參考值，故此從食物攝取到這兩類污染物而導致健康受損的機會不大，市民無須擔心。中心將會繼續進行有關本港市民的風險評估影響，包括從食物攝取到“骯髒的一打”持久性有機污染物的評估。

如何減少從食物中攝取到持久性有機污染物？

要減少持久性有機污染物的總攝取量，主要透過環境管制措施。國際機構及各國政府已在這方面各盡其力，例如食品法典委員會就擬備了《防止和減少食物及飼料受二噁英污染守則》（只備英文版）。

不過，由於持久性有機污染物容易在動物脂肪內積聚，消費者可採取下列方法，進一步減少從食物攝取到持久性有機污染物：

1. 減少進食動物脂肪，例如：
 - 去掉肉類及其製品中的脂肪；
 - 避免以動物脂肪配製和烹調食物；
 - 採用可讓脂肪從食物中流出的烹調方法，例如蒸和焗。
2. 保持均衡飲食，盡量減少因偏吃幾類食品而過量攝取持久性有機污染物。

In the *last issue*, we presented an overview of Persistent Organic Pollutants (POPs), why POPs are present in food, as well as the international treaty, namely the Stockholm Convention, which was initially aimed at the restriction and elimination of a group of POPs, informally called the “dirty dozen”. Among this “dirty dozen”, DDT and dioxins are the best known and there have been reports that these two groups of substances might be of local concern. In this issue, we would examine these concerns and talk about the food safety aspect of POPs.

What are the Adverse Effects of POPs upon Excessive Dietary Exposure?

The adverse effects of POPs depend on various factors such as the nature of individual POP, the amount and the duration of exposure. Generally speaking, the main concern over POPs for the general population is their possible adverse effects, including their potential to cause cancer, upon long-term dietary exposure. Animal studies demonstrated that some may cause damage to internal organs and immune systems while some may affect reproduction and development. However, related human data upon dietary exposure is limited.

The International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) has evaluated the potential to cause cancer of the “dirty dozen” POPs. One of the dioxin congeners, namely TCDD, can cause cancers in humans. Fortunately, IARC considered that eight other groups of POPs can cause cancers in experimental animals, but are not likely to be cancer causing in humans; whereas three others have limited or inadequate evidence to cause cancers in animals.

How About the Levels of POPs in Food in Hong Kong?

POPs are everywhere in the environment and its presence in food, particularly those of animal origin that is rich in fat (i.e. fish, shellfish, milk, meat, poultry and their products), is inevitable. However, their generally low levels are unlikely to cause immediate health risks. The Centre for Food Safety (CFS) has included almost all POPs of the “dirty dozen” in its routine food surveillance programme.

On the other hand, the Food and Environmental Hygiene Department conducted two risk assessment studies on POPs, namely “Dietary Exposure to Dioxins of Secondary School Students” and “Dietary Exposure to DDT of Secondary School Students” in 2002 and 2006 respectively. The dietary exposures to these two POPs for average and high consumers of secondary school students fell below the respective safety reference values established by the expert groups under WHO. Adverse effects via dietary exposures are therefore unlikely. There is no cause for concern. CFS will continue its effort in conducting risk assessment studies, including the assessment of dietary exposures to the “dirty dozen” POPs, for the general population in Hong Kong.

How to Reduce the Dietary Exposure to POPs?

Environmental control is the primary measure to minimise total exposure to POPs. International organizations and national governments have put much effort in this aspect, e.g. the Codex Alimentarius Commission has developed [code of practice](#) for the prevention and reduction of dioxins contamination in food and feed.

Nevertheless, as POPs tend to accumulate in animal fat, consumers can take the following to further reduce intake of POPs from the diet:

1. Reduce the consumption of animal fat, e.g.
 - trim fat from meat and meat products;
 - avoid the use of animal fat for food preparation and cooking;
 - use cooking methods that allow the fats to drain away (e.g. steaming, baking.).
2. Maintain a balanced diet so as to minimize excessive exposure to POPs from a small range of food items.

食物事故點滴

Food Incident Highlight

創傷弧菌與食物安全

今年四月三十日，新加坡當局通知當地業界，由於澳洲道格拉斯港進口的生蠔驗出含有創傷弧菌，產自該處的所有生蠔必須抽取樣本作化驗後，方可進入市場。

創傷弧菌這種細菌主要存在於海水和微鹹（例如河口）的水中，常與魚類和生蠔、蜆或蟹等貝類有關。

如遭珊瑚或海洋動物割傷，創傷弧菌會進入人體引致傷口感染。此外，如未癒合的傷口接觸到創傷弧菌，亦會引致傷口感染。身體健康的人如吃下含有此菌的食物，可引致腸胃炎。另一方面，創傷弧菌會令免疫能力較差的人或長期病患者（尤其是肝病病人）出現原發性敗血病。

長期病患者不應進食生或未經徹底煮熟的海產，而處理生海產的人則應使用手套等防護用具。

肉毒桿菌與香草醬

今年四月，美國回收一款玻璃瓶裝的香草醬。該款意粉醬以羅勒、蘑菇和芝士等製成，被發現酸度不足，可能會滋生肉毒桿菌。此菌所產生的毒素可引致肉毒中毒這種罕見的嚴重疾病，症狀包括嘔吐、頭痛、複視和癱瘓，部分患者更會死亡。

肉毒桿菌及其孢子只可在無氧的環境中生長，但亦能在香草和蘑菇等弱酸食物中存在。在有利的條件下，例如貯存在瓶子、罐子或油中的食物又沒有經過充足的加熱，此菌會繁殖和產生毒素。

為預防肉毒中毒，切勿進食罐面凹陷、裂損或罐頂或罐底凸起的罐裝食品。自製的油浸食品如採用新鮮材料，例如蔬菜、香草或香料，必須放進雪櫃，同時不得貯放超過十天。

Vibrio vulnificus and Food Safety

On 30 April 2008, the Singapore authority informed traders that all oysters imported from Port Douglas in Australia had to be sampled and tested before entering the market because of the detection of the bacteria *Vibrio vulnificus*.

Vibrio vulnificus are bacteria mainly found in sea and brackish water (e.g. estuary). They are often associated with fish and shellfish like oysters, clams and crabs.

These bacteria can cause wound infections when they enter body through cuts caused by corals and marine animals or when an open wound comes into contact with the bacteria. When a healthy individual consumes foods that contain the bacteria, it can cause gastrointestinal infection. On the other hand, the bacteria can cause primary septicaemia in people with weakened immunity or underlying chronic diseases, especially liver diseases.

People who have chronic diseases should not consume raw or undercooked seafood. People who handle raw seafood should use protective gears like gloves.

Clostridium botulinum and Pesto Sauce

In April 2008, there was a recall of a certain brand of pesto sauce in glass jar in the USA. This pasta sauce, which contains basil, mushroom and cheese, was found not acidic enough. As a result it could harbour the bacteria *Clostridium botulinum*. The toxin the bacteria produced can cause a rare but serious illness called botulism. Symptoms range from vomiting, headache, double vision, to paralysis and in some cases, death.

Clostridium botulinum and its spores only grow in oxygen-free environment but could exist in any low-acid food including herbs and mushrooms. Under favourable conditions, such as when food is stored in jars, tins or oil and without adequate heating, the bacteria begin to grow and produce toxin.

To prevent botulism, never eat canned foods that are dented, leaking or have bulging ends. If home-made foods stored in oil are prepared using fresh ingredients (e.g. vegetables, herbs and spices), they must be kept refrigerated and for no more than 10 days.



香草醬 Pesto sauce

風險傳達 工作一覽 Summary of Risk Communication Work

風險傳達工作一覽 (二零零八年五月) Summary of Risk Communication Work (May 2008)	數目 Number
事故/食物安全個案 Incidents / Food Safety Cases	60
公眾查詢 Public Enquiries	128
業界查詢 Trade Enquiries	255
食物投訴 Food Complaints	343
教育研討會/演講/講座/輔導 Educational Seminars / Lectures / Talks / Counselling	68
上載到食物安全中心網頁的新訊息 New Messages Put on the CFS Website	15