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焦點個案 Incident in Focus

半乾番茄中的甲型肝炎病毒 Hepatitis A Virus in Semi-dried Tomatoes

食物安全中心

風險評估組

科學主任游天頌先生報告

Reported by Mr. Arthur YAU, Scientific Officer,

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澳洲爆發甲型肝炎後，新南威爾斯衛生部遂於今年十一月七日採取預防措施，發出新聞公報警告國民切勿進食非預先包裝的半乾番茄，除非已經徹底煮熟。此外，由於澳洲大部分甲型肝炎個案集中在維多利亞省，該省亦要求有關業界加強追溯半乾番茄的來源，以及採取更嚴格的半乾番茄加工程序。澳洲最近的證據顯示甲型肝炎爆發與半乾番茄有關。食物安全中心(中心)一直與澳洲有關當局密切聯絡，以了解事件的最新發展。香港至今並未發現有關的番茄。

On 7 November 2009, the Department of Health of New South Wales in Australia issued a [press release](#) as a precautionary measure, warning people not to eat non-prepackaged semi-dried tomatoes unless thoroughly cooked following outbreaks of hepatitis A in Australia. The state of Victoria, where most of the cases concentrate, also requested enhanced traceability and processing steps for all semi-dried tomatoes. Recent evidence in Australia suggested an association between the hepatitis A outbreaks and semi-dried tomatoes. The Centre for Food Safety (CFS) has been communicating closely with the Australian authorities on the latest development of the incident. No affected products has been found in Hong Kong.

甲型肝炎

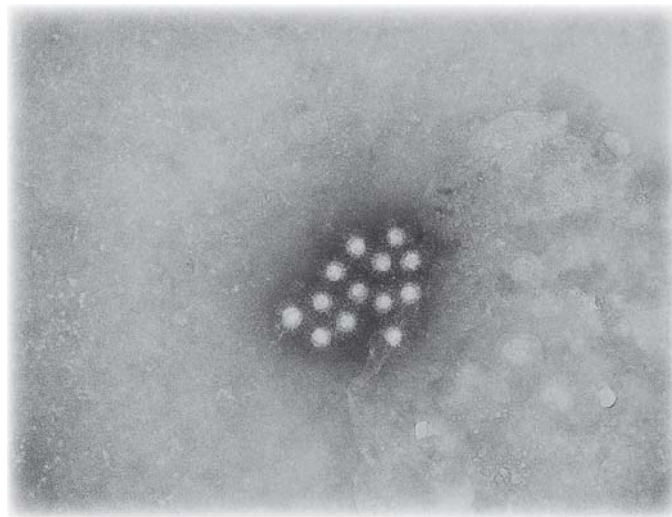
甲型肝炎是由甲型肝炎病毒引起的肝臟疾病，可引致的症狀包括突發性發燒、不適、厭食、噁心、腹痛、深色小便及黃疸等。病情輕微的患者會出現一兩周的輕微不適，而嚴重者則可患病長達數月。病情的嚴重程度隨年齡而加劇，幼童染上這種疾病通常毫無病徵。甲型肝炎的死亡率一般偏低，大部分患者能完全康復。

甲型肝炎病毒對溫度敏感，徹底烹煮食物可殺死這種病毒。

甲型肝炎病毒的傳播途徑

由於人類是宿主，故甲型肝炎病毒可通過口糞途徑經患者或帶菌者傳播給他人。帶菌者經常把甲型肝炎病毒傳給有密切接觸的人。此外，不當處理人類糞便亦會污染飲用水和貝類養殖區。

甲型肝炎病毒無分國界，在許多個人和環



甲型肝炎病毒(相片來源:美國疾病控制及預防中心)
Hepatitis A virus (Source: Centers for Disease Control and Prevention, USA)

Hepatitis A

Hepatitis A is a liver disease caused by hepatitis A virus (HAV). It may cause symptoms like an abrupt onset of fever, malaise, anorexia, nausea, abdominal pain, dark urine and jaundice. The severity of disease, ranges from a mild illness lasting one to two weeks to severe one lasting for months, increases with age. Infected young children are often without symptoms. The death rate is generally low and most people recover from the illness completely.

HAV is heat sensitive and can be destroyed through thorough cooking of food.

Transmission of HAV

As human is the reservoir, HAV can transmit from person-to-person via the faecal-oral route. The carriers can often spread HAV among close contacts. Furthermore, improper disposal of human waste can cause contamination of both drinking water and shellfish production areas.

HAV has worldwide presence and is very common in many parts of the world where there is inadequate personal hygiene and environmental sanitation. The spread of HAV in the population of more developed regions will cause more outbreaks as most of the population is not immune.

Food-borne HAV

A number of foods are of particular concern in

境衛生欠佳的地方十分常見。甲型肝炎病毒如在較先進地區傳播，便會造成較多病例，因為大部分人對此病毒沒有免疫力。

食源性甲型肝炎病毒

我們要特別留意一些與甲型肝炎病毒有關的食物。蠔、蜆、青口及帶子等雙殼貝類海產屬於濾食動物，會把受污染海水中的甲型肝炎病毒積聚在體內。此外，供生吃的水果和蔬菜（例如沙律菜、蔥等新鮮蔬菜、草莓及紅莓等水果）亦可能通過兩個主要途徑受甲型肝炎病毒污染：第一，這些蔬果可能於收割前已在農場內受污水污染，而污染來源可能是灌溉水或未經妥善處理的動物糞便。第二，甲型肝炎病毒亦可在食物收割、加工、包裝、貯存、分銷及最終配製過程中隨時透過食物處理人員或設備進入食物內，然後才供人食用。食物處理人員如把沾有甲型肝炎病毒的食物污染其他食物，又或如屬於甲型肝炎帶菌者而又沒有奉行良好個人衛生習慣，便會把病毒傳開。不潔的手會把甲型肝炎病毒傳開，而感染劑量可低至約10至100個病毒粒子。

甲型肝炎病毒能在環境中繼續生存，並可能在新鮮蔬果變壞後仍然存活。由於以食水清洗蔬果只能去除部分病毒，如污染量高，食用者仍可能受感染。

注意要點：

1. 甲型肝炎是一種經口糞途徑傳播的病毒性疾病；
2. 為防止食物交叉污染，我們應在個人和食物配製方面奉行良好衛生守則；
3. 食物應徹底煮熟（如適用），以殺死甲型肝炎病毒。

relation to HAV. Bivalve shellfish like oysters, clams, mussels and scallops are filter feeders and will concentrate the HAV present in contaminated seawater. Fruits and vegetables for raw consumption (e.g. salad items, fresh vegetables like green onions and fruits like strawberries and raspberries) may also be contaminated with HAV in two major ways. They may get contaminated before harvest in farms through sewage contamination. First, possible sources of contamination are irrigation water or inadequately treated manure. Second, HAV can also enter food through food handlers and equipment any time from harvest, processing, packaging, storage, distribution and during final preparation before consumption. Food handlers can spread HAV through cross-contamination with affected foods, or by being HAV carriers themselves and with poor personal hygiene. HAV can spread through unclean hands and the infective dose is as low as about 10-100 virus particles.

HAV can survive well in the environment and may outlast the shelf life of fresh fruits and vegetables. As washing produce with potable water can only remove some of the virus, infection is still possible if the contamination level is high.

Key Points to Note:

1. Hepatitis A is a viral disease that is spread via the faecal-oral route;
2. Proper hygiene should be maintained both personally and during food preparation in order to prevent cross-contamination of food;
3. Food should be cooked thoroughly to destroy HAV, if applicable.

本港情況

一九九八至二零零七年，衛生防護中心發現由各種原因引起的甲型肝炎呈報個案數目呈下降趨勢，由二零零零年約500宗跌至二零零五至二零零七年每年少於100宗。超過90%甲型肝炎個案屬本地感染個案，病毒在冬季及春季較為活躍。本港沒有發現與蔬菜有關的甲型肝炎事故，部分原因可能是感染與發病之間相隔一段很長時間，以致通常沒有殘餘食物可作實驗室分析來證實致病原因。

預防食源性甲型肝炎

我們應作出預防措施以減低染上食源性甲型肝炎的機會。就半乾番茄而言，在食用前徹底煮熟會較為安全，這樣即使番茄沾上甲型肝炎病毒，也會透過烹煮過程消除。

由於食物從農場到餐桌的過程中隨時可能受污染，因此從可靠的來源購買即食食物尤其重要，因為我們在進食前不會進一步烹煮即食食物，以消除當中可能存在的甲型肝炎病毒。為預防交叉污染，我們應（1）保持良好個人衛生，在處理食物前後和期間正確清洗雙手；（2）使用不同的用具，分開處理生的食物和即食食物；（3）把半乾番茄等即食食物與生的食物放在雪櫃的不同位置，把即食食物蓋好、入盒和放於生的食物之上。徹底煮熟食物（如適用）仍然是殺死甲型肝炎病毒的最後關鍵一步。

Local Situation

From 1998 – 2007, the Centre for Health Protection found that the number of hepatitis A reported (from all causes) shows a declining trend. The number of cases dropped from approximately 500 cases in 2000 to less than 100 cases each year in 2005 to 2007. Over 90% of the cases are acquired locally and the virus is more active during winter and spring. No hepatitis A outbreaks associated with vegetables was identified locally. It may partly be due to the long lag time between infection and the onset of symptoms and therefore often no food remnants are available for confirmation through laboratory analysis.

Prevention of Food-borne Hepatitis A

To reduce the chance of spreading hepatitis A through food, one should exercise precaution. As for semi-dried tomatoes, it is safer to cook them thoroughly before consumption so that the HAV, if present, is destroyed.

As food may get contaminated in any point from farm to table, it is especially important to choose food from reliable sources for ready-to-eat (RTE) food, where no further cooking will be done to destroy any HAV present before consumption. To prevent cross-contamination, one can (1) maintain good personal hygiene by washing hands properly before, during and after handling food; (2) using separate set of utensils for handling raw food and RTE food; (3) separate RTE food like semi-dried tomatoes from raw food when storing in refrigerator by covering or boxing it and keep it above any raw food. Thorough cooking, wherever applicable, remains the final critical step to destroy HAV.



食物輻照技術 Food Irradiation

食物安全中心
風險評估組
科學主任周淑敏女士報告

Reported by Ms. Shuk-man CHOW, Scientific Officer,
Risk Assessment Section,
Centre for Food Safety

正如上一期介紹，現時有多項食物加工技術可用來保持食物收割後的質量和安全，其中輻照技術對市民來說似乎是一種較新的技術。其實，輻照技術在食物處理上已使用超過五十年。

食物輻照技術

輻照技術是一項利用電離輻射來處理食物的加工技術。由於在輻照過程中食物的溫度不會大幅提高，故輻照技術又稱為“冷巴士德消毒”。

在輻照過程中，進行處理的食物一般會放在包裝內，經輸送系統運送至一個密封的房間，然後接受伽瑪射綫、X射綫或高能電子束等電離輻射處理。輻照的時間和能量會根據食物大小、種類和處理目的小心調校。電離輻射穿過食物時，會破壞食物、細菌、昆蟲和寄生蟲內的基因，令這些生物死亡或喪失繁殖能力，從而延長輻照食物的保質期。不過，病毒和細菌孢子抗電離輻射的能力通常較高，故它們經過輻照後可能仍然存活。

As introduced in the last issue, there are a number of food processing technologies that can be used to maintain the post-harvest quality and safety of our food. Among these, irradiation seems to be a relatively new technology to the public. Irradiation, in fact, has been used for food treatment for more than five decades.

Food Irradiation

Irradiation is a processing technology which involves treating food with ionising radiation. Since irradiation does not substantially raise the temperature of food products under treatment, it is also called “cold pasteurisation”.

During the process of irradiation, food under treatment is usually packed in its final packaging and transported by a conveyor system into a closed room where the food is exposed to ionising radiation, such as gamma rays, x-rays or high energy electron beams. The duration and energy for irradiation is carefully adjusted according to the size, food type and purpose for treatment. When the ionising radiation passes through, DNA in the food, bacteria, insects or parasites will be broken. These organisms will then be killed or sterilised and thereby the shelf-life of the irradiated food products can be extended. However, viruses and bacterial spores are typically more resistant to ionising radiation that may survive through the irradiation process.



1. 抑制馬鈴薯，大蒜和洋蔥球不適當地萌芽
Limit unwanted sprouting of potato tubers, garlic and onion bulbs
2. 淨化香草和香料
Decontaminate herbs and spices

3. 減慢香蕉，木瓜和芒果的成熟速度
Delay ripening in bananas, papayas and mangoes
4. 減少新鮮農產品的致病微生物
Reduce pathogenic microorganisms in fresh produces

食物輻照技術的應用

現時，已有超過50個國家批准使用電離輻射來控制食物收割後的質量，使業界可符合檢疫規定。

減少新鮮和冷藏食物的致病微生物

由於使用電離輻射處理食物不會令食物的溫度大幅提高，所以輻照技術對於控制新鮮和冷藏食物(例如海產、新鮮農產品和冷藏肉類產品)引起的食源性疾病尤其重要。有鑑於美國在二零零六年爆發與菠菜和捲心生菜有關的O157:H7型大腸桿菌事故，美國食物及藥物管理局最近批准使用電離輻射處理新鮮菠菜和捲心生菜，以保障消費者免受致病細菌的影響。

淨化香草和香料

香料、香草和調味料的價值，在於其獨特的味道、顏色和香味。不過，環境及處理過程往往會令這類食品受到微生物污染。由於加熱處理會令味道和香味大減，因此輻照技術等“冷過程”可能是不錯的選擇，讓乾製香草和香料經淨化後才混入其他食品內。

延長易腐壞農產品的保質期

延長商業上重要植物食品的保質期一向是業界樂見的。低劑量電離輻射有助延長一些易腐壞農產品的保質期，並保持收割後的質量。舉例說，輻照技術能抑制蘑菇的菇傘張開和菇柄變長，阻止馬鈴薯和洋蔥球不適當地萌芽，以及減慢香蕉、芒果和木瓜的成熟速度。

Application of Food Irradiation

Currently, over 50 countries have approved the use of ionising radiation to control the post-harvest quality of foods and for satisfying quarantine requirements in trade.

Reduce pathogenic microorganisms in fresh and frozen food

As treatment of food with ionising radiation does not result in significant temperature increase, it is of particular importance to control food-borne illnesses in fresh and frozen food products such as seafood, fresh produces, and frozen meat products. In the wake of *E. coli* O157:H7 outbreaks linked to spinach and iceberg lettuce in the United States in 2006, the U.S. Food and Drug Administration (FDA) has recently approved the use of ionising radiation for the treatment of fresh spinach and iceberg lettuce to protect consumers from the disease-causing bacteria.

Decontaminate herbs and spices

Spices, herbs and seasonings are valued for their distinctive flavours, colours and aromas. However, they are often contaminated with microorganisms from the environment and during processing. Since heat treatment can lead to a significant loss of flavour and aroma, a “cold process”, like irradiation may be a good choice to decontaminate dried herbs and spices before incorporating into other food products.

Extend shelf-life of perishable produce

Extending the durable life of commercially important plant commodities is always desirable. Exposure to low dose of ionising radiation can help improve the shelf-life and maintain the post-harvest quality of some perishable produces. For example, irradiation can inhibit cap opening and stem elongation of mushrooms, limit unwanted sprouting of potato tubers and onion bulbs, and delay ripening in bananas, mangoes, and papayas.

控制水果和穀物製品的蟲害

保存水果及穀物製品面對的一大問題是蟲害。輻照技術證實能有效取代現時用於防治害蟲的物理和化學方法，並可殺死穀類、乾果、麪粉和咖啡豆等食品中的害蟲。不過，值得一提的是，輻照食物必須妥善包裝，以防再有害蟲滋生。

儘管業界數十年來一直使用輻照技術為食物進行消毒，以符合檢疫規定，但食用輻照食物對健康的影響仍是備受關注。我們將在下一期更深入探討輻照食物的安全性和營養價值。

有關食物輻照技術的基本原理和應用的詳情，請參閱我們的文獻研究“輻照食物的安全性”。

Control insect infestation in fruits and grain products

A major problem encountered in preservation of fruits and grain products is insect infestation. Irradiation has been shown to be an effective alternative to the physical and chemical methods currently used for insect control. Commodities such as cereal grains, dried fruits, flour and coffee beans have been successfully disinfested by irradiation. However, it is worth mentioning that proper packaging of irradiated food products is required to prevent reinfestation of insects.

Despite the fact that irradiation has been used for decades for food disinfection and satisfying quarantine requirements in trade, health concerns over the consumption of irradiated food continue to attract attention. In the coming issue, we will have a more in-depth discussion on the safety and nutritional quality of food after irradiation treatment.

For details of the basic principles and application of food irradiation, please refer to our literature review on “Safety of Irradiated Food”.



罐頭食品中的雙酚A

美國一個消費者組織在上個月公布一項調查結果，指在多款罐頭食品中量度到雙酚A。

雙酚A用於生產聚碳酸酯塑料，而聚碳酸酯塑料則是製造飲料瓶和餐具的常見物料。此外，雙酚A亦是用來製造食物罐和飲料罐保護塗層和內層的某些環氧樹脂的起始材料。少量的殘餘雙酚A可從聚碳酸酯塑料或環氧樹脂內層遷移到食物和飲料。如塑料或樹脂受損或破裂，雙酚A亦會遷移到食物。關注食物含有殘餘雙酚A與下列兩點有關：雙酚A具有荷爾蒙特性，以及動物研究結果發現雙酚A可能會影響生殖情況、神經系統和行為發育，但至今仍未有定論。

各主要規管和諮詢機構以往的研究認為，現時透過食物包裝而從飲食中攝入雙酚A的情況，預計不會對一般人(包括初生嬰兒及嬰兒)構成健康風險。聯合國世界衛生組織與糧食及農業組織將於明年聯合舉行專家會議，評估雙酚A的安全性。食物安全中心將密切留意這個議題的發展。

Bisphenol A in Canned Foods

Last month, a consumer group in the United States reported results of a survey which found measurable levels of bisphenol A (BPA) in a diverse assortment of canned foods.

BPA is used in the manufacture of polycarbonate plastic, a material commonly used to make beverage bottles and tableware. It is also a starting material for certain epoxy resins used to make protective coatings and linings for food and beverage cans. Small amounts of BPA residues can migrate from polycarbonate plastics or epoxy resin linings into foods and beverages. BPA can also migrate into foods if the plastic or resin is damaged or broken down. Concerns of BPA residues in foods are related to hormonal properties of BPA and the uncertainty in the results of animal studies on the possibility of adverse health effects on reproduction, the nervous system and behavioural development.

Previous reviews by major regulatory and advisory bodies considered that the current dietary exposures to BPA through food packaging uses were not expected to pose a health risk to the general population, including newborns and infants. The World Health Organization and the Food and Agricultural Organization of the United Nations will jointly organise an expert meeting next year to assess the safety of BPA. The Centre for Food Safety will follow closely developments on this subject.

鮑魚中的硝基呋喃

台灣衛生署在上個月發現中國內地進口的新鮮鮑魚含有硝基呋喃類代謝物。本港報章亦有報道這則消息，引起市民關注食物含有殘餘獸藥的安全事宜。

硝基呋喃是一類抗菌劑，用來醫治食用動物的細菌感染。歐盟各國、美國、加拿大和澳洲等多個國家已禁止使用這種抗菌劑。硝基呋喃在食物中的主要關注，是這類化合物可能會令實驗動物患癌。不過，目前並無足夠證據證明硝基呋喃會令人類患癌。

硝基呋喃及其代謝物已納入食物安全中心(中心)的日常食品監察計劃中。今年一月至十一月中，中心抽取逾200個水產樣本作分析，其中兩個魚類樣本和一個蝦樣本驗出含有低水平的硝基呋喃類代謝物。從驗出的含量來看，按一般食用量進食上述產品，對健康產生嚴重影響的風險不大。鑑於硝基呋喃有潛在風險，中心建議業界不要使用這類化合物。

Nitrofurans in Abalone

Last month, the Department of Health in Taiwan found nitrofurans metabolites in fresh abalone imported from Mainland China. This news was reported in local newspapers, which raised some concerns on the safety of veterinary drug residues in food.

Nitrofurans are a group of antimicrobial agents used to treat bacterial infections in food animals. Their use has been banned in many countries, such as EU countries, the United States, Canada, and Australia. The main concern of nitrofurans in food is that these compounds may cause cancer in experimental animals. However, currently there is inadequate evidence that they can cause cancer in humans.

Nitrofurans and their metabolites are included in the routine food surveillance programme of the Centre for Food Safety (CFS). Between January and mid-November 2009, over two hundred aquatic products were sampled for analysis. Of which, two fish and one shrimp samples were found with low levels of nitrofurans metabolites. Based on the levels detected, usual consumption of the above products is unlikely to pose significant health risk. In view of the potential risk, the CFS advises the trade not to use nitrofurans.

風險傳達 工作一覽 Summary of Risk Communication Work

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