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對放射性污染的食品安全關注

Food Safety Concern on Radioactive Contamination

食物安全中心風險評估及傳達科
周楚耀醫生報告

Reported by Dr. Tony CHOW,
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最近，媒體對福島核電站排放經處理的核污水並可能因此污染海洋環境及海產表示關注。特區政府的首要考慮是確保食物安全。2011年福島核電站事故（福島事故）發生後，當局對日本食品實施了進口管制措施。因應最新情況，當局正檢討對日本進口食品的進口管制措施。

Recently, the media has been voicing concerns over the discharge of nuclear-contaminated water from the Fukushima nuclear power station (FNPS) and its possible contamination of the marine environment and seafood. Ensuring food safety is the Hong Kong SAR Government's prime consideration. Following the FNPS incident (Fukushima incident) in 2011, the Administration has imposed import control measures on Japanese food. In light of the latest findings and development, the Administration has been reviewing the import control measures on food products imported from Japan.

日本的排放計劃

日本政府計劃於2023年夏季將福島核電站用作冷卻核反應堆而產生的核污水經處理後排放出海洋。這些核污水曾直接接觸活躍的核原料，因此含大量高濃度放射性物質。若日本按計劃進行排放，排放行動將持續30年。在這段長時間裏，若淨化系統無法有效運作，便有可能對食物安全和海洋生態構成嚴重風險。有關計劃引起國際社會和公眾關注。

Japan's Discharge Plan

The Government of Japan plans to discharge the nuclear-contaminated water generated in the process of cooling the reactors at the FNPS into the ocean in the summer of 2023. The nuclear-contaminated water had direct contact with active raw materials of the nuclear reactor and thus contains a high concentration of radioactive substances. If Japan proceeds with the discharge as planned, it will last for 30 years. During this long period of time, if the purification system fails to operate effectively, it can pose significant risks to food safety and marine ecology. The plan has aroused concern from the international community and the public.

國際原子能機構的審視工作

國際原子能機構成立的技術工作組一直在審視日本的排放計劃。技術工作組多次到訪日本進行考察，並發表報告，就排放計劃的一些技術上和規管上的事宜向日方提出意見。國際原子能機構於2023年7月就排放前的審視發表報告，並表示會於排放期間繼續進行審視。

International Atomic Energy Agency's Review

The Task Force set up by the International Atomic Energy Agency (IAEA) has been reviewing Japan's discharge plan. The Task Force conducted visits to Japan and published review reports to make suggestions on some technical and regulatory aspects of the discharge plan to the Japanese authorities. The IAEA published the report in July 2023 on the review before the discharge, and indicated that the review will continue during the discharge.

加強對日本進口水產品的檢測

根據東京電力控股株式會社（東京電力）發出的一份報告，一個從福島核電站口岸區採集的魚類樣本的放射性物質銫含量超出食品法典委員會指引限值18倍。銫可通過進食食物或喝水進入人體，進食後會被血液吸收，進入身

Enhanced Testing on Imported Japanese Aquatic Products

According to a report issued by Tokyo Electric Power Company Holdings (TEPCO) earlier, a fish sampled from the port area of the FNPS was found to contain 18 times the Codex guideline level of the radioactive substance Caesium. Caesium can be taken into the body by eating food or drinking water.

體各處，主要蓄積在肌肉中。進食有關魚類或會對健康構成風險，增加患癌的可能性。

因應福島採集的魚類樣本銻含量超出食品法典委員會指引限值的報告，食物安全中心（食安中心）調整相應的監測工作，並加強對日本進口水產品的檢測。有關魚類在2023年5月捕獲，化驗報告則於2023年6月5日上載到東京電力的網站。事實上，食安中心已於六月中起全面提升日本進口食品的檢測範圍，檢測所有由日本進口的的水產品。

迷思1：進食碘含量豐富的食物如碘鹽作為預防措施

在過去或涉及放射性碘的核事故中，衛生當局會派發碘片，以阻止甲狀腺攝取放射性碘，來作為防護輻射影響的一種保護措施。

然而，沒有科學證據顯示碘含量豐富的食物和碘鹽跟碘片有著類似的輻射防護效果。此外，碘鹽的碘含量相對低，每日要進食2.5至5公斤碘鹽，才相當於吸收一顆碘片所含的碘。進食過量的食鹽會有損健康，特別是本身患有高血壓、心臟病或腎病的人士。

迷思2：使用自購的便攜式輻射檢測儀器測量輻射水平

專業用的離子輻射檢測儀（一般稱為核輻射檢測儀）應具備所須的準確度和靈敏度並需由專業機構作定期校正，而一般自購的便攜式輻射檢測儀器，未必能達至所須的測量要求，亦可能沒有相關的專業認證和校準，並不能取代專業設備和人員所進行的輻射監測和評估。所以，市民若使用自購的核輻射檢測儀器未必可以評估食物的輻射水平。

給市民的建議

- 由於食安中心採取多項有效措施，本港市面上供應的食物不會有大量輻射污染。
- 食安中心會進一步加強向公眾發放檢測結果和日本食品的安全資訊，釋除市民的疑慮，包括公布日本進口食品樣本輻射檢測結果。
- 食安中心不建議購買核輻射檢測儀器測量食物的輻射水平，因為有關儀器未必能達至所須的測量要求。

給業界的建議

- 食安中心會繼續與本地的日本食品進口業界和餐飲業界等保持聯繫，讓業界更能掌握有關排放計劃的最新情況，以及可能採取的進口管制措施，這樣將有助業界制定相應措施，例如在訂購食材方面，預早作出安排。

After ingestion, it is absorbed into the bloodstream, distributes throughout the body, and tends to concentrate in muscles. The fish, if consumed, may pose a risk to health and increase the likelihood of inducing cancer.

In view of the report of the fish sampled in Fukushima exceeding the Codex guideline level, the Centre for Food Safety (CFS) has adjusted the corresponding monitoring work and enhanced the testing on imported Japanese aquatic products. The concerned fish was caught in May 2023 and the analytical report was uploaded on TEPCO's website on 5 June 2023. In fact, the CFS has since mid-June expanded the scope of testing to cover all Japanese aquatic products.

Myth 1: Consumption of iodine-rich foods such as iodized salt as a prophylactic measure

In the previous nuclear emergencies where radioactive iodine might have been involved, iodide tablets would be distributed by the health authority as some form of protection against radiation effects by preventing the uptake of radioactive iodine by the thyroid gland.

However, there is no scientific evidence to suggest that iodine-rich foods and iodized salt, would have similar radiation protective effect as iodide tablets. For iodized salt, its iodine content is relatively low. Moreover, one has to take about 2.5 to 5 kg of iodized salt a day in order to absorb the equivalent dose of iodine that is contained in an iodide tablet. Consuming an excessive amount of salt is harmful to health especially for those with high blood pressure, heart disease or kidney disease.

Myth 2: Measurement of radiation with self-purchased portable radiation detectors

Ionising radiation detectors (commonly known as nuclear radiation detectors) for professional uses need to have the required accuracy and sensitivity and to be calibrated regularly by professional bodies to make sure they give accurate and reliable results. On the contrary, self-purchased portable radiation detectors may not have the required measurement capability as well as relevant professional certification and calibration, and cannot replace radiation monitoring and assessment by professional equipment and personnel. Hence, members of the public may not be able to determine radiation levels in food by using self-purchased nuclear radiation detectors.

Advice to the Public

- With effective food control measures in place, foodstuffs available on market are not likely to be contaminated with high level of radioactivity.
- The CFS will further enhance the dissemination of testing results as well as information on the safety of Japanese food to members of the public to dispel public concerns, including the radiological testing results of food products from Japan.
- It's not advisable to purchase nuclear radiation detectors to detect radiation levels in food as such device may not have the required measurement capability.

Advice to the Trade

- The CFS will continue to maintain close liaison with local importers of Japanese food products and catering operators to enable their better grasp of the latest position of the discharge plan and the possible import control measures that may be implemented, so that early preparations, such as arrangements for sourcing ingredients, can be made.

天冬酰胺：安全嗎？ Aspartame: Safe or Not?

食物安全中心風險評估組
科學主任黃詩雯女士報告

Reported by Ms. Sosanna WONG, Scientific Officer,
Risk Assessment Section, Centre for Food Safety

40多年來，天冬酰胺一直是廣泛研究的課題，其安全性已經過聯合國糧食及農業組織 / 世界衛生組織食物添加劑聯合專家委員會（專家委員會）、歐洲食品安全局、美國食品及藥物管理局和澳洲新西蘭食品標準管理局審視。這些機構的結論一致認為，科學證據支持天冬酰胺用作甜味劑的安全性。然而，由於有新的研究結果，國際癌症研究機構和聯合國糧食及專家委員會最近進行了獨立和互補的評估，以探討與攝入天冬酰胺相關的潛在致癌危害和其他健康風險。

什麼是天冬酰胺？

天冬酰胺是一種高甜度、低熱量的人造甜味劑，自二十世紀八十年代以來廣泛用於多種食品如汽水、口香糖和雪糕。其甜度比砂糖高約200倍，因此只需少量即可達致食物中與砂糖相同的甜度。

天冬酰胺由兩個氨基酸部分組成：天冬氨酸和苯丙氨酸。苯丙氨酸部分經過輕微改造，賦予天冬酰胺甜味。天冬酰胺在進食後會在胃腸道內完全水解，產生天冬氨酸、苯丙氨酸和甲醇這些天然存在於體內和多種食物中的物質。這些代謝物其後會被吸收到血液中並進一步代謝。來自食物中的蛋白質或天冬酰胺的兩種氨基酸（即天冬氨酸和苯丙氨酸），在化學上並無區別，在我們身體內的代謝過程亦是一樣的。

國際癌症研究機構和聯合國糧食及農業組織 / 世界衛生組織食物添加劑聯合專家委員會對天冬酰胺的評估

國際癌症研究機構評估了天冬酰胺的潛在致癌作用，而專家委員會則在考慮攝入天冬酰胺的情況後，在風險評估中衡量了所有對健康可能造成的影響。國際癌症研究機構和專家委員會於2023年7月14日發表聯合聲明，其中的研究結果概述如下：

(a) 國際癌症研究機構基於對實驗動物和人類致癌性的“有限證據”，把天冬酰胺分類為或可能令人類患癌（組別2B）；

(b) 在三項可評估天冬酰胺與癌症的觀察性研究中，國際癌症研究機構發現飲用含有人造甜味劑的飲品與患肝癌風險有正向關聯；然而，不能排除偶然性、偏見或干擾影響作為對陽性結果的解釋；

(c) 專家委員會的結論是，實驗動物或人體的數據均沒有強力證據表明進食天冬酰胺後會產生不良影響，亦不可能在動物攝入天冬酰胺與患上癌症之間建立聯繫。

此結論是建基於天冬酰胺在胃腸道中完全水解後所產生的代謝物，其與進食一般食物後所吸收的代謝物是一樣；及

(d) 專家委員會也得出結論，認為從飲食攝入天冬酰胺不會影響健康，並表示並無理據改變此前所訂定的每日每公斤體重0-40毫克天冬酰胺每日可攝入量。

世界衛生組織將繼續監測新證據，並鼓勵獨立研究機構就攝入天冬酰胺的情況與對消費者健康的影響之間可能存在的關聯進行更多研究。

如何規管天冬酰胺？

在本港，批准用於食物中的甜味劑都通過國際機構的安全

Aspartame has been the subject of extensive investigation for more than 40 years, and its safety has been comprehensively reviewed by international organisations such as the Joint FAO/WHO Expert Committee for Food Additives (JECFA), the European Food Safety Authority (EFSA), the US Food and Drug Administration (FDA) and Food Standards Australia New Zealand (FSANZ). These organisations have concluded unanimously that scientific evidence supports the safety of aspartame for use as a sweetener. Nonetheless, given the availability of new research results, the International Agency for Research on Cancer (IARC) and JECFA have recently conducted independent and complementary reviews to assess the potential carcinogenic hazard and other health risks associated with aspartame consumption.

What is Aspartame?

Aspartame is an intense, low-calorie artificial sweetener widely used since the 1980s in various food products like soda, chewing gum and ice-cream. It is approximately 200 times sweeter than table sugar and thus smaller amounts can achieve the same level of sweetness as sugar in food.

Aspartame consists of two amino acid moieties, aspartic acid and phenylalanine. The phenylalanine moiety has been slightly modified to give aspartame its sweet taste. After oral ingestion, aspartame is fully hydrolysed in the gastrointestinal tract to yield aspartic acid, phenylalanine and methanol, which are all occurring naturally in the body and in a wide variety of foods. These metabolites are then absorbed into the blood and are further metabolised. The two amino acids (i.e. aspartic acid and phenylalanine) from proteins in food or from aspartame are chemically indistinguishable and are metabolised in the same way in our bodies.

Evaluations of Aspartame by IARC and JECFA

IARC assessed the potential carcinogenic effect of aspartame, while JECFA considered all possible health impacts in its risk assessment, taking dietary exposure of aspartame into consideration. The findings in the joint statement by IARC and JECFA on 14 July 2023 are summarised as follows:

(a) IARC **classified** aspartame as possibly carcinogenic to humans (Group 2B) on the basis of “limited evidence” for carcinogenicity in experimental animals and humans;

(b) In the three observational studies that allowed an assessment of aspartame and cancer, IARC noted that a positive association was observed between the consumption of artificially sweetened beverages and the risk of liver cancer; however, chance, bias or confounding could not be ruled out as an explanation for the positive findings;

(c) JECFA concluded that there was no convincing evidence from experimental animal or human data that aspartame has adverse effects after ingestion, and it is not possible to establish a link between aspartame

exposure in animals and the appearance of cancer. This conclusion is supported by the information that aspartame is fully hydrolysed in the gastrointestinal tract into metabolites that are identical to those absorbed after consumption of common foods; and

(d) JECFA also concluded that dietary exposure to aspartame does not pose a health concern and indicated no reason to change the previously established acceptable daily intake (ADI) of 0-40 mg/kg body weight for aspartame.

The World Health Organization (WHO) will continue to monitor new evidence and encourage independent research groups to develop further studies on the potential association between aspartame exposure and consumer health effects.

How is Aspartame Regulated?

In Hong Kong, sweeteners, including aspartame, approved for food uses have undergone safety evaluations by international authorities such as JECFA,

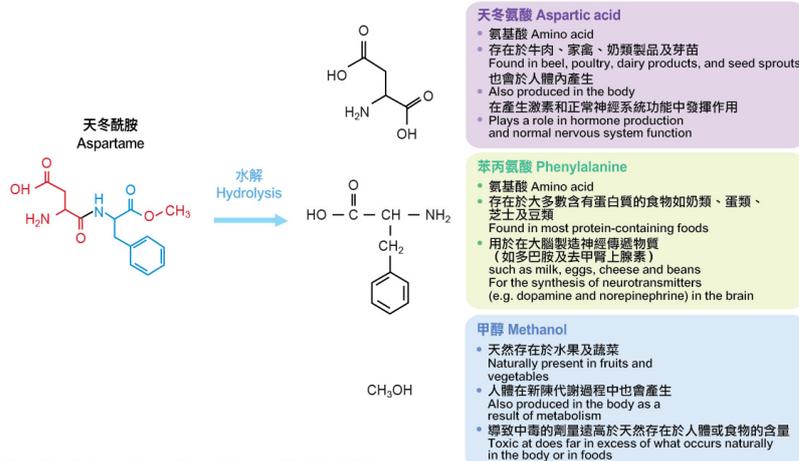


圖1: 天冬酰胺水解產生天冬氨酸、苯丙氨酸和甲醇
Figure 1: Hydrolysis of aspartame yields aspartic acid, phenylalanine and methanol

評估，包括專家委員會，並受《食物內甜味劑規例》(第132 U章)所規管。甜味劑在符合優良製造規範的情況下使用，即添加於食物內的分量，以發揮預期作用的最低分量为限。

消費者應該做什麼？

部分消費者使用甜味劑作為控制體重的方法。保持體重的關鍵在於避免攝取多於身體所需的熱量。以低熱量甜味劑取代砂糖的確可以減少熱量，但如果因為省下了熱量而在之後吃得更多，或吃了更多其他產生熱量的營養素，例如碳水化合物、蛋白質和脂肪等，對於減輕體重仍然是徒勞無功的。長期維持健康的體重需要保持積極健康的生活模式，包括均衡飲食和適當運動，而且持之以恆。

and are regulated under the Sweeteners in Food Regulations (Cap. 132U). Sweeteners should be used under the condition of Good Manufacturing Practice (GMP), that is, the quantity added to food shall be limited to the lowest possible level necessary to accomplish the desired effect.

What Consumers Should Do?

Some consumers use sweeteners as a means for weight control. The key to maintaining body weight is not to consume more calories than those that are burnt. Low-calorie sweeteners can be used as an alternative to reduce calories by replacing table sugar. Nevertheless, they only work if the calories saved are not added back, say, by eating more food later in the day, or by taking in more of other calorie-yielding nutrients such as carbohydrates, protein and fat in the overall diet. Achieving long-term weight maintenance rests on a healthy and active lifestyle that includes a sensible, balanced diet and regular physical activity, and this requires long-term commitment.

學校和幼兒機構的食物安全

Food Safety in Schools and Childcare Facilities

隨著暑假接近尾聲，學校和幼兒機構正在為新學年做準備。學校膳食方面，有必要保持高水平食物安全和衛生標準，因為安全又有營養的食物對兒童健康成長非常重要，特別是對幼兒來說，因為他們較易出現食物中毒個案。因此，員工與食物處理人員應妥為認識食物中的潛在危害並保持良好食物衛生習慣。

為協助教師、照顧者和食物處理人員全面掌握學校食物安全的各種事宜，食物安全中心為教師和員工製作了一冊全新的「學校和幼兒機構確保食物安全實務指南」。該指南涵蓋在學校和幼兒機構建立有效食物安全計劃所需的基本食物安全要求和其他重要範疇。如欲了解更多有關確保校園食物安全的資料，請瀏覽新推出的學校主題網頁。

As summer vacation is nearing its end, schools and childcare facilities are preparing for a new school year. When it comes to school meals, it is essential to maintain high food safety and hygiene standard as safe and nutritious food is important to the growth and wellbeing of children. This is especially true for younger children as they are more vulnerable to food poisoning. Therefore, staff and food handlers should properly understand the potential hazards in food and practice proper food hygiene.

To assist teachers, caregivers and food handlers in developing a comprehensive understanding of food safety issues in schools, the Centre for Food Safety has prepared a new booklet titled "A Practical Guide for Ensuring Food Safety in Schools and Childcare Facilities" for teachers and staff. The guide covers basic food safety requirements and other important aspects necessary for establishing a successful food safety programme in schools and childcare facilities. For more information on ensuring food safety on campus, please visit the newly launched [thematic webpage](#) for schools.

未煮熟的豬肉 — 可供安全進食嗎？

Undercooked Pork - Safe to Eat?

最近網上有人在討論在食肆進食含有未煮熟豬肉的菜式是否安全。由於未煮熟的豬肉可能有多種微生物危害和寄生蟲感染，因此會對食物安全構成重大風險，不能安全食用。

由於未煮熟的豬肉熱處理不足，未能消滅當中的食源性細菌如沙門氏菌，進食未煮熟的豬肉可引致食物中毒。此外，未煮熟的豬肉內或有原生動物寄生蟲如弓形蟲，進食後可引發弓形蟲病。以微包囊形式存在的寄生蟲可通過食物感染人類。

業界和市民配製豬肉菜式時，應確保菜式**徹底煮熟**。豬肉的中心溫度應最少達到攝氏75度。使用食物溫度計時，應把溫度計插進肉的最厚部分的中央。為保障食物安全，市民不應進食生或未煮熟的豬肉。

There are online discussions about the safety of consuming dishes with undercooked pork at food premises. Undercooked pork is not safe to eat and poses a significant risk to food safety due to various microbiological hazards and parasitic infections.

Since undercooked pork does not have adequate heat treatment to eliminate foodborne bacteria such as *Salmonella*, consuming undercooked pork could result in food poisoning. In addition, undercooked pork may contain protozoan [parasites](#) like *Toxoplasma*, which can cause toxoplasmosis when ingested. The parasites in the form of microscopic cysts can be transmitted to humans by food.

When preparing pork dishes, the trade and the public are reminded to check that they are [thoroughly cooked](#). The core temperature of the pork should reach at least 75°C. When using a food thermometer, it should be inserted into the centre of the thickest part of the meat. For the sake of food safety, the public should not consume raw or undercooked pork.



風險傳達工作一覽 (二零二三年七月)

Summary of Risk Communication Work (July 2023)

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