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追蹤膳食中的鈉

Tracking Dietary Sodium

食物安全中心
風險評估組
科學主任林伏波博士報告

Reported by Dr. Violette LIN, Scientific Officer,
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二零一二年四月十二日，有報章引述本港一大學的報告，指港人的鹽分攝取量每日達十克，較世界衛生組織(世衛)建議的每日攝取限量超標一倍，中風風險亦因而大增。從膳食中攝入鈉真的是無可避免的嗎？

鈉在食物中無處不在

食物中天然含有鈉，即使是那些嚐不出鹹味的也不例外(例如開水、牛奶、魚類和蔬菜等)。鈉可作為調味料，食鹽固然含鈉，就連佐料及各種加工食品，由鹹味小食、罐頭魚或罐頭肉，以至早餐穀類食品等都離不開鈉。鈉還出現在食物添加劑中，例如常用作醃製肉類或香腸的防腐劑硝酸鈉，還有中菜或其他菜餚常用的谷氨酸鈉(俗稱“味精”)。方包也有用鈉來增加其味道和口感。

減少鹽份攝取量—不可能的任務？

鈉不但是維持人體體液平衡所必需的元素，其衍生物更能令食物美味可口，促進我們的食欲。但攝入過量的話，可引致高血壓及其所引起的其他不良健康後果。世衛在二零零三年已呼籲採取行動，把鈉攝取量限制在每天不多於2 000毫克，以減少罹患冠心病和中風的風險。

對已習慣偏鹹的人士來說，既要減鹽又要不損食欲，的確不是易事。幸而，只要逐步減少，味蕾自會慢慢適應新口味。澳洲一份關於麵包中的鈉含量的研究報告提到，一間醫院在六個星期裡把麵包裡的鈉含量逐漸減少了25%，病人全都沒有察覺到。加拿大、英國及澳洲等國早已提倡逐漸減少食物的鈉含量，並就各食物類別訂定了減鈉目標。

在本港，政府把營養資料標籤制度成文立法，以提高市民對飲食中攝入鈉及其他營養素的意識。營養資



一碟約800克的味菜排骨炒麵(約含3 680毫克鈉，資料來源：營養資料查詢系統)加一杯約240毫升的預先包裝蔬菜汁(每100毫升含20至200毫克鈉，資料來源：各品牌的營養標籤)共含有3 700至4 200毫克鈉，約9至10克鹽。

This meal with 800g plate of fried noodles with preserved vegetable and spare rib (containing 3 680mg of sodium, reference: Nutrient Information Inquiry System) and 240ml of prepackaged vegetable juice cocktail (with 20-200mg/100ml sodium, reference: nutrition labels of various brands) gives a total of 3 700-4 200mg sodium or 9-10g of salt.

On 12 April 2012, some newspaper headlined that Hong Kong people have a daily consumption of 10g salt, which is twice the World Health Organization (WHO) recommended upper limit of 5g, and are at risk of stroke, quoting from a local university's report. Is sodium unavoidable in our diet?

Sodium is in Every Food

Sodium is naturally present in foods, even in those that do not give a salty taste (e.g. drinking water, milk, fish, vegetables). As a seasoning agent, sodium is found not only in table salt but also in condiments and various processed foods, ranging from savoury snacks, canned fish or meat, to breakfast cereals. Sodium may be used as food additives, such as in the form of sodium nitrate, a preservative often used in cured meat or sausages, and monosodium glutamate (MSG) in Chinese dishes is found in sandwich breads for the

or other seasonings. Sodium is found in sandwich breads for the taste and texture.

Reducing Salt Intake – Mission Impossible?

Sodium is essential for maintaining fluid balance in our body. Its derivatives can also make foods more palatable and in turn contribute to the pleasure of eating. However, taking in too much salt can lead to hypertension and its harmful sequelae. The WHO in 2003 called for actions to limit daily sodium intake to 2 000mg to reduce the risk of coronary heart diseases and strokes.

For those who have accustomed to the salty taste, it can be challenging to change to a low salt diet with minimal effect on the appetite. Fortunately, a gradual reduction can allow the human taste buds to get adapted to the new taste. In the Australian Sodium in Bread study, an incremental sodium reduction by 25% in bread over a six-week period was not detected by the hospital patients being served. Canada, the United Kingdom, and Australia have been advocating a gradual reduction by setting national sodium reduction targets for different food types.

In Hong Kong, the incorporation of a nutrition labelling scheme in the local law has served to arouse public awareness about the consumption of sodium and other nutrients in food in the diet. Since the implementation of the scheme in July 2010, all prepackaged foods need to declare the sodium content on a nutrition label. Nutrition claims, such as "salt free" and "low

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料標籤制度在二零一零年七月實施後，所有預先包裝食物均須在營養標籤上標明鈉含量。“無鹽”及“低鈉”等營養聲稱也從此受到監管。為配合該制度的推行，食物安全中心(中心)大力推廣活用營養標籤，以及世衛有關每日最多只攝取5克鹽(或一茶匙鹽)的指引。

為進一步促進降低食物中的鈉含量，中心在諮詢業界後，草擬了一份指引，鼓勵業界生產鈉含量較低，較健康的食物。指引中有三大建議：首要的是，在不影響食品品質的原則下，採購或研發鈉含量較低的配料或製造食物新配方；其次，用香草和香料等其他佐料代替鹽/鈉；最後，調整產品包裝大小，使消費者每次攝入的鈉分量得以減少。這份《降低食物中鈉含量的業界指引》預計可於二零一二年內發布。

坐言起行

市場一向都以消費者的喜好為依歸。如果大家都捨鹹而寧取食物的原味，業界自然會積極研發低鈉的新配方去製造食物。只要注意並限制每天的鹽攝取量、在食用罐頭或鹽醃食品前先用水沖洗，以及外出用膳時，要求少鹽或“走鹽”的菜餚，便能立刻減少鈉的攝取量。

為方便市民追蹤自己的鈉攝入量，中心推出了一個名為**營計寶**的手機應用程式。營計寶有多種功能，包括估計使用者攝取了多少營養素，建立個人食物資料庫，還可以與其他用戶交換食物資料庫內的食物資料。至於新鮮或其他非預先包裝食物，市民可透過中心網頁上的**營養資料查詢系統**查詢其營養成分。

注意要點：

1. 過量攝入鈉，可引致高血壓，進而引發心臟病和中風。
2. 無論體重多少，鈉的攝入量每日應少於2 000毫克(相當於5克或一平茶匙鹽)。
3. 逐步減低食物中的鹽，能讓消費者易於接受。

給消費者的建議

- 細閱營養標籤，選購低鈉食品。
- 罐頭或鹽醃魚或蔬菜在食用前先隔走浸用水或用清水沖洗。
- 點菜時要求少鹽或無鹽的醬汁及菜式。

給業界的建議

- 開發各種價廉物美、低鈉食物。
- 逐步把產品中鹽/鈉的含量減到最小分量。
- 調整食品包裝大小，使消費者每次攝入的鈉分量得以減少。

sodium" are regulated. The scheme comes together with the effort of the Centre for Food Safety (CFS) in promoting the use of nutrition labels, and the promulgation of the WHO recommended daily upper limit of 5g, or one teaspoonsful, of salt.

To move further, the CFS has, in consultation with the trade, drafted a set of guidelines to encourage development of healthier foods with lower sodium content. Three main approaches have been identified. First and foremost, the trade is encouraged to source for ingredients or develop more creative formulations that contain less sodium without altering food quality. Secondly, replace salt/ sodium with alternatives, such as herbs and spices. Thirdly, product package may be resized so as to reduce the amount of sodium consumed each time. This "Trade Guidelines for Reducing Sodium in Foods" is expected to be issued later in 2012.

Starting Today

One of the most important driving forces for the market is consumer preference. If the natural taste of food is sought for over salty taste, the trade will be more inclined to develop formulations with lower sodium content. One can cut down sodium intake right away by tracking and limiting one's own daily intake, rinsing canned or salted food before use, and when dining out, asking for less or no salt recipes.

The CFS has produced a mobile application **Nutrition Calculator (NuCal)** for tracking one's sodium intake. Apart from estimating nutrient intake, NuCal also allows the users to establish their own food data bank, and to share with friends their own food data. For fresh or other non-packaged food, one may consult the **Nutrient Information Inquiry System** at the CFS website for the nutrient content.

Key Points to Note:

1. Excessive sodium intake is associated with hypertension, and in turn heart diseases and stroke.
2. Irrespective of body weight, the daily sodium intake should be below 2 000mg (5g or one level teaspoon of salt).
3. A gradual reduction of salt in foods is readily acceptable to the consumers.

Advice to Consumers

- Read nutrition labels and choose the basket of food that contains a lower sodium content.
- Drain or rinse canned or salted vegetables or fish in clear water before use.
- Select foods prepared with low or no salt sauces, gravies, and recipes.

Advice to the Trade

- Develop affordable quality food products with low sodium content.
- Reduce or remove the amount of salt/ sodium to the minimum little by little.
- Resize food package to reduce per serving sodium consumption.

風險傳達 工作一覽 Summary of Risk Communication Work

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從海藻到麻痺性貝類中毒

From Algae to Paralytic Shellfish Poisoning

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,
Risk Assessment Section,
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我們一連三期介紹由微小生物（如浮游生物）產生，並影響海產安全的海洋毒素，本文為該系列之二。

是藻類還是貝類惹的禍？

人類最初因為進食貝類中毒而發現麻痺性貝類毒素。但這種毒素其實並非來自貝類，而是由一種名為雙鞭毛藻的藻類所產生的。這種藻類分布於各緯度，從熱帶以至阿拉斯加等寒冷地區的近岸海域和河口皆有其蹤跡。在有利的環境條件下，這些藻類會迅速繁殖，令海水變成紅色或棕色。這種現象稱為“有害藻華”，亦即我們熟悉的紅潮。

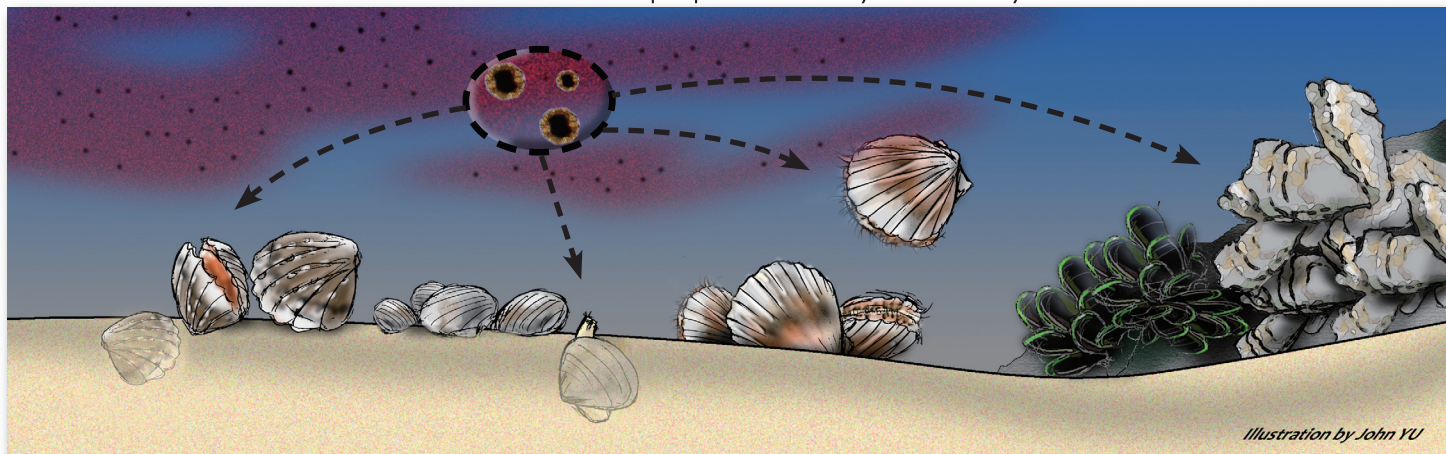
麻痺性貝類毒素是一組結構上非常相近的化學物的總稱，目前已知有21種。這些毒素積聚在貝類的組織內，尤其是在消化腺和生殖腺。人們進食受污染貝類後，神經系統的鈉離子通道會受毒素影響，中毒症狀通常在數分鐘至數小時內出現，包括刺痛、麻痺、口部四周出現灼熱感覺、發燒、出疹和步履踉蹌等，而且往往會有腸胃病症狀。嚴重者可能會出現癱瘓、呼吸停頓，甚至死亡，但大部分患者通常在數天內康復。

This is the second article in a series of three that focus on marine toxins originating from minute organisms (e.g. planktons) which can affect seafood safety.

Algae or Shellfish?

The paralytic shellfish poisoning (PSP) toxins are actually produced not by the shellfish but by certain species of microscopic algae known as dinoflagellates. The toxins were first noticed following food poisoning after consumption of shellfish. These algae are found in the coastal and estuarine waters across broad latitudes, ranging from the tropics to the much cooler areas like Alaska. Under favourable condition, the algae can grow profusely. Such phenomena may turn the sea reddish or brownish and is called **harmful algal bloom (HAB)**, also commonly known as red tide.

The PSP toxins are a group of 21 structurally closely related chemicals. They can accumulate in various parts of shellfish, especially in digestive and reproductive glands. When consumed by human, the toxins affect sodium channels in the nervous system, giving rise to symptoms like tingling, numbness, burning sensation near the mouth, fever, rash and staggering within minutes to hours. The toxins also give gastrointestinal symptoms. In severe cases, the symptoms may progress to muscle paralysis, respiratory arrest and even death. However, most people recover fully in a few days.



在有利的氣候和水質環境下，產生麻痺性貝類毒素的藻類（圓圈所示）會迅速繁殖，以濾食為生的貝類吃下這些藻類後，毒素在體內積聚。人類吃了這些受污染的貝類便有可能中毒。

PSP producing algae (circled) can grow rapidly under favourable weather and water condition. Shellfish filter feed on them and accumulate the PSP toxins in their bodies, which may eventually cause human poisoning.

麻痺性貝類中毒是可以預防的

世界各地的麻痺性貝類中毒事件在近數十年似乎有上升的趨勢，目前還不能確定究竟這是因為人們對這種毒素加深了認識；監察得力；貝類的食用量增加；還是實質的上升。在本港，根據衛生防護中心的記錄，在二零零七至二零一一年間，有34宗懷疑貝類毒素中毒個案，68人受影響。其中在二零一零年五月有14宗個案呈報，受影響的29人均曾進食新鮮帶子。當時進行的流行病學研究顯示，進食了帶子生殖腺而出現不適的風險較高。

麻痺性貝類毒素一般積聚於貝類的消化腺和生殖腺。避免進食這些部位可大大減低麻痺性貝類中毒的風險。因此，若可行的話，烹煮前應先摘除雙貝類的內臟，只食用閉殼肌。烹煮的汁液亦應棄掉（尤其是蒸扇貝），以減少毒素水平。此外，應向可靠的店鋪購買貝類，烹煮前先刷洗外殼。進食亦不宜過量。

PSP is Preventable

The number of PSP poisoning cases seems to be on the rise in the past decades internationally, but it is unclear whether it is due to heightened awareness, improved surveillance, expanded shellfish consumption or due to real increase. In Hong Kong, from 2007 to 2011, the Center for Health Protection recorded 34 suspected shellfish toxins-related food poisoning affecting 68 persons. Among them, 14 outbreaks reported in **May 2010**, involving 29 persons, were found to be associated with consumption of fresh scallops. An epidemiological study conducted at that time also showed that persons who consumed the gonad of the scallops had a higher risk to develop the symptoms.

The chance of PSP poisoning can be much reduced if one avoids consuming the **digestive and reproductive glands** where much of the toxins concentrate. All organs of bivalves should be discarded and only the adductor muscles should be consumed when possible. The cooking liquid, especially of steamed fan shells, should also be abandoned to reduce the amount of PSP toxins present. One should always buy shellfish from reliable sources, and scrub and clean the shells thoroughly before cooking. Overindulgence in shellfish should be avoided.

監察紅潮及麻痺性貝類中毒

為保障貝類可安全食用，各國食物規管當局均設立了監察及管理制，本港亦不例外。食物安全中心(中心)設有食物監察計劃，定期抽查食物。因應本港水域出現的紅潮，政府設立了紅潮/有害藻華管理行動總計劃，務求減少紅潮可能對本港海魚養殖活動及市民健康的影響。當發現本港水域出現懷疑有毒的浮游藻類時，漁農自然護理署會通知食環署等各有關部門。中心便會在懷疑有毒藻類數量偏高地區附近的街市抽取貝類樣本，進行貝類毒素化驗。中心在二零零九至一一年之間，曾在這樣的情況下額外抽取了25個貝類樣本作麻痺性貝類毒素化驗，結果全部合格。

業界應向已建立有毒藻類監察計劃的國家採購貝類，避免購入從近期受有毒藻類影響的海域撈捕的貝類。另外，業界人士亦應按照《食物安全條例》的規定，妥為備存交易紀錄，以便追查食物來源。

下一期我們會繼續介紹其他貝類毒素。

Algal Bloom Watch and PSP Surveillance

Like many other food authorities, Hong Kong has put in place monitoring and management programmes to safeguard shellfish safety. On a regular basis, the Centre for Food Safety (CFS) conducts surveillance in food. For harmful algae occurring in Hong Kong waters, the Government has established a [Red Tide / HAB Management Operation Master Plan](#) with a view to minimising the possible impacts of HAB on marine fish culture activities and human health. Under the framework, the Agriculture, Fisheries and Conservation Department informs various Departments including the Food and Environmental Hygiene Department when suspected harmful phytoplanktons are found in local waters. The CFS will take shellfish samples from markets near the areas where higher number of toxic or potentially toxic planktons are found for shellfish toxins analysis. From 2009 to 2011, 25 such extra shellfish samples were taken for PSP analysis and all results were satisfactory.

For the trade, when sourcing shellfish, source from countries with established monitoring programmes for toxic algae and avoid areas that have recently been affected by PSP toxins. Traders should also be mindful to meet the Food Safety Ordinance requirement regarding keeping relevant transaction records for tracing the source.

In the next issue, we shall talk about other shellfish poisoning toxins.



食用期限：安全與品質

為確保食物的品質與安全，在進食前先檢查食物上的食用期限是非常重要的。根據《食物及藥物(成分組合及標籤)規例》(第132W章)，預先包裝食物須加上說明適當保質期的標記或標籤。

有些預先包裝食物特別容易腐壞(例如經巴士德消毒的鮮奶、雞蛋、三文治等)，只能存放一段短時間。如過期後食用，可能會對人體健康構成即時的危險，這類食物須說明“此日期或之前食用”(use by)日期。其他預先包裝食物則須標示“此日期前最佳”(best before)日期。食物在此日期之後未必能保持最佳味道及品質。

食物安全中心(中心)會定期檢查本港市面上出售的預先包裝食物上的標籤，食用期限便是其中一項檢查項目。根據目前的規例，售賣過了“此日期或之前食用”(use by)日期的食物，即屬違法。二零一一年，中心檢查了超過55 000個食物標籤，提出了25宗檢控。市民在購買食物時，應選購未過“此日期或之前食用”(use by)日期的食物，而過了“此日期前最佳”(best before)日期的食物，則應留意其品質。

Expiry Date: Safety Vs Quality

To ensure quality and safety of our food, it is important to check expiry dates on food products before consumption. Under the Food and Drugs (Composition and Labelling) Regulations (Cap. 132W), prepackaged food shall be marked or labelled with appropriate durability indication.

In the case of some highly perishable prepackaged food (e.g. pasteurised fresh milk, eggs, sandwiches, etc.) which are likely after a short period to constitute an immediate danger to human health, a “use by” date should be used. For other prepackaged food products, a “best before” date shall be indicated. The food may not be at its best flavour and quality beyond the date.

The Centre for Food Safety (CFS) conducts regular checks on labels, including information on expiry date, of prepackaged food products available in the local market. Under current regulations, it is an offence to sell any food after its “used by” date. In 2011, the CFS conducted more than 55 000 label checking and 25 prosecutions were pursued. Consumers are advised to choose food before its “use by” date and be wary of the quality of food beyond the “best before” date.

日本進口綠茶葉驗出含輻射

二零一二年四月三日，食物安全中心驗出一個在本地超級市場售賣的日本進口綠茶葉樣本含微量輻射。為審慎起見，中心隨即發出食物警報。

中心進行的風險評估顯示，飲用該綠茶葉樣本一年所攝入體內的輻射劑量，相等於接受一次胸肺X光檢查的5%劑量。由此可見，有關的綠茶葉不會對健康造成不良影響。

二零一一年三月日本發生核電廠事故後，中心已加強監察來自日本的食物。直至二零一二年四月，中心共檢測了78 072個日本食品樣本的輻射水平，其中有三個樣本(白蘿蔔、蘿蔔和菠菜)不合格。在其餘合格的樣本中，有21個(其中19個為茶葉樣本)驗出含輻射，但水平並未超出食品法典委員會的指引限值(詳細檢測結果請瀏覽中心網頁)。一如這個個案，進口商已自願停售或交出有關食品作銷毀。

Radioactivity Detected in Japanese Green Tea Leaves

On 3 April 2012, the Centre for Food Safety (CFS) issued a [food alert](#) as a precautionary measure following a sample of Japanese green tea leaves collected from a local supermarket was found to have low radioactivity.

Risk assessment conducted by the CFS showed that the total internal dose for radioactive substances from consuming the green tea leaves sample for one year was about 5% of the radiation dose received during a chest X-ray examination. Hence, consuming the tea leaves concerned would not pose adverse health effects.

The CFS has stepped up food surveillance for Japanese produce since the [nuclear power plant incident](#) in March 2011. Of the 78 072 Japanese food samples tested for radiation (up to April 2012), three samples (white radish, turnip and spinach) were found to be unsatisfactory. Among all other satisfactory samples, 21 (including 19 tea samples) were found to contain radioactivity not exceeding the guideline levels of the Codex Alimentarius Commission (results available on [CFS website](#)). As in this case, these products were voluntarily suspended from sale or surrendered by importer for disposal.