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以水存養進口生蠔是否適當？

Is Wet Storage of Imported Raw Oysters Appropriate?

食物安全中心獸醫公共衛生組
漁業主任安世桓博士報告

Reported by Dr. Jason ON, Fisheries Officer,
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生蠔是廣受世界各地美食家所喜愛之海鮮，但眾所周知亦可引致食物中毒。在本地持續錄得由未經烹煮的蠔所引致的食源性疾病個案中，食物安全中心注意到，有些進口商把待售的進口生蠔重新浸入鹹水缸中存養。今年發生的數宗由擬供直接食用的生蠔所導致的食物中毒個案，便是涉及這種不當的處理方式。雖然原意是為了延長蠔的保質期，但這種暫存的方法卻會對消費者構成額外的食物安全風險。

生蠔存有風險

蠔是濾食性動物，每小時可過濾數公升的水。在濾食過程中，蠔隻體內吸收在海水中懸浮的食物粒子，但同時也會積聚致病微生物，例如細菌(例子：副溶血性弧菌和創傷弧菌)及病毒(例子：諾如病毒和甲型肝炎病毒)。因此，進食未經徹底煮熟的生蠔可能有直接攝入這些微生物的風險。從食物安全的角度而言，我們不建議進食生蠔，特別是高危人士。

然而，還是有消費者喜歡生吃或食用略為煮熟之蠔。為了在市場需求與顧客安全之間取得平衡，養蠔場往往嚴格遵守不同司法管轄區所訂明的指引。舉例來

A popular seafood enjoyed by connoisseurs worldwide, raw oysters are also an infamous culprit of food poisoning. While the shellfish, often served uncooked, continues to appear in the records of local foodborne disease outbreaks, the Centre for Food Safety notices that some importers re-immersed imported raw oysters into saltwater tanks before sale. Such improper handling of oysters intended for direct consumption was implicated in several food poisoning cases this year. With the intention of extending shelf-life of the shellfish, the temporary storage method may otherwise pose additional food safety risks to consumers.

Oysters with Inherent Risks

Being a filter feeder, oysters can filter litres of water hourly. During feeding, both suspended food particles and disease-causing microorganisms, such as bacteria (e.g. *Vibrio parahaemolyticus* and *Vibrio vulnificus*) and viruses (e.g. norovirus and Hepatitis A virus) from the seawater, are collected and concentrated inside the organism. As such, consuming oysters raw without thorough cooking might risk direct intake of these microorganisms. In terms of food safety, eating raw oysters is not recommended, particularly for susceptible individuals.

To certain consumers' preferences, oysters are eaten raw or lightly cooked nevertheless. In order to strike a balance between market demand and customers' safety, oyster farms often strictly follow guidelines stipulated by different jurisdictions. For instance, in the European Union (EU), only oysters raised from Class A production area (i.e. with the least bacterial count) can be harvested for direct consumption, coupled with additional purification

病原體 / 有害物質 Pathogens / Harmful Substances

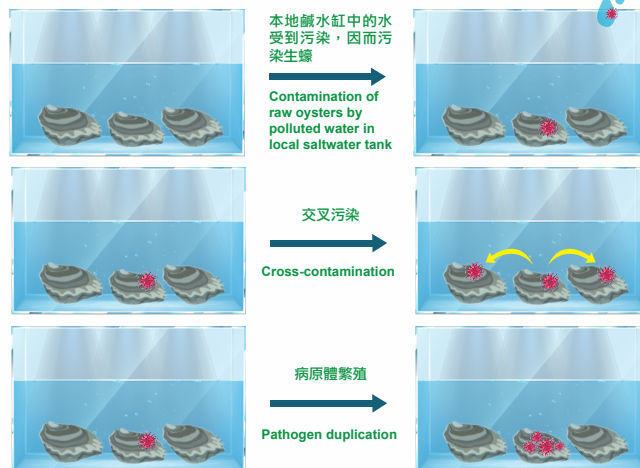


圖1：以水存養生蠔的污染風險

Figure 1: Contamination risks of raw oysters during wet storage

說，歐洲聯盟(歐盟)規定，只有A級產區(即細菌數量最少)養殖的蠔才可採收供人直接食用，有時還要進行額外的淨化程序，務求把微生物污染減至最少。儘管採取了所有安全措施，有時進口生蠔仍有可能受到病原體污染，最終導致食物中毒，並須回收食物。

以水存養的問題

以水存養是指把活生的蠔浸入水中或透過大量灑水來暫存。食品法典委員會在其《魚類及魚類製品操作規範》中訂明，活生的雙殼貝類軟體動物在包裝和離開分銷中心後，不得重新浸入水中或以水噴灑。重新浸入水中會破壞生蠔的最終品質。鹹水缸的水溫通常不足以低至可抑制細菌生長，而不同批次的生蠔混置於同一水缸中，也會造成生蠔之間交叉污染。與其延長生蠔的保質期，業界應把擬供直接食用的生蠔保存於受控制、不間斷的冷鏈中，並盡可能縮短貯存時間，以確保可安全食用。

符合要求以確保食物安全

以水存養進口生蠔並不符合國際要求。法國、愛爾蘭及澳洲等生蠔出口國的食物主管當局均反對生蠔出口後以水存養，歐盟則禁止在包裝後把生蠔重新浸入水中存養。本港方面，食物環境衛生署在受限制食物售賣許可證的持證條件中訂明，供生吃的蠔必須保持於攝氏0度至4度之間的溫度。因此，把生蠔存放於較高的溫度即屬違反上述條件，並可能會影響許可證/牌照的有效性。此外，以水存養會損害生蠔的品質，以致可能不符衛生證明書所確認的食物標準，並且未必獲出口國當局認可為適宜供人食用。為了保障市民健康及生蠔的品質，業界應遵守這些規定。

注意事項

1. 進食生蠔存有風險。
2. 以水存養生蠔，微生物可在鹹水缸中傳播和繁殖，損害生蠔的食物安全及品質。此外，用於存養的水也可成為污染的來源。
3. 以水存養的生蠔未必獲生蠔出口國當局認可為適宜供人食用。

給業界的建議

- 不要把生蠔重新浸入水中存養，此舉會破壞蠔的品質及安全。
- 業界應向可靠的供應商採購附有相應衛生證明書的生蠔，並在來貨後加以核實，確保全部附有可供從採收到銷售追蹤蠔隻的標籤。
- 收到付運的生蠔時，應確保其溫度符合要求(即攝氏4度以下)，並立即放入攝氏0度至4度的冷凍櫃中暫存。

給市民的建議

- 高危人士應避免進食生蠔。
- 確保所購買的生蠔沒有重新浸入水中存養，因為以水存養的生蠔存有更高的食物安全風險。
- 向持有牌照/許可證的食物業處所購買生蠔。

procedures sometimes to minimise the microbiological contamination. Despite all safety measures in place, occasionally imported raw oysters can still be contaminated with pathogens, ending up with sick diners and food recalls.

Problems with Wet Storage

Wet storage refers to the practice of storing live shellfish temporarily by submerging them under water or heavy spraying. In its Code of Practice for Fish and Fishery Products, the Codex Alimentarius (Codex) specifies that live bivalve molluscs must not be re-immersed in or sprayed with water after they have been packaged and left the distribution centre. Re-immersion can ruin the end-product specifications of raw oysters. While the temperature of the saltwater tank is usually not low enough to suppress bacterial growth, mixing of raw oysters from different batches in the same water tank facilitates cross-contamination between shellstocks. Instead of prolonging the shelf-life of oysters intended for direct consumption, traders should store them at a controlled, uninterrupted cold chain for the shortest time possible to secure food safety.

Fulfilling Requirements to Secure Food Safety

Wet storage of imported raw oysters is not in line with the international requirements. Food authorities of oyster-exporting countries such as France, Ireland and Australia are against wet storage of oysters after export. In the EU, re-immersion of oysters following packaging is prohibited. In Hong Kong, it is a licensing condition of the restricted food permit issued by the Food and Environmental Hygiene Department that oysters to be eaten in raw state shall be kept at a temperature between 0°C and 4°C. Hence, keeping oysters at higher temperature will breach the aforesaid condition and may affect the validity of permits / licences. Furthermore, wet storage could tamper the quality of raw oysters to the extent that such quality may not be comparable with the food standards endorsed by the health certificate and recognised by the authorities of exporting countries as fit for human consumption. For the sake of public health and the quality of raw oysters, traders should observe these rules.

Key Points to Note

1. Consuming raw oysters has an inherent risk.
2. Wet storage allows microorganisms to spread and replicate in the saltwater tank, compromising the food safety and quality of raw oysters. Also, water for wet storage can be a source of contamination.
3. Authorities of oyster-exporting countries may not recognise the raw oysters undergoing wet storage as fit for human consumption.

Advice to the Trade

- Do not re-immers raw oysters, which can ruin the quality and safety of the products.
- Traders should purchase raw oysters from reliable sources with the corresponding health certificate. Verify stocks and make sure they are all attached with a shellfish tag that allows tracking of products from harvest to consumers.
- When receiving orders, make sure the temperature of the shipment is satisfactory (i.e. below 4°C) and immediately place it into a cooler at 0°C-4°C for temporary storage.

Advice to the Public

- Susceptible individuals should avoid consuming raw oysters.
- Make sure the oysters purchased have not been re-immersed as raw oysters undergoing wet storage are at an even higher food safety risk.
- Buy raw oysters from licensed / permitted food premises.

提供可靠的食物營養標籤

Making Reliable Food Nutrition Labels

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,
Risk Assessment Section, Centre for Food Safety

在上一期中，我們討論了食物營養標籤有助消費者作出知情及更健康的飲食選擇。提供營養資料有利於促進公眾健康，例如選擇更健康的食物和預防非傳染病。食物上標示的營養素數值通常直接來自生產商對食物的分析，或根據食物成分資料間接計算出來。

食物是複雜的基體，有多項因素導致營養素的標示值與化驗所檢測個別食物樣本所得的數值未必完全相符。基於季節、加工過程、配料來源、營養素的穩定性及貯存條件的差異(圖2)，不同批次甚至同一批次的同一食品在營養素數值上可能有所分別。話雖如此，食物的營養素含量與所標示的數值不應有大幅差距，因此，設定營養標籤的規管容忍限作為供業界遵循的基準是十分重要的。

食品法典委員會的《營養標籤準則》提供了一些大原則，說明如何設定規管容忍限以便在食物標籤上標示營養資料。香港參考了這些原則，以及中國內地、新加坡及美國等一些司法管轄區的做法，制定了各種營養素的規管容忍限，並已載於適用於一般預先包裝食物和嬰幼兒配方產品及食物的技術指引中。

另一方面，檢測中測量的不確定度是關乎測量的真正數值所在的可能測量值範圍。舉例來說，某食品經檢測後驗出每100克含10.0毫克某種營養素，但樣本的均質性、儀器的精密度、檢測方法及環境等多項因素都可影響測量結果的準確度。不確定度有一個合理範圍，例如介乎每100克含8.5毫克至每100克含11.5毫克，該種營養素的真正數值便處於這個範圍內。在制定規管容忍限時，並沒有把測量的不確定度計算在內，因此在進行合規檢查時，通常會考慮檢測中測量的不確定度。

標示含量微小的營養素

在國際上，含量微小的營養素通常忽略不計，因此可標示為「零」。然而，不同司法管轄區對各種營養素標示為「零」的定義各有不同。以反式脂肪為例，如果食品的每一食用分量含0.5克或以下的反式脂肪，在美國可以在營養標籤上標示為「0克」，但在本港，「零」反式脂肪的定義是每100克食物含0.3克或以下的反式脂肪。

業界在標示某些營養素含量為零時應十分小心。舉例來說，即使沒有添加游離糖，但預先包裝食物的基本配料仍可能含有糖分。為了符合規定，業界應參閱食物安全中心(食安中心)發出的技術指引，了解適用於本港市面上的食物有關各種營養素標示為零的定義。

營養標籤合規檢查及業界溝通

在香港，《食物及藥物(成分組合及標籤)規例》(第132W章)訂明有關營養標籤的規例。食安中心實施了營養標籤監測機制。在二零一八年至二零二零年，食安中心進行了超過21,000次標籤檢查，並檢測了1,500個樣本，不合格率分別為0.45%及6.2%。檢測結果不合格的98個樣本涉及能量、蛋白質、脂肪、碳水化合物、糖及鈉含量與營養標籤不符的問題。就此，食安中心已指令涉事商戶採取補救行動，包括暫時停售受影響的預先包裝食品，直至營養標籤的違規問題得到糾正。

鑑於同一批食品
的營養素含量可能

As discussed in [our last article](#), nutrition labelling provided on foods allows consumers to make informed, healthier dietary choices. The provision of nutrition information can promote public health, such as making healthier food choices and preventing non-communicable diseases. The declared nutritive values are usually derived either directly from manufacturer's analysis of the food, or indirectly from calculations from food composition data.

Food is a difficult matrix and there are a number of reasons why the declared value of a nutrient might not match exactly with values of a specific sample of the food tested by the laboratory. The variations in seasons, processing practices, ingredient sources, nutrient stability and storage conditions (Figure 2) may result in discrepancies in the nutrient values among the same product of different batches and even within the same batch. That said, the nutrient contents of foods should not deviate substantially from the labelled values, and tolerances set for nutrition labelling are therefore important benchmarks for the trade to follow.

The Codex's [Guidelines on Nutrition Labelling](#) have provided some general principles for setting of tolerance limits for declaring nutrition information on food labels. Hong Kong made reference to these principles as well as the approaches practised in some jurisdictions such as mainland China, Singapore and the United States, establishing tolerance limits for various nutrients, and the tolerance limits were specified in the technical guidance notes for [general prepackaged foods](#) and [infants and young children \(IYC\) formulae and foods](#).

Measurement uncertainty of testing, on the other hand, relates to the range of possible measured values which the true value of the measurement falls within. For example, a certain nutrient of a food item was measured to be 10.0mg/100g by testing, but multiple factors, such as sample homogeneity, precision of instrument, testing methods and environment, can affect the accuracy of the measurement result. This uncertainty gives a plausible range, say from 8.5mg/100g to 11.5mg/100g, within which the true value of that nutrient might actually be. Since measurement uncertainty was not considered when establishing corresponding tolerance limits, the measurement uncertainty of testing is commonly taken into account upon compliance checking.

Labelling of Negligible Amounts of Nutrients

Internationally, it is [common](#) to regard insignificant amounts of nutrients as negligible, which can therefore be declared as "zero". However, the definition of "zero" for different nutrients varies among different jurisdictions. Take trans fat as an example. If a food product contains 0.5g or less per serving, it can be declared as "0g" on a nutrition label in the United States, whereas locally, in contrast, it defines "zero" for trans fat at 0.3g or less per 100g of food.

Traders should be careful when declaring zero for certain nutrients. For example, there can still be sugar from the primary ingredients of a prepackaged food with no free sugar added. For the sake of compliance, traders should make reference to the technical guidance notes published by the Centre for Food Safety (CFS) on the definition for different nutrients applicable to locally available food.

Compliance Checking and Communication with the Trade on Nutrition Labels

In Hong Kong, the regulations related to nutrition labelling are stipulated under the [Food and Drugs \(Composition and Labelling\) Regulations \(Cap. 132W\)](#). The CFS has initiated a surveillance system for nutrition labelling. From 2018 to 2020, more than 21,000 inspections of labels were conducted and 1,500 samples were tested, with unsatisfactory rates of 0.45% and 6.2% respectively. The 98 samples with unsatisfactory testing results involved nutrient discrepancies in energy, protein, fat, carbohydrates, sugars and sodium. In this connection, the CFS has instructed traders to take remedial actions, including temporary cease of selling the affected prepackaged food products until the rectification of irregularities on the nutrition labels.

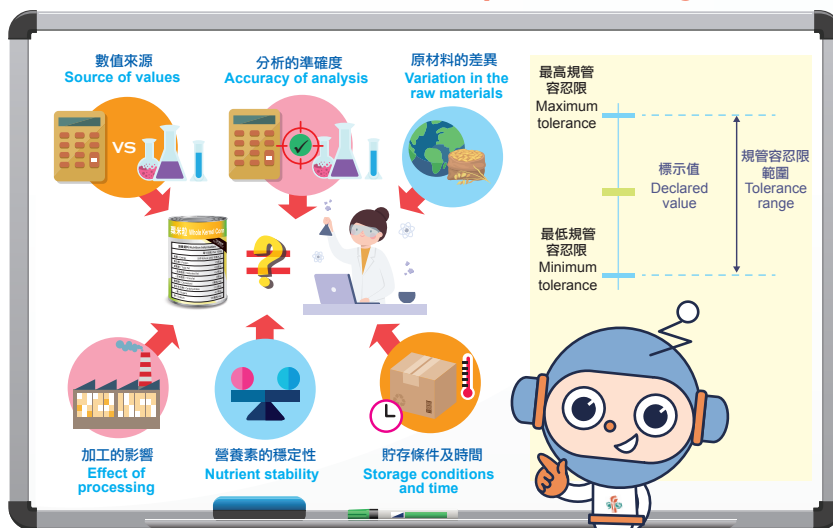


圖2: 導致營養素的標示值與化驗所的檢測數值不符的因素(左), 以及規管容忍限的示例(右)
Figure 2: Factors leading to discrepancies between the declared nutritive values and the values tested by laboratory (left), and an example illustrating the tolerance limits (right)

存有差異，食安中心的食物安全專家委員會已通過，建議如情況可行，在抽樣時盡可能從同一批食品中抽取12個樣本。加拿大等海外司法管轄區亦有類似的建議，認為應抽取數個樣本進行營養標籤檢測。在與食物業界溝通方面，食安中心定期舉行技術會議及工作坊，以協助業界遵照規定。市民現可瀏覽食安中心為提供營養標籤資料而設的專題網頁，參考資料庫中有關製備可閱的標籤、釐定食用分量、作出營養聲稱，以及尋找本地及香港以外認可化驗所的實用指引。

總括而言，食物業界應確保在營養標籤上提供真確的資料。業界可參閱食安中心就一般預先包裝食物和嬰幼兒配方產品及食物發出的技術指引，更詳細了解如何標示營養資料。

Given the possible variations of nutrient contents within the same product batch, as endorsed by the Expert Committee on Food Safety of the CFS, it is recommended to take 12 samples from the same batch as far as practicable in sampling. Overseas jurisdictions such as Canada also have similar recommendations that several samples should be collected for nutrition label testing. On communication with the food sector, the CFS conducts regular technical meetings and workshops to facilitate traders' compliance. The public can now access a [designated website](#) of the CFS as a resource hub for nutrition labelling, with practical guidelines on preparing [legible labels](#), determining [serving size](#), making [nutrition claims](#), and seeking accredited laboratories [in](#) and [outside](#) Hong Kong.

In summary, food traders are advised to ensure that the information provided in the nutrition label is truthful. For more detailed information on declaring nutrition information, traders are suggested to refer to the CFS' technical guidance notes for [general prepackaged foods](#) and [IYC formulae and foods](#).

生的淡水魚與乙型鏈球菌感染 Raw Freshwater Fish and Group B Streptococcus Infection

衛生防護中心最近通報，本港乙型鏈球菌感染個案較過去數年有所增加。

乙型鏈球菌存在於許多動物中，包括哺乳類動物、兩棲類動物、爬蟲類動物、魚類，以及20-40%健康成年人的腸道中。大部分乙型鏈球菌感染個案的傳播途徑不明，但有報告指可透過母乳傳播，亦與不當處理和食用受污染的淡水魚生，例如大頭魚、山斑魚等有關。高危人士若感染乙型鏈球菌，可致嚴重的侵入性疾病，包括敗血症、化膿性關節炎、腦膜炎及感染性心內膜炎。

本港已禁售淡水魚生超過30年。為保障食物安全，市民應保持良好的手部衛生，在處理未經烹煮的食物前要先包紮好手部傷口，分開生熟食物，並徹底煮熟食物才食用。

The Centre for Health Protection (CHP) recently [reported](#) an upsurge in local cases of Group B *Streptococcus* (GBS) infection when compared with previous years.

GBS are bacteria found in many animals, including mammals, amphibians, reptiles, fish, and in the guts of 20 to 40% of healthy adults as commensals. In most cases of GBS infection, the way of transmission is unclear, but mother-to-child transmission and improper handling and consumption of contaminated raw freshwater fish like big head, snakehead, etc. had been reported. GBS infection can cause severe invasive diseases including sepsis, septic arthritis, meningitis and infective endocarditis in vulnerable populations.

Freshwater fish intended for raw consumption had been prohibited for sale in Hong Kong for more than 30 years. For the sake of food safety, the public is advised to maintain good hand hygiene, dress hand wounds properly before handling raw food, keep raw and cooked foods separate and cook food thoroughly before consumption.

對抗食物鏈中的抗菌素耐藥性 Fight Against Antimicrobial Resistance in the Food Chain

「2021年世界提高抗微生物藥物認識周」的主題是「提高認識，制止耐藥性」。高危人士，包括孕婦、嬰幼兒、長者及免疫力弱人士(例如正接受抗生素治療或使用抗胃酸藥)，應避免進食生或未完全煮熟的食物，因為這些食物沒有經過熱處理或熱處理不足，較大可能受到「超級細菌」的污染。

「超級細菌」指產生了抗菌素耐藥性的微生物，具有抑制多種抗菌素(例如抗生素)的能力。這些「超級細菌」不論是否有致病性，都有可能把抗藥性基因轉移到人體內的其他細菌，因而影響抗菌素的藥效。

為了對抗食物鏈中的抗菌素耐藥性，應把食物煮熟至中心溫度達攝氏75度，便可殺死大部分細菌，包括「超級細菌」。此外，遵守「食物安全五要點」，例如保持良好的手部衛生，都可減少食物受到「超級細菌」交叉污染的機會。業界可在餐牌上標明哪些食品是生或未完全煮熟的食物，並作出食用忠告，以供消費者作出知情的選擇。

The theme of the [World Antimicrobial Awareness Week 2021](#) is 'Spread Awareness, Stop Resistance'. [Susceptible populations](#) including pregnant women, infants and young children, the elderly and people with weakened immunity (e.g. on antibiotic treatment or antacids) should avoid consuming raw or undercooked foods. Consuming raw or undercooked foods with no or inadequate heat treatment is more likely to contract 'superbugs'.

'Superbugs' are microorganisms that have developed antimicrobial resistance to stop a wide range of antimicrobial agents, such as antibiotics, from working against them. Whether or not 'superbugs' can cause illnesses, they may transfer their antibiotic resistance genes to other bacteria in our body and consequently reduce the effectiveness of antimicrobials.

To address antimicrobial resistance in the food chain, food should be cooked until the core temperature reaching 75°C, which can kill most bacteria including 'superbugs'. In addition, observance of the [Five Keys to Food Safety](#), like maintaining good hand hygiene, can minimise cross-contamination of food by 'superbugs'. The trade can [indicate](#) the presence of raw or undercooked foods on the menus and provide a consumer advisory for consumers to make informed choices.



風險傳達工作一覽 (二零二一年十月)

Summary of Risk Communication Work (October 2021)

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