



由食物環境衛生署食物安全中心於每月第三個星期三出版
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焦點個案 Incident in Focus

進食未經煮熟的漢堡牛肉或牛扒 可致食物中毒

Eating Undercooked Beef Burger or Steak Can Cause Food Poisoning

食物安全中心風險傳達組
科學主任陳蓉蓉女士報告
Reported by Ms. Melva CHEN, Scientific Officer,
Risk Communication Section, Centre for Food Safety



圖1: 消費者不宜進食未經煮熟的漢堡牛肉或牛扒, 以免食物中毒。

Figure 1. Consumers are advised not to eat undercooked beef burger or steak to avoid food poisoning.

過去數年來, 美食風格的漢堡餐廳在本港興起。與全熟的漢堡肉餅相比, 有些消費者較為喜歡生或半生熟漢堡肉餅的味道與口感。不過, 他們未必知道, 未經煮熟的漢堡肉餅可構成食物中毒風險。

你的漢堡牛肉要多少成熟?

無論肉的品質、來源及價格如何, 漢堡肉餅都應煮至全熟。當肉類絞碎製成漢堡肉餅時, 生肉表面的有害細菌, 例如沙門氏菌或致病性大腸桿菌, 會散布至整塊肉餅。除非將漢堡肉餅徹底煮熟, 否則這些細菌仍可在肉餅中存活。因此, 碎牛肉應煮至內部溫度至少達攝氏75度, 或內外均呈褐色且肉汁清澈。

透過未經煮熟的漢堡牛肉感染致病性大腸桿菌可以致命

牛的腸道是致病性大腸桿菌的主要來源。其中一種O157:H7血清型大腸桿菌可引起急性腎衰竭, 幼童及長者的風險尤其高。一九九三年, 美國連鎖快餐店Jack in the Box的漢堡包受O157:H7型大腸桿菌污染, 感染了數以百計的人, 年齡大多在十歲以下, 當中四名兒童死亡, 部分患者腎臟永久受損。

Over the past few years, there has been a trend for gourmet-style burger restaurants in Hong Kong. Some consumers may prefer the taste and mouthfeel of rare or medium burger patties to those of their well-done counterparts. However, they may not be aware that undercooked burger patties can impose risks of food poisoning.

How Would You Like Your Beef Burger Cooked?

Burger patties should always be cooked well-done regardless of the quality, source and price of the meat. When meat is minced to produce burger patties, harmful bacteria such as *Salmonella* or pathogenic *Escherichia coli* (*E. coli*) from the raw meat's surface are mixed throughout the whole piece. Unless the burger patty is cooked right through, these bacteria can remain alive on the inside. Therefore, ground beef should be cooked until the internal temperature reaches at least 75°C or until browned throughout with the juice running clear.

Infection of Pathogenic *E. coli* from Undercooked Beef Burger Can be Fatal

The intestinal tracts of cattle is the main reservoir of pathogenic *E. coli* bacteria. One of the serotypes, *E. coli* O157:H7, may cause acute renal failure, particular in young children and the elderly. In 1993, *E. coli* O157:H7, linked to contaminated hamburgers from the Jack in the Box chain restaurants, infected hundreds of people in the USA. The majority of the victims were under 10 years old. Four children died and some victims were left with permanent kidney damage.

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儘管上述事件前車可鑑，但世界各地仍不時發生與未經煮熟的碎牛肉有關的事故。二零一九年，另一種致病性大腸桿菌菌株所污染的碎牛肉導致美國二百多人患病。本港過去亦曾接報出現零星由碎牛肉粥引致的O157:H7型大腸桿菌感染個案。

未經煮熟的牛扒亦應避免進食

有些人認為牛扒煎香表面即可，中間無需煮熟，他們的理由是細菌污染通常只限於表面。然而，食用未經煮熟的牛扒仍然存有風險：所有未經煮熟的肉類，包括牛扒在內，都可能帶有細菌，有些細菌甚至可能具有抗生素耐藥性，會減低抗生素的藥效，導致感染情況更為複雜，難以治療。消費者宜食用徹底煮熟的牛扒（即煮至內部溫度達攝氏75度），幼童、長者、孕婦及免疫力弱人士尤須注意。

許多食肆都容讓消費者選擇牛扒的生熟程度，特別是西式餐廳。不過，牛扒如非煮至全熟，須符合一些先決條件。舉例來說，供半生吃的牛扒必須是原塊牛肉，不經注入液體、捶打軟化或再造，並且按照嚴格的衛生守則加以貯存和處理。話雖如此，海外的食物安全當局並不建議食用未經煮熟的肉類。英國食物標準局、美國農業部、澳洲新南威爾斯食品局及加拿大衛生部認為，煮至內部溫度達攝氏63度，並放置三分鐘，是原塊牛肉或牛扒的最低烹煮要求。

就未經煮熟的肉類向消費者作出食用忠告

食肆如有供應未經煮熟的牛扒，宜在餐牌上作出食用忠告，告知消費者潛在的風險。以下是食肆可向消費者提供的食用忠告示例，適用於各種生或未經煮熟的高風險食物：

「食用生或未煮熟的食物，可增加患上食源性疾病的風險，尤其是孕婦、嬰幼兒、長者和免疫力弱人士。」

注意事項

1. 生及未經煮熟的肉類可能帶有有害細菌，包括抗藥性細菌。
2. 當肉類絞碎時，生肉表面的有害細菌會散布至整塊肉餅。
3. 把肉類徹底煮熟，包括漢堡肉餅及牛扒，可減低食物中毒及感染抗生素耐藥性細菌的風險。

給消費者的建議

- 無論在家或外出用膳，漢堡肉及其他碎肉產品應徹底煮熟至內外均呈褐色且肉汁清澈。
- 如果上菜時漢堡肉未有煮熟，應要求食肆將之徹底煮熟，確保安全才食用。
- 消費者不宜食用未經煮熟的牛扒，高危人士尤須注意。

給業界的建議

- 漢堡肉餅及其他碎肉產品應徹底煮熟至內部溫度至少達攝氏75度才奉客。
- 如可按照消費者的喜好烹煮牛扒，應在餐牌上就高風險食物作出食用忠告。

Despite the hard-earned lesson from the above incident, outbreaks associated with undercooked ground beef still occurred from time to time worldwide. In 2019, ground beef contaminated with another strain of pathogenic *E. coli* sickened over 200 people in the USA. In Hong Kong, there were also sporadic cases of *E. coli* O157:H7 infection linked to minced beef congee reported in the past.

Undercooked Steak Should Also be Avoided

Some people consider that steak can be just seared on the outside and not cooked in the middle, because they think that bacterial contamination is usually limited to the surface alone. Risk still exists nevertheless when consuming undercooked steak: all undercooked meat including steak may carry bacteria, and some bacteria may even carry antimicrobial resistance (AMR). AMR results in reduced efficacy of antibiotics, which results in more complicated infections that are difficult to treat. Consumers, especially young children, the elderly, pregnant women and people with a weakened immune system, are advised to eat thoroughly cooked steak (i.e. internal temperature reaching 75°C).

Many restaurants, especially the western-style ones, often let consumers choose the doneness of their steaks. There are nonetheless prerequisites should the steak be not cooked in full. For example, the steak to be served undercooked must be an intact meat that is not injected, mechanically tenderised or reconstructed, likewise being stored and handled according to strict hygiene practices. That said, overseas food safety authorities do not recommend eating undercooked meat. The UK Food Standards Agency, the US Department of Agriculture, the New South Wales Food Authority of Australia and Health Canada consider internal temperature reaching 63°C with a three-minute rest time is the minimum cooking requirement for intact beef or steak.

Provide Consumer Advice for Undercooked Meat

Restaurants that serve undercooked steaks are encouraged to provide consumer advice on their menus to inform consumers of the potential risk. The following is an example of consumer advice that restaurants can provide, whereas it applies to raw/undercooked high-risk food of all sorts:

“Consuming raw or undercooked foods may increase the risk of foodborne illness, especially for pregnant women, infants, young children, the elderly and people with weakened immunity.”

Key Points to Note

1. Raw and undercooked meat may carry harmful bacteria including AMR bacteria.
2. When meat is minced, harmful bacteria from the surface of the raw meat are mixed throughout the whole piece.
3. Thorough cooking of meat including burger patties and steaks can reduce the risks of food poisoning and acquiring bacteria with AMR.

Advice to Consumers

- No matter eating at home or dining out, burgers and other ground meat products should be thoroughly cooked until browned throughout with the juice running clear.
- If a restaurant serves you an undercooked burger, send it back to be thoroughly cooked until it is safe to eat.
- Consumers, especially susceptible populations, are advised not to consume undercooked steak.

Advice to the Trade

- Burger patties and other ground meat products should be thoroughly cooked to reach an internal temperature of at least 75°C before being served.
- Provide advice for high-risk foods on the menus if the steak can be cooked according to consumers' preferences.

慎防小食的高糖陷阱

Avoid High Sugar Traps in Snacks

食物安全中心風險傳達組 科學主任鄧紹平博士報告
Reported by Dr. Anna SP TANG, Scientific Officer,
Risk Communication Section, Centre for Food Safety

近來在2019冠狀病毒病大流行下，市民都減少社交接觸，有些人留在家中，也有人在保持社交距離的原則下外出活動。有時候，大家或會很想吃些零食，或吃點東西來快速提升能量。市面上有一些推廣為「能量棒」或「小食棒」的預先包裝食品，有人視為較健康的選擇，但本地一項研究指出，這些食品實際上糖含量甚高(每100克超過15克糖)。在本文中，我們會探討如何作出精明的選擇，以避免這些產品的「高糖陷阱」，保持飲食健康。

能量棒－健康抑或噱頭？

基於社會急速而忙碌的節奏，方便的預先包裝產品備受一些消費者歡迎。市面上出現多種各式名稱的口袋裝產品，例如「營養棒」、「能量棒」、「蛋白棒」、「代餐棒」、「早餐麥片棒」和「節食棒」，所含成分包括穀物、果仁、乾果、蛋白質或植物蛋白質。這些食品的促銷策略是打造為健康而富營養的選擇，可以作為餐點，或供運動後補充能量。不過，當中有很多在營養方面並不符合消費者的預期。

像任何食物一樣，能量棒含有常量營養素，例如蛋白質、碳水化合物和脂肪，以及微量營養素，例如維他命、礦物質和必要的脂肪酸。值得注意的是，許多能量棒的碳水化合物含量偏高，一條由10至50克不等，視乎品牌及用途而定。當中所含的可能是複合碳水化合物(即多糖)，例如燕麥片或米之中的澱粉和膳食纖維，以及簡單碳水化合物(即單糖和雙糖)，例如蔗糖、葡萄糖和果糖。在加工過程中，能量棒通常加入糖及甜味劑，例如聚葡萄糖和山梨糖醇，以及食物添加劑，例如麥芽糊精，目的是改善質感及甜度，以迎合消費者的口味。

雖然這些產品聲稱有助運動員維持適中的血糖水平，但有些能量棒會使血糖急升，然後迅速下降，這與糖果棒或麵包的情況分別不大。

解構「棒」的真相：閱讀營養標籤

糖是簡單碳水化合物(單糖和雙糖)，可提供能量(每1克糖提供4千卡)。從游離糖含量高的食物中攝取過多卡路里，可導致不健康的體重增加及肥胖症，因而提高患上糖尿病及其他非傳染病的風險。游離糖指由製造商、廚師或消費者加入食物中的所有單糖和雙糖，以及蜜糖、糖漿和果汁中的天然糖分。世界衛生組織制訂的指引建議，成人及兒童的游離糖攝取量應減少至每日所需總能量的10%以下，以一個每日攝取2000千卡能量的成年人為例，即每日的游離糖攝取量應少於50克(約10粒方糖)。

Upon the recent COVID-19 pandemic, practising social distancing may mean staying at home for some, keeping physically active for others while reducing social contacts. At times one may be tempted to reach out for foods to snack on, or want to get a quick energy boost. Marketed as “energy bar” or “snack bar”, some pre-packaged food products may be perceived as being a healthier option by some, but are actually high in sugar content (>15g sugars/100g) as reported in a local study. This article explores how we may choose these products wisely to avoid “sugar traps” and maintain a healthy diet.



圖1: 市場上各種產品的糖含量差異頗大。產品1的糖含量較高: 進食一條所攝取的糖佔建議每日攝取量的幾乎一半; 產品2的糖含量較低: 進食一條所攝取的糖佔建議每日攝取量的約12%。

Figure 2: Sugar contents in the various products on the market vary widely. Bar 1 with a higher sugar content: consuming one bar reaches almost half of the recommended daily intake for sugar; Bar 2 with a lower sugar content: consuming one bar reaches about 12% of the recommended daily intake.

Energy Bars – Health or Hype?

Pre-packaged products are popular for some for their convenience in a fast-paced, on-the-run society. Many types of pocket-sized bars emerge on the market under various names such as “nutrition bar”, “energy bar”, “protein bar”, “meal replacement bar”, “breakfast cereal bars” and “diet bar”, containing ingredients like grains, nuts, dried fruits, protein or plant protein. Savvy marketing creates an impression that these food products are a healthy and nutritious choice as an alternative to a meal or for energy refill after exercise. Many of them, however, leave a lot to be desired in the nutrition department.

Like any food, energy bars consist of macronutrients such as protein, carbohydrates and fat, as well as micronutrients like vitamins, minerals and essential fatty acids. Of note, many bars are high in carbohydrates, ranging anywhere from 10 to 50 grams in a bar, depending on the brand and intended use. They may include complex carbohydrates (i.e. polysaccharides) like starch and dietary fibre, such as in oats or rice, and simple carbohydrates (i.e. monosaccharides and disaccharides) such as sucrose, glucose and fructose. Sugar and sweeteners such as polydextrose and sorbitol, as well as food additives such as maltodextrin, are often added into the bars during processing in order to improve texture and sweetness levels to satisfy consumers’ palates. While these products claim to help keep blood sugar levels at a moderate level for athletes, some energy bars produce a quick rush of blood sugar followed by a rapid decline, which is not much different than what occurs with a candy bar or bread.

Digesting the Bar Facts: Read the Nutrition Labels

Sugars are simple carbohydrates (monosaccharides and disaccharides) which provide energy (1g of sugars provides 4 Kcal). Excess calories from foods high in free sugars can contribute to unhealthy weight gain and obesity, increasing the risk of diabetes and other non-communicable diseases. Free sugars mean all mono- and di-saccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrup and fruit juices in diets. The World Health Organization sets out guidelines which recommend the public to reduce free sugars intake to less than 10% of total energy intake for both adults and children, i.e. less than 50 grams of free sugars (about 10 sugar cubes) per day for an adult having a daily 2000-Kcal diet.

單看產品包裝正面上噱頭十足的宣傳語句，消費者可能會感到混淆。為免超出游離糖的建議每日攝取量，消費者宜閱讀產品的成分表，作出比較。參閱營養標籤可以更清楚了解當中所含的糖及卡路里，從而選擇適合個人需要及活動量的產品，並控制體重。

運動後需要補充碳水化合物、蛋白質及水分，除了能量棒，許多新鮮食物都能滿足這些需求。以蘋果及香蕉等便於攜帶的水果為例，也同樣方便，既可迅速提供能量，而且更健康。要吃得簡單又健康，更佳的方式是進食足夠分量的新鮮蔬果及穀物。選擇小食時，宜考慮健康的食物，例如新鮮水果及番茄，切記高卡路里的能量棒並非適當的零食選擇。

Consumers may be confused sorting through all the heavily hyped promotional statements on the front package of the bars. Striving not to exceed the daily recommended free sugars intake, consumers are advised to read the list of ingredients and compare products. Reading nutrition labels allows better understanding of the sugar contents and calories when choosing these products to suit the individual's need and activity level, and for weight-watching.

After exercise, carbohydrates, protein and water are to be replenished. There are many fresh food alternatives that readily meet these needs. Portable fruits such as apples and bananas are just as convenient, provide quick energy and are healthier options. It is always better to grab a quick yet healthy meal with adequate portions of fresh vegetables, fruits and grains. When choosing snacks, consider healthy options such as fresh fruits and tomatoes, bearing in mind that calorie-dense energy bars are not the suitable choice for snacking.

食物事故點滴
Food Incident
Highlight

蘋果汁飲品檢出棒曲霉毒素含量超標

Excessive Patulin Found in Apple Juice Drinks

食物安全中心(食安中心)在二零二零年四月至六月初公布，五款本地生產及進口的蘋果汁飲品樣本檢出棒曲霉毒素含量超標。食安中心已指令涉事食物商停售和回收有關產品。

棒曲霉毒素是由多種霉菌產生的一種霉菌毒素，主要存在於腐爛的蘋果及蘋果製品中。預先包裝的蘋果汁通常經過加熱處理，例如巴士德消毒，以延長保質期。雖然加熱處理可殺滅已存在的霉菌，但不能消除棒曲霉毒素。人類攝入大量棒曲霉毒素，可引致噁心、胃腸道不適及嘔吐；至於在實驗動物中，則顯示對肝臟、脾臟、腎臟及免疫系統造成損害。

業界不應使用受損或發霉的蘋果製造果汁。市民亦不應食用受損或發霉的蘋果，或飲用以這些蘋果製造的果汁。

The Centre for Food Safety (CFS) announced in April to early June 2020 that five samples of apple juice drinks, involving both locally produced and imported products, were found to contain excessive levels of patulin. The CFS had ordered the food traders involved to stop selling and recall the products concerned.

Patulin is a mycotoxin produced by a variety of moulds. It mainly occurs in rotten apples and their products. Prepackaged apple juices are commonly heat-treated, say, pasteurised, to prolong their shelf-life. Although heat-treatment can destroy the moulds present, it cannot destroy patulin. Ingesting high doses of patulin can cause nausea, gastrointestinal disturbance and vomiting in humans and was shown to damage the liver, spleen, kidney and immune system in experimental animals.

The trade should not use damaged or mouldy apples for making juice. The public should not consume damaged or mouldy apples or the juice from them.

2019冠狀病毒病疫情下必須加倍注意自助餐場所的衛生

Extra Attention on Hygiene Required in Buffet Setting during COVID-19

近日網上有一段引起世界各地關注，片中進行的實驗以隱形染料模擬咳嗽後造成的污染。結果顯示，在未有做好衛生措施的自助餐場所中，呼吸道飛沫中的病菌及病毒可輕易經共用的器具間接傳播至各種用具和餐碟以及雙手和臉上。

共用的器具及盛載食物的設備由於經常有不同的客人及員工觸摸，是自助餐中的頻密接觸點。為了減少交叉污染的機會，應經常更換或消毒共用的器具及其他頻密接觸點。至於中菜，由於餐桌上的菜餚是共享的，最理想的做法是為每位食客分別提供一套公筷公匙及另一套用以進食的匙筷。

食肆應採取措施，減少食物環境中的社交接觸和加強衛生。他們可在便利的位置提供洗手液，方便經常清潔雙手。顧客亦應保持良好的個人衛生，經常清潔或消毒雙手。

A recent online video on an experiment using an invisible dye as a simulant of contaminations after coughing gains worldwide attention. It demonstrated how easily germs and viruses in respiratory droplets can spread to utensils and plates and to hands and faces indirectly through shared-use utensils in a buffet setting with hygiene measures loosely practised.

Shared-use utensils and food-holding equipment are high-touch areas in buffets as they are frequented by different patrons and staff. In reducing the chance for cross-contamination, shared-use utensils and other high-touch areas should be either replaced or disinfected frequently. In Chinese table settings where dishes are shared, each diner should ideally be provided with one separate set of cutleries for taking shared food and another set for eating.

Restaurants should practise [physical distancing and enhancement of hygiene in food business](#). They can facilitate frequent hand cleaning by providing sanitisers at convenient locations. Patrons should also maintain good personal hygiene and clean or sanitise their hands frequently.



風險傳達工作一覽 (二零二零年五月)

Summary of Risk Communication Work (May 2020)

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