

本港售賣的沙律的微生物質素

Microbiological Quality of Salads Available at the Local Market

風險評估研究 2016-2017

Risk Assessment Study 2016-2017



沙律

Salads

- 沙律主要以不經烹煮的蔬菜配製而成，備受香港消費者歡迎。
- Salads are a mixture of raw vegetables and are popular among consumers in Hong Kong.



海外與沙律有關的食物中毒個案

Overseas Food Poisoning Outbreaks Linked to Salads

- 海外國家如加拿大、英國和美國均有與沙律有關的食物中毒個案報告。
- 世界衛生組織亦指與進食蔬菜（包括沙律）有關的O157:H7型大腸桿菌事故越來越多。
- 中心一直有留意供即食和不經烹煮的新鮮蔬菜的安全和衛生情況。



- Reports of food poisoning outbreaks linked to salads in overseas countries such as Canada, the United Kingdom and the United States have been identified.
- The WHO also states that there is an increasing number of *E. coli* O157:H7 outbreaks associated with the consumption of vegetables (including salads).
- The CFS has all along paid attention to the safety and hygienic conditions of RTE raw fresh vegetables.



風險評估研究(2002) – 香港售賣的沙律的微生物風險評估

Risk Assessment Studies (2002) – Microbiological Risk Assessment on Salads in Hong Kong

- 在2002年間，食環署對本港售賣的沙律進行風險評估研究。
 - 這項研究分析了食物監察計劃在1999年至2001年期間所檢測的沙律樣本。
- In 2002, the FEHD conducted a risk assessment study on salads in Hong Kong.
 - The study analysed salad samples tested under the Food Surveillance Programme from 1999 through 2001.

風險評估研究
第九號報告書

香港售賣的沙律
微生物風險評估

香港特別行政區政府
食物環境衛生署
二零零二年七月

Risk Assessment Studies
Report No.9

**MICROBIOLOGICAL
RISK ASSESSMENT ON
SALADS IN HONG KONG**

July 2002
Food and Environmental Hygiene Department
HKSAR



風險評估研究(2002) – 香港售賣的沙律的微生物風險評估

Risk Assessment Studies (2002) – Microbiological Risk Assessment on Salads in Hong Kong

- 結果顯示在573個樣本中，有10個樣本（1.7%）的特定致病菌（李斯特菌和沙門氏菌屬）含量達“不滿意”水平。在239個樣本中，有3個樣本（1.3%）的大腸桿菌含量超標。
- 分析結果顯示個別沙律的微生物質素有待改善，但整體上未有出現明顯問題。

- Results showed that 10 (1.7%) out of 573 samples contained unsatisfactory level of specific pathogens (*Listeria monocytogenes* and *Salmonella* spp.) while 3 (1.3%) out of 239 samples were found unsatisfactory in terms of *E. coli* count.
- Although there was room for improvement for individual salad sample, the report did not indicate major problem from perspectives of microbiological safety and quality in general.



進行此項風險評估研究

To Conduct This Risk Assessment Study

- 為了解在本港售賣主要以不經烹煮的蔬菜配製的沙律的微生物質素的最新情況，中心近期再進行了一項相關的風險研究。
- 中心留意到近年市面上有一些供即食或不經烹煮的水耕沙律菜及魚菜共生沙律菜出售，故這項研究也包括這兩類沙律菜。
- To better understand the latest situation, the CFS embarked on another risk assessment study on the microbiological safety and quality of salads composed primarily of raw vegetables sold in Hong Kong.
- The CFS was aware that there were some RTE or raw hydroponic and aquaponic salad vegetables available in the local market in recent years, these two types of vegetables were also included in the study.



目的

Objectives

- 更新對現時在本港售賣主要以不經烹煮的蔬菜配製的沙律的微生物質素評估，包括供即食和不經烹煮的水耕沙律菜及魚菜共生沙律菜。
- To provide an updated assessment on the microbiological quality of salads composed primarily of raw vegetables (including RTE raw hydroponic and aquaponic salad vegetables) available at the local market.



研究範圍－樣本

Scope – Samples

- **預先包裝**及**非預先包裝**主要以不經烹煮的蔬菜配製的沙律，已包括供即食和不經烹煮的水耕沙律菜和魚菜共生沙律菜。
- Both **prepackaged** & **non-prepackaged** salads made primarily with raw vegetables, including RTE raw hydroponic and aquaponic salad vegetables.



研究範圍 – 沙律樣本

Scope – Salad Samples

✓ 含大量非蔬菜成分的沙律並非本研究的主要目標:-

✗ 含非植物配料（例如魚、海鮮、肉和蛋）的產品

✓ Salads that had an overwhelming portion of non-vegetable ingredients were not the primary target of this study :-

✗ Products contained non-plant ingredients (e.g. fish, seafood, meat and egg)



研究範圍 – 沙律樣本

Scope – Salad Samples

➤ 鑑於市場供應:-

✓ 沙律：含大量不經烹煮的蔬菜及相對較少的其他植物配料如穀類（包括藜麥和油煎麵包）、水果和特定的非植物配料，即芝士（生奶製成的芝士除外）、燻肉乾/魚乾及油/醋/調味醬/醬料



● In view of market availability :-

✓ Salads contained significant amounts of raw vegetables together with relatively minor portion of other plant ingredients e.g. cereals (including quinoa and crouton) and fruit as well as specific non-plant ingredients, namely cheese (except cheese made from raw milk), dried bacon/ dried fish and oil/ vinegar/ sauces/ dressings



研究範圍 – 不經烹煮的沙律菜樣本

Scope – Raw Salad Vegetable Samples

- ✗ 標示為「食用前清洗」的產品
 - ✗ 沒有特別標記為「即食」的預先包裝產品
 - ✗ 不擬供「即食」的非預先包裝產品
-
- ✗ Products labelled as “wash before use”
 - ✗ Prepackaged products that were not specifically labelled as “ready-to-eat”
 - ✗ Non-prepackaged products that were not intended for “ready-to-eat”



研究範圍 – 水耕和魚菜共生沙律菜樣本

Scope – Hydroponic and Aquaponic Salad Vegetable Samples

- 鑑於預期水耕沙律菜和魚菜共生沙律菜在本港市場上的供應量稀缺，因此，如果採樣時沙律樣本被確定含水耕沙律菜或魚菜共生沙律菜成分，在可行的情況下，僅抽取該特定的水耕沙律菜或魚菜共生沙律菜成分。
- In view of the anticipated scarcity of hydroponic and aquaponic salad vegetables in the local market, if raw hydroponic or aquaponic vegetables were identified as an ingredient in a salad sample during sampling, only that particular raw hydroponic or aquaponic vegetable component would be taken whenever possible and feasible.



採樣情況

Sampling

- 在2016年9月至2017年2月期間抽取樣本。
 - 共抽取101個樣本，當中包括8個水耕沙律菜樣本和4個魚菜共生沙律菜樣本。
- Sampling work was conducted from September 2016 to February 2017.
 - A total of 101 samples were collected, including 8 hydroponic salad vegetable samples and 4 aquaponic salad vegetable samples.



化驗測試

Laboratory Tests

➤ 衛生署轄下的公共衛生化驗服務處進行微生物測試。

- Microbiological tests were all conducted by Public Health Laboratory Services Branch of the Department of Health.



微生物含量準則

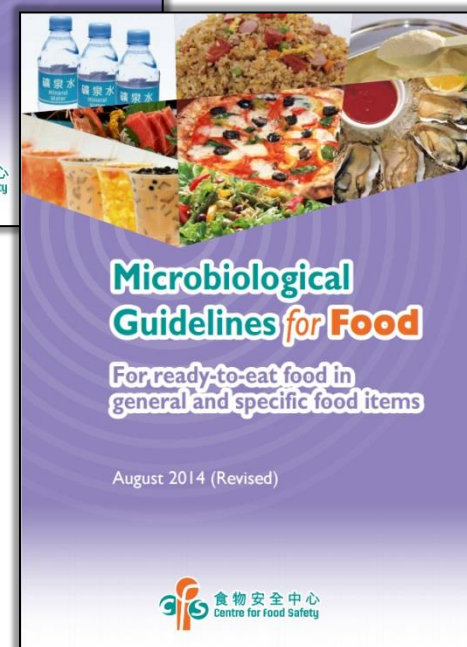
Microbiological Criteria



微生物含量準則

Microbiological Criteria

- 根據中心於2014年8月出版的《食品微生物含量指引》
- According to the “Microbiological Guidelines for Food” issued by the CFS in Aug 2014



微生物含量準則

Microbiological Criteria

➤ (I) 食物安全：致病菌

- O157型大腸桿菌、沙門氏菌屬、李斯特菌
- 如檢出或含量過多，可能影響健康

➤ (II) 衛生質素

- 大腸桿菌 — 直接或間接受糞便污染

● (I) Food Safety: Pathogens

- *Escherichia coli* O157, *Salmonella* spp., *Listeria monocytogenes*
- May affect health if presence or presence of excessive levels

● (II) Hygienic quality

- *E. coli* – direct or indirect faecal contamination



(I) 微生物安全 – 致病菌

Microbiological Safety – Pathogens

	檢測結果(每克樣本的菌落形成單位)(除非另有註明) Result (colony-forming unit (cfu)/g unless otherwise specified)		
	滿意 Satisfactory	尚可 Borderline	不滿意(可能危害健康及 / 或不宜供人食用) Unsatisfactory: Potentially injurious to health and/or unfit for human consumption
O157型大腸桿菌 <i>Escherichia coli</i> O157	在25克樣本中沒有檢出 Not detected in 25g	不適用 Not applicable	在25克樣本中檢出 Detected in 25g
沙門氏菌屬 <i>Salmonella spp.</i>	在25克樣本中沒有檢出 Not detected in 25g	不適用 Not applicable	在25克樣本中檢出 Detected in 25g



(I) 微生物安全 – 致病菌

Microbiological Safety – Pathogens

李斯特菌 <i>Listeria monocytogenes</i>	檢測結果(每克樣本的菌落形成單位)(除非另有註明) Result (colony-forming unit (cfu)/g unless otherwise specified)		
	滿意 Satisfactory	尚可 Borderline	不滿意(可能危害健康及 / 或不宜供人食用) Unsatisfactory: Potentially injurious to health and/or unfit for human consumption
冷藏食品* (冷凝食品除外)或嬰兒食品 For refrigerated food* (excluding frozen food) or food intended for infants	在25克樣本中沒有檢出 Not detected in 25g	不適用 Not applicable	在25克樣本中檢出 Detected in 25g
其他即食食品 For other ready-to-eat food	< 10	10 - ≤ 100	> 100

*除非有科學證據證明李斯特菌不易於冷藏環境下在有關食物中生長，這個準則適用於所有冷藏食品(冷凝食品除外)。可參考食品法典委員會《應用食品衛生的一般原則控制食品中單核細胞增生李斯特氏菌的準則》(CAC/GL61-2007)。

* This criterion applies to all refrigerated food (excluding frozen food) unless there is scientific evidence supporting that the food concerned does not support the growth of *Listeria monocytogenes* under refrigeration. Reference can be made to the Codex Guidelines on the Application of General Principles of Food Hygiene to the Control of *Listeria monocytogenes* in Food (CAC/GL 61-2007).

(II) 衛生質素 – 大腸桿菌

Hygienic Quality – *E. coli*

	檢測結果(每克樣本的菌落形成單位) Result (colony-forming unit (cfu)/g)		
	滿意 Satisfactory	尚可 Borderline	不滿意 Unsatisfactory
大腸桿菌 <i>Escherichia coli</i>	< 20	20 - ≤ 10 ²	> 10 ²



檢測結果

Results



(I) 微生物安全 – 致病菌檢測結果

Microbiological Safety – Pathogen Results

樣本 Samples (n = 101)		微生物檢測結果 Microbiological Results		
		滿意 Satisfactory	尚可 Borderline	不滿意* Unsatisfactory*
O157型大腸桿菌 <i>Escherichia coli</i> O157		101	不適用 Not applicable	0
沙門氏菌屬 <i>Salmonella</i> spp.		101	不適用 Not applicable	0
李斯特菌 <i>Listeria monocytogenes</i>	冷藏食品(冷凝食品除外)或嬰兒食品 For refrigerated food (excluding frozen food) or food intended for infants	100 (99%)	不適用 Not applicable	1 (1%)
	其他即食食品 For other ready-to-eat food		0	

*可能危害健康及 / 或不宜供人食用

Potentially injurious to health and/or unfit for human consumption

食物環境衛生署

Food and Environmental Hygiene Department

李斯特菌含量為每克2400個菌落形成單位
2400 cfu/g of *L. monocytogenes*



(II) 衛生質素 – 大腸桿菌檢測結果

Hygienic Quality – *E. coli* Results

- 衛生指標方面（即大腸桿菌的含量），根據《食品微生物含量指引》沒有任何樣本被界定為“不滿意”。
- Regarding the hygiene indicator (i.e. *E. coli* count), none of the samples taken were found to be unsatisfactory according to the “Microbiological Guidelines for Food” .



討論

Discussion



樣本的微生物含量安全問題

Microbiological Safety of Samples

- 絕大部分所抽取的樣本（99%）的微生物含量安全水平令人滿意，然而1個沙律樣本檢出的李斯特菌含量達“不滿意”水平。
 - 可能原因：使用了受污染的原材料、溫度控制不足及 / 或食品在處理後受到污染
- Vast majority (99%) of the samples was satisfactory in terms of microbiological safety; yet one salad sample was detected with an unsatisfactory level of *L. monocytogenes*.
 - Possible causes : Use of contaminated raw materials, inadequate temperature control and/or post-processing contamination



跟進行動 – 李斯特菌含量超標的樣本

Follow-up Actions – Sample with Unsatisfactory Level of *L. monocytogenes*

- 中心已知會涉事食肆有關違規事項，並指令即時停售有問題的食品。
 - 中心亦已向該食肆提供食物安全和衛生教育，期間該食肆自願暫停業務以進行徹底清潔和消毒。
 - 所有其後抽取的跟進樣本均為滿意。
-
- The CFS informed the premises concerned of the irregularity and instructed it to stop selling the food item in question immediately.
 - The CFS also provided health education on food safety and hygiene to the premises which made temporary voluntary suspension on its business for thorough cleaning and disinfection.
 - All follow-up samples taken afterward were satisfactory.



結論

Conclusion

- 對於所檢測的微生物，絕大部分樣本（99%）均沒有涉及食物安全問題，而且整體的衛生質素令人滿意。
 - 縱使不普遍，研究結果突顯出供即食和不經烹煮的新鮮農產品及製品仍有受微生物污染的機會，因此市民（特別是易受感染的人士）不應忽視其相關風險。
- Vast majority of the samples (99%) collected did not have microbiological food safety concern on the parameters tested and all samples were of acceptable hygienic quality in general.
 - Even though it is uncommon, results of the study still highlight the possibility of microbiological contamination of ready-to-eat raw fresh produces and their products and thus consumers (in particular susceptible groups) should not overlook the potential risks.



給公眾的建議

Advice to Public

- 易受感染的人士(包括孕婦、幼童、長者及免疫力較弱的人)一般不宜食用預製或預先包裝的沙律。如欲品嚐沙律，宜自行配製，並盡快食用。
 - 即時食用剛配製好的沙律；或馬上將剛配製好的沙律放入雪櫃，並盡快食用。
- Susceptible groups (including pregnant women, children, the elderly and people with low immunity) are advised not to eat pre-prepared or pre-packaged salads in general. If salad is wanted, they are advised to prepare their own salad and consume it as soon as possible.
 - Consume freshly made salad immediately, or refrigerate it immediately and consume it as soon as possible.



給公眾的建議

Advice to Public

➤ 跟從製造商的指示處理食品。

- Handle the products in accordance with manufacturers' instructions.



給公眾的建議

Advice to Public

- 保持雙手清潔。在處理沙律及供即食和不經烹煮的沙律菜前，應以乾淨的清水配合肥皂徹底洗濯雙手。
- 避免在處理不經烹煮的蔬菜時出現交叉污染的機會（例如使用一塊砧板處理即食食物，另一塊處理非即食食物）。



- Keep hands clean. Wash hands with clean running water and soap thoroughly before handling salads and RTE raw salad vegetables.
- Avoid opportunity where cross-contamination can take place when handling vegetables that will be eaten raw (e.g. use one cutting board for RTE food and a separate one for raw non-RTE food).



給業界的建議

Advice to Trade

- 遵行優良製造規範以控制相關的微生物危害。
- 就產品貯存和食用方面作出具體的指示，包括說明在什麼日期或之前食用或其他有關保質期的資訊。

STORAGE For Use By, see front of pack.
Keep refrigerated 0°C to +5°C. Packaged
in a protective atmosphere for freshness.

KEEP REFRIGERATED

- Follow Good Manufacturing Practices to help control associated microbial hazards.
- Provide specific directions on product storage and use, including the 'use-by' date or other shelf-life indicators.

給業界的建議

Advice to Trade

- 對於已清洗並預先包裝的即食新鮮蔬菜，應標明在開封前須保持冷藏，並提供處理鮮切、預切或即食蔬菜的相關指引。
 - 處理食物的工作人員應時刻保持個人衛生，並在處理食物時遵循良好的衛生守則。
- Specify the need to keep washed RTE prepackaged fresh leafy vegetables refrigerated until used as well as other guidance on how to safely handle fresh-cut, pre-cut or RTE leafy vegetables.
 - Food handlers should maintain good personal hygiene and have good hygienic practices when handling food.



研究的局限

Limitations

- 樣本主要於冬季抽取，或限制了這項研究的類推性。
 - 本地市場對供即食和不經烹煮的水耕沙律菜和魚菜共生沙律菜的供應有限，導致研究中的水耕沙律菜和魚菜共生沙律菜的樣本量小，影響了這項研究結論的代表性。
- Samples were mainly collected during the winter time, which may limit the generalisability of the study.
 - Limited availability of RTE raw hydroponic and aquaponic salad vegetables in the local market resulted in small sample size of these samples in this study and limited the representativeness of the conclusion drawn.



謝謝
Thank you

