

風險評估研究 消費者對減鈉的改良配方點心的接受程度

Risk Assessment Study on
Consumer Acceptance of Reformulated Dim Sum for Sodium
Reduction

風險評估研究

Risk Assessment Study



背景 Background



鈉對健康的影響

- 鈉是維持人體機能正常運作的必需元素。
- 進食過多鈉可能會增加患上高血壓的風險。
- 高血壓若不及早診治，可引致心臟病、中風和腎衰竭等疾病。

Health effects of sodium

- Sodium is essential for body functions.
- Excessive sodium intake may increase the risk of developing high blood pressure.
- Untreated high blood pressure can lead to heart attack, stroke, kidney failure, etc.

世界衛生組織 鈉攝取量建議

- 鈉

- 一般成年人每日的鈉攝取量應少於2,000毫克 (5克鹽，即略少於一平茶匙食鹽)



WHO's sodium intake recommendation

- Sodium

- The daily intake of sodium of an average adult should be less than 2,000 mg (5 g of salt, slightly less than 1 level teaspoon of salt)



本港的情況

- 衛生署發布之二零二零至二零二二年度人口健康調查報告書發現15-84歲本地人士平均每日攝取8.4克鹽（約3,400毫克鈉），有83.9%人口每日鹽攝取量超出世衛建議。

Local situation

- The Report of Population Health Survey 2020/2022 published by the Department of Health revealed that persons aged 15-84 years had a daily salt intake of 8.4g per day (~3,400 mg sodium). The vast majority (83.9%) of them had dietary salt intake above the WHO recommended daily limit.

這項研究 The Study



點心 (1)

- 食物安全中心早前的研究指出點心是本地成年人從食物攝取鈉的**第五大來源**。
- 食物安全中心在2022年「點心的鈉含量」研究調查發現
 - 部分點心款式(如：蝦肉燒賣及蝦肉春卷)的**鈉含量較高**

Dim Sum (1)

- According to the CFS's earlier study, Dim Sum was found to be the **fifth major contributors** to the total dietary sodium intake of the adult population in Hong Kong.
- CFS' study on "Sodium Content in Dim Sum" (July 2022) found
 - certain types of dim sum (e.g. shrimp siu mai and spring roll with shrimp) were found to contain **relatively high levels of sodium**

點心 (2)

- 建議業界改良製作過程及轉變配料，以減低點心的鈉含量
- 部分業界擔心消費者未必會接受味道較淡的改良配方產品。

Dim Sum (2)

- Trade members were advised to reduce the sodium content of dim sum through modification of preparation methods and use of ingredients
- Some trade members were concerned about the acceptance of consumers to reformulated products that are less salty

目的

- 評估消費者對鈉含量較低的改良配方點心的接受程度
- 促進與業界討論如何透過改良食品配方，提供鈉含量較低和較健康的食物

Objectives

- To assess the consumers' acceptance of reformulated dim sum with reduced sodium content
- To facilitate the discussion with the trade to provide healthier food products with less sodium content through recipe reformulation



方法 Method



方法

- 消費者味道測試
 - 兩個不同鈉含量的點心配方
 - 確定兩種配方之間是否存在味道上的差異

Method

- Consumer tasting
 - Dim sum with two different sodium contents
 - Determine whether sensory differences exist between two formulation

選擇的點心

- 鈉含量較高的點心(根據食物安全中心過往的研究及營養資料查詢系統)

1. 蝦肉燒賣

- (每100克590毫克鈉 (中心2022年的研究))

2. 豉汁蒸排骨

- (每100克570毫克鈉 (中心的營養資料查詢系統))

Selection of Dim Sum

- Dim sum items have **relatively high level of sodium** (Based on previous CFS' study and Nutrient Information Inquiry System (NIIS))

1. Shrimp siu mai (蝦肉燒賣)

- (590mg sodium/100g (2022 CFS' study))

2. Steamed pork ribs with black bean sauce (豉汁蒸排骨)

- (570mg sodium/100g (CFS' NIIS))

點心製作 (1)

- 與中華廚藝學院合作
- 為選擇的點心，製作兩個不同鈉含量的配方
 - 標準點心
 - 每100克約含600毫克鈉
 - 接近市面點心的鈉含量
 - 減鈉點心
 - 鈉含量較標準點心配方減少10-20%
- 點心製作後儲存於-18°C或以下，在試味前以微波爐翻熱
- 所有點心樣本均以相同方法加熱及貯存

Production of Dim Sum (1)

- Collaborated with the Chinese Culinary Institute
- Production of selected dim sum with two different sodium contents
 - Standard dim sum
 - at around 600mg sodium /100g
 - To approximate the usual sodium content of dim sum in the local market
 - Sodium-reduced dim sum
 - sodium content 10-20% less than that the standard dim sum
- Kept at -18°C or below after production and reheated using microwave oven before tasting
- All samples were reheated and stored under the same condition.

點心製作 (2)

- 點心的鈉含量化驗結果
 - 由食物安全中心委託獲認可的化驗所進行

Production of Dim Sum (2)

- Results of chemical analysis of sodium content of the dim sum samples
 - Conducted by accredited laboratory commissioned by the CFS

點心 Dim sum	鈉含量 (毫克/100克) Sodium content (mg/100g)		減鈉點心的減鈉百分比 Reduction of sodium content in sodium-reduced dim sum
	標準點心 Standard dim sum	減鈉點心 Sodium-reduced dim sum	
蝦肉燒賣 Shrimp siu mai	576	464	↓19%
豉汁蒸排骨 Steamed pork ribs with black bean sauce	632	547	↓13%

試味參與者 (1)

- 透過含有篩選問卷的電郵，招募72位來自食物安全中心消費者聯繫小組的成員成為參與者
 - 不同性別
 - 不同年齡組別
 - 最少每3個月進食點心的習慣
 - 排除吸煙人士，因吸煙可能會影響味覺

Subjects for tasting (1)

- 72 subjects from the CFS' Consumer Liaison Group were recruited through email with a screening questionnaire
 - both genders
 - different age groups
 - habit of consuming dim sum at least every three months
 - smokers were excluded as smoking may dull taste sensations

試味參與者(2)

Subjects for tasting (2)

資料 Information	組別 Category	參與者總數 (%) Total number of subject (%)
性別 Gender	男 Male	42 (58%)
	女 Female	30 (42%)
年齡 Age	15-30	8 (11%)
	31-40	15 (21%)
	41-50	23 (32%)
	51 歲或以上 51 or above	26 (36%)
進食點心的習慣 Frequency of consuming dim sum	每日 Every day	8 (11%)
	每周 Every week	43 (60%)
	每月 Every month	19 (26%)
	每三個月 Every three months	2 (3%)

味道測試 - 三角測試 (1)

- 常用的一種辨別測試
- 確定兩個產品是否存在味道的差異
 - 標準點心
 - 減鈉點心

Tasting – Triangle Test (1)

- One type of commonly used difference test
- determine whether detectable sensory differences exist between two products
 - Standard dim sum
 - Sodium-reduced dim sum

味道測試 - 三角測試 (2)

- 參與者品嚐三個樣本，其中兩個樣本相同
 - 兩個標準點心 + 一個減鈉點心
 - 或
 - 一個標準點心 + 兩個減鈉點心
- 樣本被盲化*，並以三位數的隨機號碼標示 (*目的是避免研究結果受觀察者偏向所影響。)
- 參與者品嚐點心樣本後，選出不同的樣本
- 72位參與者皆會品嚐兩款點心
 - 蝦肉燒賣
 - 豉汁蒸排骨

Tasting – Triangle Test (2)

- Subjects tasted three samples (one different and two alike samples)
 - 2 standard + 1 sodium-reduced dim sum
 - or
 - 1 standard + 2 sodium-reduced dim sum
- The samples were blinded* with three-digit random numbers.
(*The purpose is to avoid study results being affected by the observer bias.)
- The subjects tasted the samples and identified which sample was different from the others.
- 72 subjects tasted both
 - shrimp siu mai
 - steamed pork ribs with black bean sauce

味道測試 - 三角測試 (3)

- 樣本有6個可能的展示次序 (AAB, ABA, BAA, BBA, BAB, ABB - A (●)代標準點心，而B (○)代表減鈉點心)，並平均編排給各參與者
 - 兩個標準點心 + 一個減鈉點心
→ (AAB, ABA, BAA)
 - 一個標準點心 + 兩個減鈉點心
→ (BBA, BAB, ABB)

Tasting – Triangle Test (3)

- Six possible serving orders (AAB, ABA, BAA, BBA, BAB, ABB where A (●) denotes for standard dim sum and B (○) denotes for sodium-reduced dim sum) are counterbalanced across all subjects.
 - 2 standard + 1 sodium-reduced dim sum
→ (AAB, ABA, BAA)
 - 1 standard + 2 sodium-reduced dim sum
→ (BBA, BAB, ABB)

	兩個標準 2 standard + 一個減鈉 1 sodium-reduced	一個標準 1 standard + 兩個減鈉 2 sodium-reduced
A ● (標準 standard) B ○ (減鈉 sodium-reduced)	●●○ / ●○● / ○●●	○○● / ○●○ / ●○○

味道測試 - 三角測試 (4)

- 參與者品嚐三個樣本
 - 一半參與者：
兩個標準點心 + 一個減鈉點心
 - 另一半參與者：
一個標準點心 + 兩個減鈉點心

Tasting – Triangle Test (4)

- Subjects tasted three samples
 - Half of subjects:
2 standard + 1 sodium-reduced dim sum
 - Other half of subjects:
1 standard + 2 sodium-reduced dim sum







味道測試 - 三角測試 (5)

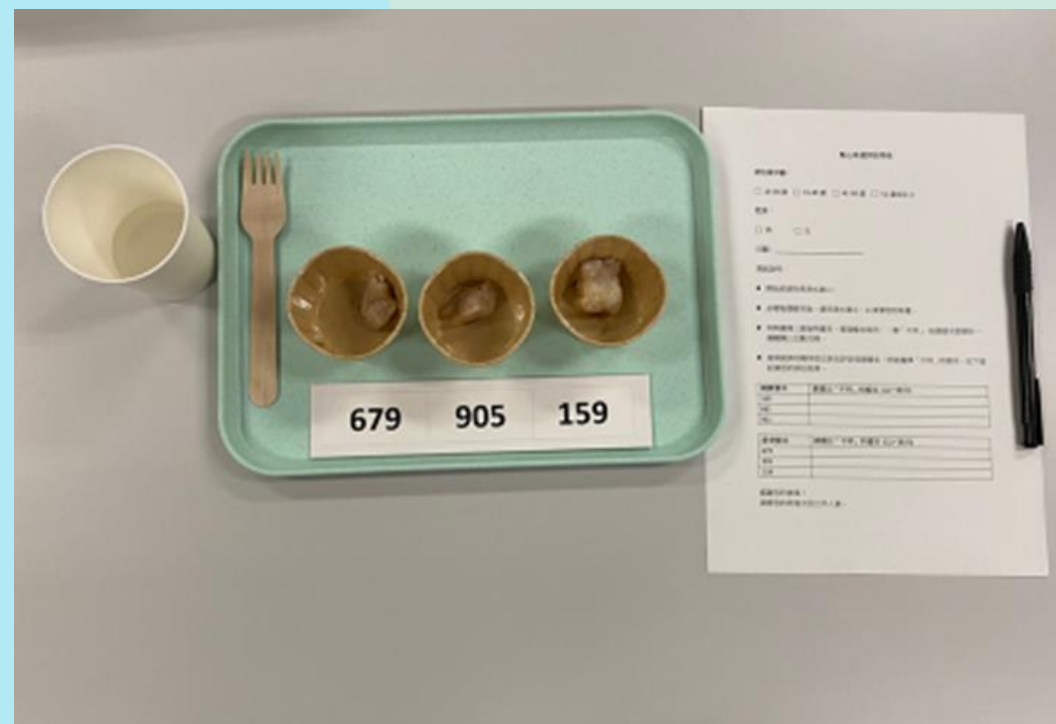
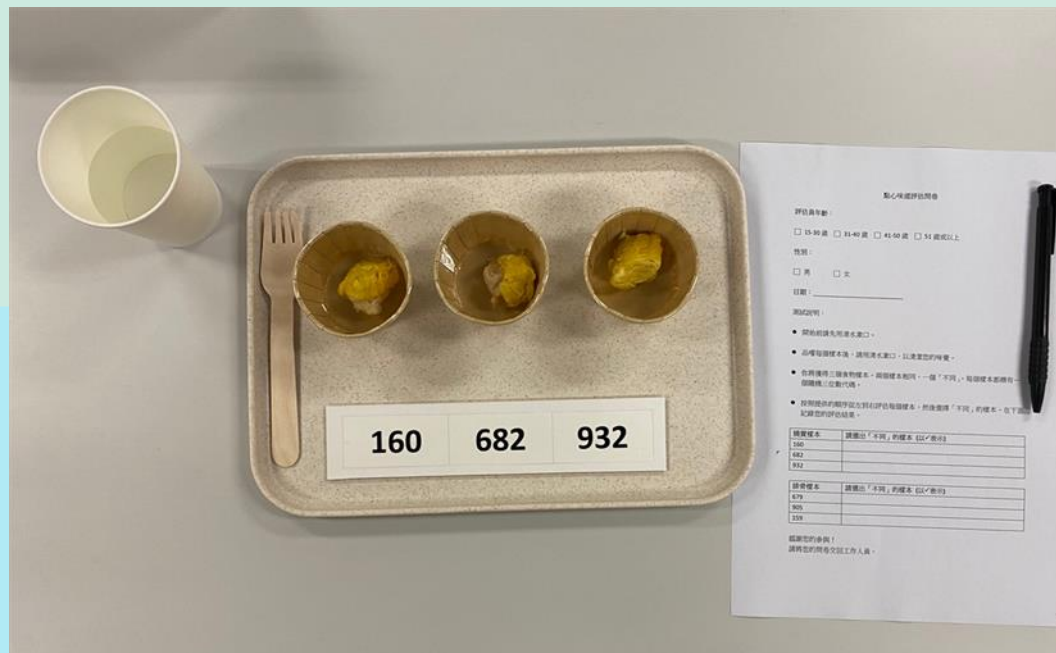
Tasting – Triangle Test (5)

Triangle test design for Shrimp siu mai (三角測試 蝦肉燒賣)

樣本 Sample Identification	有兩個樣本 A 的組別的編號 Codes in Sets with Two As	有兩個樣本 B 的組別的編號 Codes in Sets with Two Bs
A. 標準點心 Standard dim sum	659, 234	682
B. 減鈉點心 Sodium-reduced dim sum	931	160, 932
評估員編號 Subjects Number	樣本展示次序 Serving Order	樣本編號次序 Codes in Order
1,7,13,19,25,31,37,43,49,55,61,67	AAB 	659, 234, 931
2,8,14,20,26,32,38,44,50,56,62,68	ABA 	659, 931, 234
3,9,15,21,27,33,39,45,51,57,63,69	BAA 	931, 659, 234
4,10,16,22,28,34,40,46,52,58,64,70	BBA 	160, 932, 682
5,11,17,23,29,35,41,47,53,59,65,71	BAB 	160, 682, 932
6,12,18,24,30,36,42,48,54,60,66,72	ABB 	682, 160, 932

Triangle test design for Steamed pork ribs with black bean sauce (三角測試 豉汁蒸排骨)

樣本 Sample Identification	有兩個樣本 A 的組別的編號 Codes in Sets with Two As	有兩個樣本 B 的組別的編號 Codes in Sets with Two Bs
A. 標準點心 Standard dim sum	679, 905	951
B. 減鈉點心 Sodium-reduced dim sum	159	582, 709
評估員編號 Subjects Number	樣本展示次序 Serving Order	樣本編號次序 Codes in Order
1,7,13,19,25,31,37,43,49,55,61,67	ABB 	951, 582, 709
2,8,14,20,26,32,38,44,50,56,62,68	BBA 	582, 709, 951
3,9,15,21,27,33,39,45,51,57,63,69	BAB 	582, 951, 709
4,10,16,22,28,34,40,46,52,58,64,70	BAA 	159, 679, 905
5,11,17,23,29,35,41,47,53,59,65,71	AAB 	679, 905, 159
6,12,18,24,30,36,42,48,54,60,66,72	ABA 	679, 159, 905



味道測試 - 三角測試 (6)

- 參與者於2024年3月至4月於政府辦公室的房間品嚐同一批的點心樣本
- 點心樣本的份量大約相同，足夠吃兩口
- 參與者按指示於品嚐點心樣本前及各樣本之間，以蒸餾水清潔味蕾
- 參與者依次序品嚐點心樣本後，按指示選出不同的樣本

Tasting – Triangle Test (6)

- All subjects tasted the same batches of samples in rooms in the Government Office between March and April 2024.
- Samples of the roughly the same size (enough for two bites) were served.
- The subjects were instructed to cleanse their palates with distilled water before and after each trial to prevent carryover taste.
- The subjects tasted the samples in the serving orders and were instructed to identify the odd sample.

結果解讀

- 三角測試
 - 72個參與者，最少要有多少個正確的選擇才可反映兩個樣本味道存在顯著的差異
(於95%信賴水平)

32



Results interpretation

- Triangle Test
 - With a total number of 72 subjects, minimum numbers of correct response showing that a significant difference in taste exists between two samples at a confidence level of 95% -

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結果(1)

Result (1)

點心 Dim sum item	三角測試 Triangle test		最少要有多少個正確選擇的參與者才反映兩個樣本味道有顯著的差異 (於95%信賴水平) Minimum numbers of correct response showing that a significant difference in taste exists between two samples at a confidence level of 95%
	參與者數目 Total no. of subject	識別出不同樣本的 參與者數目 No. of subject identified the odd sample	
蝦肉燒賣 Shrimp siu mai	72	15	32
豉汁蒸排骨 Steamed pork ribs with black bean sauce	72	13	32

結果(2)

- 蝦肉燒賣及豉汁蒸排骨
 - 由於少於32個參與者識別出不同樣本
 - 所以結果顯示標準配方及減鈉配方點心味道沒有存在顯著差異

Results (2)

- For both shrimp siu mai (蝦肉燒賣) and steamed pork ribs with black bean sauce (豉汁蒸排骨)
 - Since fewer than 32 subjects identified the odd sample
 - the result indicated that no significant difference in taste between the standard and the sodium-reduced dim sum

研究結論

Study conclusion

- A 10-20% reduction of the sodium content in dim sum concerned would not result in perceptible sensory difference

This reflects the acceptability of consumers to such range of sodium reduction

This reflects the feasibility of the trade to reduce the sodium content in dim sum

- 將有關點心的鈉含量減少10-20%，不會在味道上產生可察覺的分別

反映上述減鈉幅度獲消費者接受

反映降低點心的鈉含量對業界而言屬可行

給業界的建議

- 參考食物安全中心的《降低食物中鈉含量的業界指引》，改良食物配方，以降低食物中的鈉含量(例如：選用鈉含量較低的配料、使用天然配料調味和醃製食物)。
- 以獨立容器盛載醬料，讓消費者按其口味添加於食物。

Advice to Trade

- Reduce the sodium content of food through product reformulation by making reference to the CFS' "Trade Guidelines for Reducing Sodium in Foods" (e.g. choose ingredients with lower sodium content, use natural ingredients for flavouring and marinating).
- Serve sauces in separate containers to allow consumers to add sauces based on their preference.

給市民的建議

- 要求食肆把食物與醬料分開送上
先嘗一嘗食物的味道才蘸醬料。
- 保持均衡和多元化的飲食，逐漸減少食用偏鹹的食物，慢慢適應較清淡的口味。

Advice to Public

- Request the food to be served separately from sauces, and taste before dipping in sauces
- Maintain a balanced diet with variety and accustom to milder taste by gradual cutback on salty food.



謝謝
Thank You

