本地蛋糕反式脂肪和糖含量
Trans Fat and Sugar Contents of Cakes in Local Market

業界諮詢論壇

Trade Consultation Forum

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反式脂肪對健康的影響
Health effect of trans fat

- 反式脂肪會提高低密度脂蛋白膽固醇(即壞膽固醇)濃度，並使高密度脂蛋白膽固醇(即好膽固醇)濃度下降，從而增加罹患冠心病的風險
- 世衞建議，反式脂肪攝取量實際上應少於人體每日所需能量的1%
- 以每天攝取2,000千卡能量計算，每日應攝取少於2.2克的反式脂肪

- Trans fat (TFA) raises the low density lipoprotein (bad cholesterol) and reduces the high density lipoprotein (good cholesterol), which increases the risk of coronary heart disease
- World Health Organization (WHO) recommends that the daily intake of TFA should be less than 1% of daily energy intake
- For a 2,000 kcal diet, the daily intake of TFA should be less than 2.2 grams

不同種類的反式脂肪
Different types of TFA

屬不健康飲食之列，應不要使用

Not part of a healthy diet, should not be used

反式脂肪 TFA

天然的反式脂肪
Natural TFA

動物（如牛和羊）的肉和奶
Animal's (e.g. cow and goat) meat and milk

工業生產的反式脂肪
Industrially produced TFA (IP-TFA)

以含部分氫化油的食材（如人造牛油和植物起酥油）製作的食品或油炸食品
Food produced by Partially Hydrogenated Oil (PHO) containing ingredients (e.g. margarine, vegetable shortening) or fried food

糖對健康的影響
Health effects of sugars

- 糖是一種碳水化合物。食物中的糖有其中一部分是出自天然來源，另外一部分來自食物生產過程中添加的糖分
- 攝取過多的糖分會增加肥胖症和蛀牙的風險
- 成人和兒童的游離糖攝取量應少於每日能量總攝取量10%
- 以每日攝取2000千卡能量的人為例，每日游離糖的攝取量應少於50克 (約10粒方糖)

- Sugars are carbohydrates. Sugars in food can be naturally produced or added during manufacturing process
- Excessive intake of sugars may increase the risk of obesity and tooth decay
- The daily intake of free sugars for adults and children should be less than 10% of daily energy intake
- For a 2000 kcal diet, the daily intake of free sugars should be less than 50 grams (around 10 sugar cubes)

游離糖是指包括由生產商、廚師或消費者在食品中添加的單糖和雙糖以及天然存在於蜂蜜、糖漿、果汁和濃縮果汁中的糖分

Free sugars include monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates

蛋糕成份
Ingredients of cakes

朱古力片 (糖)
Chocolate flake (Sugar)

忌廉 (脂肪)
Cream (Fat)

水果 (糖)
Fruit (Sugar)

啫喱 (糖)
Jelly (Sugar)

雞蛋 (脂肪)
Egg (Fat)

食用油脂
Edible fat and oil

砂糖
Granulated sugar

麵粉
Flour

是次研究

This Study

目的 Objectives

- 了解本地非預先包裝蛋糕所含的反式脂肪和糖的最新情況
- 推動業界改良食品配方
- 增加公眾對蛋糕的反式脂肪和糖含量的認識

- Understand the TFA and sugar contents of local non-prepackaged cakes
- Promote the trade to reformulate products
- Enhance the understanding of the public about the TFA and sugar contents in cakes

研究範疇 Scope of study

100個非預先包裝蛋糕樣本，共分為10個類別，每個類別10個樣本

- 瑞士卷
- 鬆餅
- 黑森林蛋糕
- 芒果慕絲蛋糕
- 鮮果忌廉蛋糕
- 千層蛋糕
- 雪芳蛋糕
- 栗子蛋糕
- 牛油蛋糕
- 拿破崙蛋糕

100 non-prepackaged cake samples, with totally 10 groups, and 10 samples for each group

- Swiss Roll
- Muffin
- Dark Forest Cake
- Mange Mousse Cake
- Fresh Fruit Cream Cake
- Mille Crêpe
- Chiffon Cake
- Chestnut Cake
- Butter Cake
- Napoleon Cake

採樣 Sampling

- 抽取樣本時間
  - 2020年3月至4月
- 化驗樣本時間
  - 2020年4月至7月
- 抽取樣本地點
  - 烘焙店
  - 咖啡室
  - 茶餐廳
  - 快餐店
  - 酒店
- 每個抽取樣本地點會收集不多於3個樣本，所採樣本包括切件蛋糕及完整蛋糕

- Sampling period
  - Mar – Apr 2020
- Testing period
  - Apr – Jul 2020
- Sampling Locations
  - Bakeries
  - Cafés
  - Hong Kong-style café
  - Fast food shops
  - Hotels
- Not more than 3 samples are collected for each sampling location, which include slice cakes and whole cakes

測試項目 Test items

- 測試由食物安全中心食物研究化驗所進行
- 檢測樣本中的反式脂肪、總脂肪、飽和脂肪及糖含量
- 產品中工業生產的反式脂肪含量：根據丹麥的方法估算，即摒除了來自動物的肉及奶的反式脂肪

- Tests were conducted by Food Research Laboratory of the Centre for Food Safety
- Tested for TFA, total fat, saturated fat and sugar contents
- IP-TFA in food: Estimated by use of the Denmark's deduction method, i.e. excluding TFA from animals' meat and milk

參考水平 Reference values

以100克 食物計算 **Per 100g of food**	根據香港 《食物及藥物（成分組合及標籤）規例》 **According to Food and Drugs (Composition and Labelling) regulations, Cap 132W**	根據中心印製的「購物指南卡」 **According to the CFS Shopping Card**
總脂肪 Total Fat	「低脂」：含不超過3克總脂肪 “Low fat”: Not more than 3g of total fat	「高脂」：含超過20克總脂肪 “High fat”: More than 20g of total fat
糖 Sugars	「低糖」：含不超過5克糖 “Low Sugars”: Not more than 5g of sugars	「高糖」：含超過15克糖 “High sugars”: More than 15g of sugars
反式脂肪酸 TFA	「零」反式脂肪：含不超過0.3克反式脂肪 “Low Sugars”: Not more than 0.3 of TFA	

結果
Findings

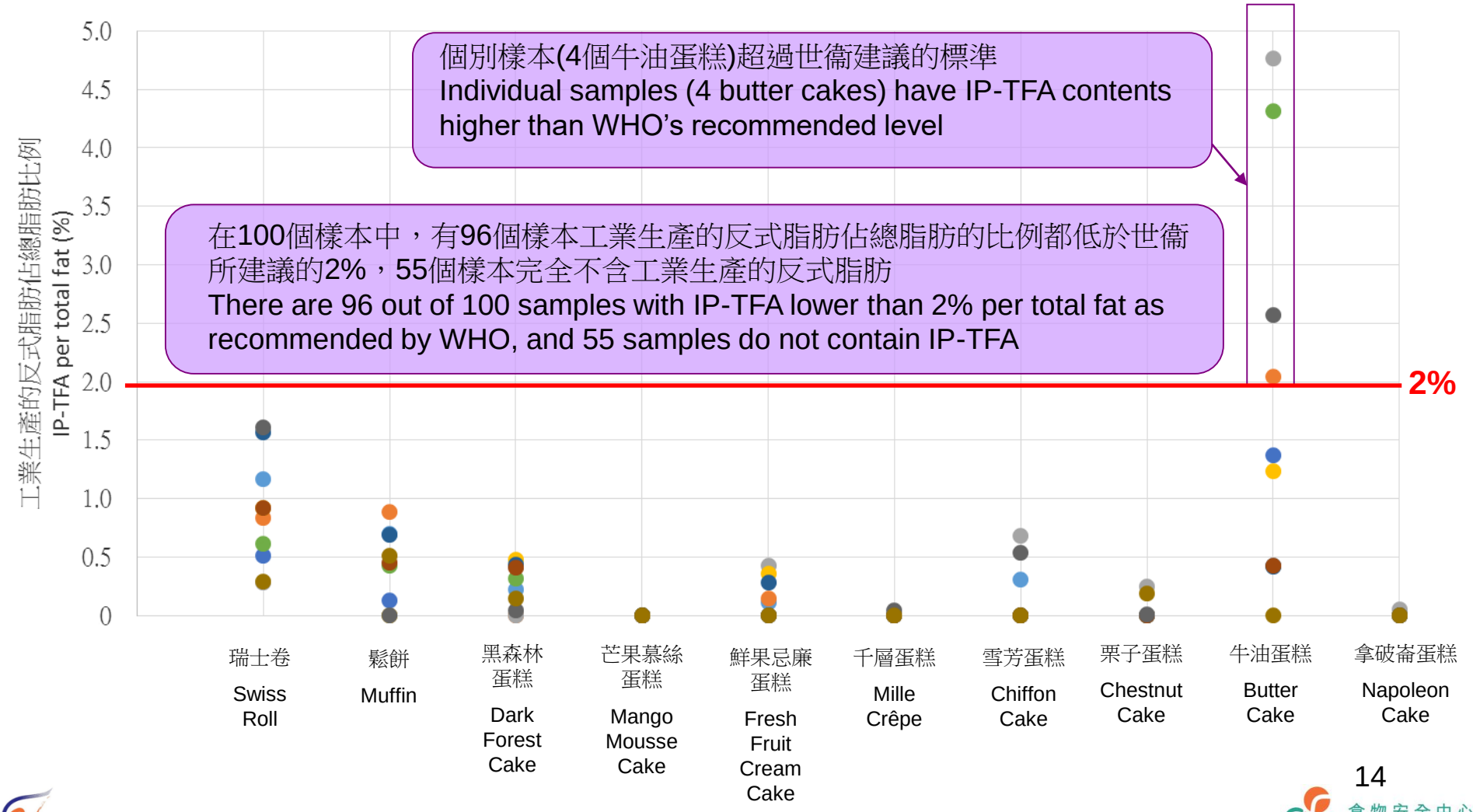
蛋糕樣本檢出的工業生產的反式脂肪含量
IP-TFA content in cake samples

	產品類別 Product category	數目 No. of samples	工業生產的反式脂肪平均含量[範圍] (佔總脂肪的比例) IP-TFA Mean [Range] (%/total fat)
1.	牛油蛋糕 Butter Cake	10	1.76 [0-4.76]
2.	瑞士卷 Swiss Roll	10	0.87 [0.28-1.61]
3.	鬆餅 Muffin	10	0.38 [0-0.88]
4.	黑森林蛋糕 Dark Forest Cake	10	0.25 [0-0.48]
5.	雪芳蛋糕 Chiffon Cake	10	0.15 [0-0.68]
6.	鮮果忌廉蛋糕 Fresh Fruit Cream Cake	10	0.13 [0-0.43]
7.	栗子蛋糕 Chestnut Cake	10	0.05 [0-0.25]
8.	拿破崙蛋糕 Napoleon Cake	10	0.01 [0-0.05]
9.	千層蛋糕 Mille Crêpe	10	0 [0-0.04]
10.	芒果慕絲蛋糕 Mango Mousse Cake	10	0 [0]
	整體 Overall	100	0.36 [0-4.76]

按照世衛建議工業生產的反式脂肪佔總脂肪的百分比(<2%)，全部蛋糕樣本的平均工業生產的反式脂肪佔總脂肪的百分比為0.36%，普遍低

With reference to the WHO's recommended level of IP-TFA per total fat (<2%), the mean IP-TFA is 0.36% per total fat, which is low in general

蛋糕樣本的工業生產的反式脂肪含量分佈圖
Distribution chart of IP-TFA content in cake samples



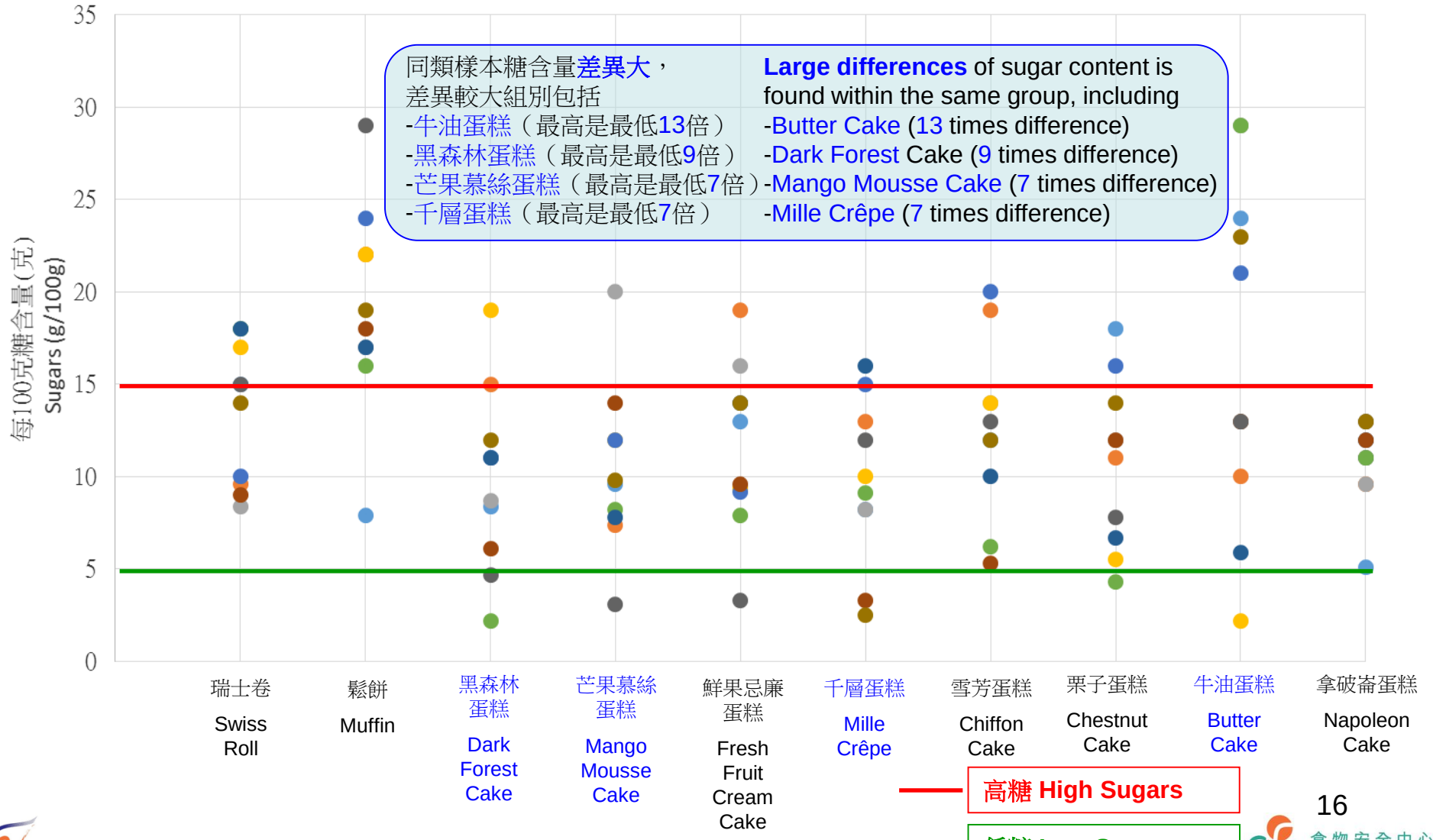
蛋糕樣本檢出的糖含量
Sugar content in cake samples

	產品類別 Product category	數目 No. of samples	糖平均含量[範圍] (克/每100克食物) Sugars Mean [Range] (g/100g food)
1.	鬆餅 Muffin	10	19.2 [7.9-29]
2.	牛油蛋糕 Butter Cake	10	17 [2.2-29]
3.	瑞士卷 Swiss Roll	10	13.4 [8.4-18]
4.	雪芳蛋糕 Chiffon Cake	10	12.6 [5.3-20]
5.	鮮果忌廉蛋糕 Fresh Fruit Cream Cake	10	11.5 [3.3-19]
6.	栗子蛋糕 Chestnut Cake	10	10.7 [4.3-18]
7.	拿破崙蛋糕 Napoleon Cake	10	10.7 [5.1-13]
8.	芒果慕絲蛋糕 Mango Mousse Cake	10	10.4 [3.1-20]
9.	黑森林蛋糕 Dark Forest Cake	10	9.8 [2.2-19]
10.	千層蛋糕 Mille Crêpe	10	9.7 [2.5-16]
	整體 Overall	100	12.5 [2.2-29]

不同蛋糕組別的平均糖含量差異大
- 鬆餅的平均糖含量最高，而千層蛋糕的平均糖含量則最低

Large variations of mean sugar contents are found among different cake groups
- Muffin the highest mean sugar content, and Mille Crêpe has the lowest mean sugar content

蛋糕樣本的糖含量分佈圖
Distribution chart of sugar content in cake samples



食物安全中心 Centre for Food Safety

與過往研究比較 – 工業生產的反式脂肪(1)
Comparison with previous studies – IP-TFA(1)

- 在蛋糕工業生產的反式脂肪含量上，不少蛋糕是次研究與過往研究的結果比較有下降的趨勢
- 在10個比較樣本中，有4個樣本包括2個瑞士卷、1個鬆餅及1個牛油蛋糕的反式脂肪及工業生產反式脂肪含量都有所減少
- 而有3個比較樣本包括1個鬆餅、1個千層蛋糕及1個拿破崙蛋糕則在是次研究中並沒有發現工業生產的反式脂肪

- A decreasing trend is observed in the IP-TFA when comparing the findings of this study with the results of previous studies
- There are 4 out of 10 samples having both decreases in the TFA and IP-TFA contents, which include 2 Swiss rolls, 1 muffin and 1 butter cake
- 3 samples are found to have no IP-TFA detected in this study, including 1muffin, 1 Mille Crêpe and 1 Napoleon cake

與過往研究比較 – 工業生產的反式脂肪(2)
Comparison with previous studies – IP-TFA(2)

	樣本 Sample	商鋪名稱 Shop Sign	2012年研究 2012 Study (%)	2019年研究 2019 Study (%)	是次研究 Current Study (%)	最近2次研究的工業生產的反式脂肪轉變 IP-TFA Change between last 2 Studies (%)
1	瑞士卷	聖安娜餅屋	0	NA	1.17	**First detected**
2	迷你原味卷蛋	美心西餅	0	NA	0.84	**First detected**
3	瑞士卷	東京麵包餅食	1.05	NA	0.29	**-73**
4	雲呢拿瑞士卷	大班麵包西餅	0.35	NA	0.92	**162**
5	瑞士卷	迦南麵包西餅店	3.08	NA	0.51	**-83**
6	Blueberry Muffin	文華餅店	NA	0.26	0	**-100**
7	Signature Mille Crêpe	Lady M	NA	0	0	0
8	牛油蛋糕	皇爵麵包西餅	2.34	1.67	0.42	**-75**
9	牛油切餅	超群麵包西餅	2.22	4.23	4.76	13
10	芒果千層蛋糕	Lucullus Gourmet Shop	NA	0	0	0

•有3個比較樣本包括1個鬆餅、1個千層蛋糕及1個拿破崙蛋糕則在是次研究中並沒有發現工業生產的反式脂肪

•3 samples are found to have no IP-TFA detected in this study, including 1muffin, 1 Mille Crêpe and 1 Napoleon cake

•在10個比較樣本中，有4個樣本包括2個瑞士卷、1個鬆餅及1個牛油蛋糕的反式脂肪及工業生產反式脂肪含量都有所減少

•There are 4 out of 10 samples having both decreases in the TFA and IP-TFA contents, which include 2 Swiss rolls, 1 muffin and 1 butter cake

NA: Data not available in the previous studies

與過往研究比較 – 糖(1)
Comparison with previous studies – Sugars(1)

- 在是次研究中的糖含量普遍有所減少
- 在10個比較樣本當中發現其中7個樣本（4個瑞士卷、1個鬆餅及2個牛油蛋糕）的糖含量有所減少
- 在過往研究被列為「高糖」的8個蛋糕樣本中，有4個（3個瑞士卷及1個牛油蛋糕）在是次研究所檢測出的糖含量已低於「高糖」水平

- The sugar contents generally decrease among samples
- Sugar content of 7 out of 10 samples (4 Swiss Rolls, 1 muffin and 2 Butter Cake) are reduced
- There are 4 out of 8 samples which are previous “High Sugars” are found to have the sugar content lower than the level of “High Sugars” in this study, including 3 Swiss Rolls and 1 Butter Cake

與過往研究比較 – 糖(2)
Comparison with previous studies – Sugars(2)

	樣本 Sample Description	商鋪名稱 Shop Sign	2012年研究 2012 Study (g/100g)	2014年研究 2014 Study (g/100g)	是次研究 Current Study (g/100g)	最近2次研究的糖轉變 Sugars Change between last 2 Studies (%)
1	瑞士卷	聖安娜餅屋	20.1	NA	15	-25
2	迷你原味卷蛋	美心西餅	17	NA	9.6	-44
3	瑞士卷	東京麵包餅食	11.5	NA	8.4	-27
4	雲呢拿瑞士卷	大班麵包西餅	15.4	NA	17	10
5	瑞士卷	迦南麵包西餅店	15.3	NA	10	-35
6	牛油蛋糕	皇爵麵包西餅	26.3	NA	24	-9
7	牛油切餅	超群麵包西餅	21.7	NA	10	-54
8	鬆餅	KFC	NA	4.5	7.9	**76**
9	Blueberry Muffin	maccato	NA	24	17	-29
10	鬆餅	Mrs. Fields	NA	22	24	9

•在過往研究被列為高糖的8個蛋糕樣本中，有4個樣本在是次研究所檢測出的糖含量已低於「高糖」的水平，包括3個瑞士卷及1個牛油蛋糕

•There are 4 out of 8 samples which are previous "High Sugars" are found to have the sugar content lower than "High Sugars" in this study, including 3 Swiss rolls and 1 butter cake

•在10個比較樣本當中發現其中7個樣本的糖含量都減少

•Sugar content of 7 out of 10 samples are reduced

高糖 (> 15克 / 100克)
High Sugars (> 15g / 100g)

NA: Data not available in the previous studies

總結 (1)
Conclusion(1)

- 蛋糕樣本中含工業生產的反式脂肪的含量普遍低，祇有個別樣本(4%)超過世衞的標準。
- 與過往的研究比較，蛋糕的工業生產的反式脂肪亦已降低，可見業界已在配方中使用不含部分氫化油的材料製作蛋糕
- 個別蛋糕組別的工業生產的反式脂肪含量仍然較高。規管食物中的部分氫化油，能有助進一步減低當中的工業生產的反式脂肪含量

- IP-TFA contents are low among cake samples, and only individual samples (4%) exceed WHO's recommended level.
- When comparing with previous studies, IP-TFA contents decrease in cakes, indicating that the trade has used edible fats and oils without containing PHO in cake production
- IP-TFA contents of individual samples are relatively high. Regulating PHO in food, the IP-TFA content in food can be further reduced

總結 (2)
Conclusion(2)

- 不同組別及同類蛋糕樣本的糖含量差異大
- 市民要認識蛋糕中有不同糖含量，並作出健康的選擇
- 部分蛋糕樣本的糖含量與以往研究比較明顯下降，可見業界遂步積極響應改良食品配方

- Large sugar content variation are found among different cake groups and within the same cake group
- The public should understand cakes contain various sugar levels and to make healthier choice
- Sugar contents of some cakes decrease when compared with previous studies, indicating that the trade has actively engaged in product reformulation

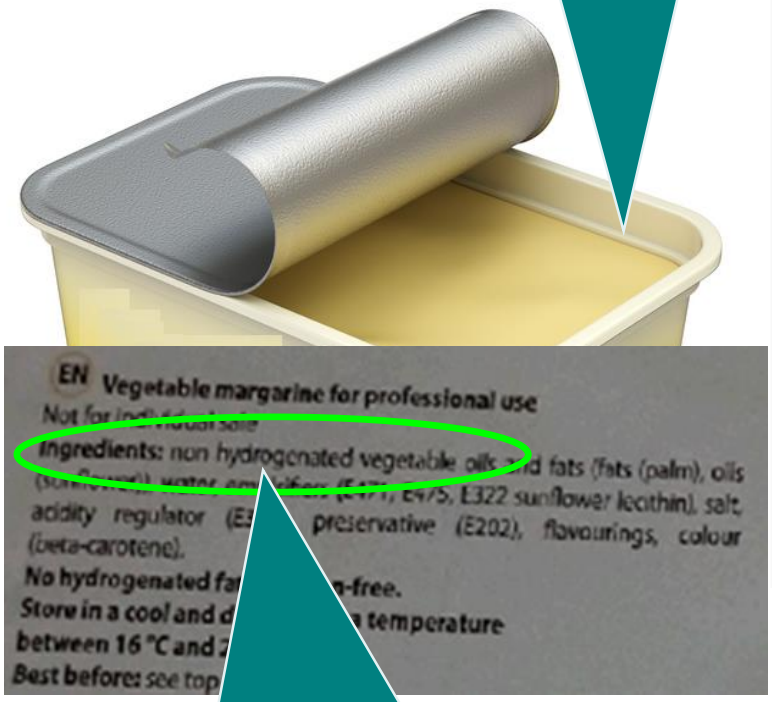
給業界的建議(1)
Advice to Trade(1)

- 在製作蛋糕時使用不含部分氫化油的配料
- 向供應商索取食物配料的成份資料，確保配料中不含部分氫化油
- 向消費者提供有關食物中氫化油成分的資訊，以便消費者在購買前了解產品成份
- 參考食安中最新發布的《取代食物中工業生產反式脂肪的指引》及《減少食物中反式脂 肪業界指引》(2008)，多選用更健康的替代油（如大豆油及粟米油）

- Use ingredients without containing PHO in cake production
- Obtain ingredient information from suppliers to ensure that the ingredients do not contain PHO
- Provide food product information related to hydrogenated oils to consumers
- Refer to the latest issue of “Guidance to Replace Industrially-produced Trans Fats in Food” and “Trade Guidelines on Reducing Trans Fats in Food” (2008) to choose healthier alternatives (e.g. soybean oil, and corn oil)

配方改良例子以減少工業生產的反式脂肪
Reformulation to reduce IP-TFA

例子:人造牛油
Example: Margarine



成份: 非氫化植物油
Ingredient: non hydrogenated vegetable oils

例子:起酥油
Example: Shortening

PRODUCT: ALL PURPOSE SHORTENING (ZERO GRAMS TRANS FAT PER SERVING)
INGREDIENTS: PALM OIL

Nutrition Facts
Serving Size 1 Tbsp (13g)

Amount Per Serving		
Calories	120	Calories From Fat 120
		% Daily Value*
Total Fat	13g	20%
Saturated Fat	6g	30%
Trans Fat	0g	
Polyunsaturated Fat	1.5g	
Monounsaturated Fat	5g	
Cholesterol	1	0%
Sodium		0%
Total Carbohydrate		0%
Dietary Fiber		0%
Sugars		
Protein		
Vitamin A		C 0%
Calcium		0%

*Percent Daily Values are ... lorie Diet.

反式脂肪: 0 克 (每食用份量)
TFA: 0 g (per serving)

給業界的建議(2)
Advice to Trade(2)

- 開發及改良蛋糕配方以降低產品中糖的含量，以及提供不同糖含量的產品予消費者作出選擇
- 製作份量較小的蛋糕
- 參考《降低食物中糖和脂肪含量的業界指引》(2012)，提供較多糖和脂肪含量較低的產品

- Reformulate cakes to reduce sugars, and provide products with various sugar contents for consumers
- Produce cakes with smaller portions
- Refer to “Trade Guidelines for Reducing Sugars and Fats in Foods” (2012), and provide more products with lower sugar and fat contents

給消費者的建議
Advice to Consumers

- 參考本研究結果，並選擇較低脂低糖的蛋糕
- 考慮選購份量較少的產品，或與人分享蛋糕
- 如果是預先包裝蛋糕的話，可參考產品包裝上的營養標籤
- 保持均衡和多元化的飲食

- Refer to the findings of this study and choose cakes with lower fat and sugar contents
- Consider to purchase products with smaller portions, or sharing cakes with others
- Refer to the nutrition labels of food packages of prepackaged cakes to make informed choices
- Maintain a balanced and diverse diet

謝謝

Thank you