

# 本地食物中之 工業生產的反式脂肪含量

Industrially-produced *Trans* Fatty Acids  
(TFA) Content in Local Foods

# 背景



# Background



# 不同類型的膳食脂肪

## Different types of dietary fats

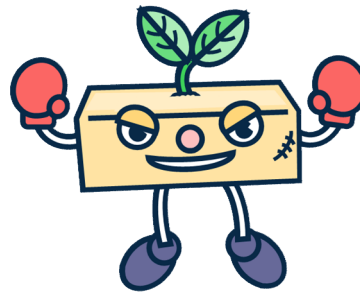
### 脂肪 Fats

飽和脂肪  
Saturated fats (SFA)

反式脂肪  
TFA

不飽和脂肪  
Unsaturated fats

食物例子  
Food example



# 食物中反式脂肪的來源

## Sources of dietary TFAs

佔少部分  
Minor

天然的反式脂肪  
Natural TFAs

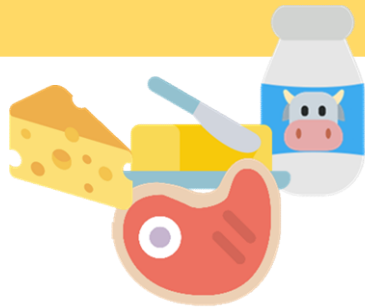


佔大部分  
Major

工業生產的反式脂肪  
iTFA

來自動物(如牛、羊)的肉及奶




From the animal's (e.g. cow, sheep) meat or milk






以氫化植物油

為材料(如植物起酥油、人造牛油)或作烹調的煎炸/烘培食品(如冬甩、酥皮批、薯條)  
Fried food and bakery products (e.g. doughnut, puff pastry/pie, French fries) in which hydrogenated vegetable oils are used as ingredients (e.g. vegetable shortening, margarines) or in the cooking process

## 攝入反式脂肪會... Trans fatty acid intake can...

-  「壞膽固醇」含量
-  「好膽固醇」含量
-  患心血管疾病風險

-  “Bad” cholesterol level
-  “Good” cholesterol level
-  Risk of cardiovascular diseases

# 是次研究 The Study



# 目的 Objectives

- 持續監察本地食物所含反式脂肪的情況;
- 增加公眾對食物所含反式脂肪含量的認識，從而幫助公眾作出知情和適合個人情況的選擇;和
- 鼓勵業界通過配方改良，提供更低工業生產的反式脂肪含量的較健康食品。

- Serve for continuous monitoring the changes of TFA level in foods;
- Inform the public on the TFA content in food, so as to enable informed choices which suit individual needs; and
- Encourage the trade to provide healthier food products with less industrially produced TFA content through recipe reformulation.

# 研究範疇 Scope of study

## 75款食品分為9類

- 酥皮 } 酥皮忌廉湯
- 忌廉湯 }
- 雞批
- 蛋撻
- 咖哩角 / 酥皮卷
- 曲奇
- 蛋糕
- 中式 / 甜酥餅
- 其他

非預先包裝食品  
(無需營養標籤顯示  
反式脂肪含量)

**Non-prepackaged food**  
(Not required to label  
TFA content on NL)

## 75 food samples: 9 items

- Puff pastry } *Cream soup w/  
puff pastry*
- Cream soup }
- Chicken pie
- Egg tart
- Samosa/ Meat stuffed pastry roll
- Cookies
- Cake
- Chinese/sweet pastry
- Others



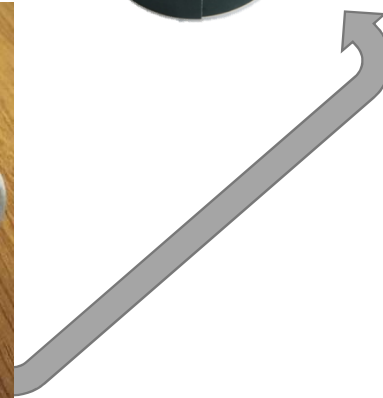
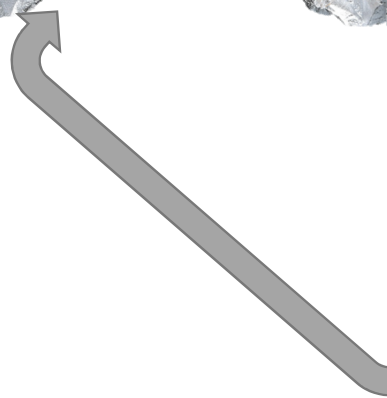
1) 酥皮  
Puff pastry

樣本數目  
No. of samples 8



2) 忌廉湯  
Cream soup

樣本數目  
No. of samples 8



3) 雞批  
Chicken pie

樣本數目  
No. of samples 9



4) 蛋撻  
Egg tart

樣本數目  
No. of samples 8



5) 咖哩角/酥皮卷  
Samosa/ Meat stuffed pastry roll

樣本數目  
No. of samples 9



## 6) 曲奇 Cookies

樣本數目  
No. of samples

6



## 7) 蛋糕 Cake

樣本數目  
No. of samples

8



## 8) 中式/甜酥餅 Chinese/sweet pastry

樣本數目  
No. of samples **8**



## 9) 其他 Others

樣本數目  
No. of samples **11**

# 採樣 Sampling

## 抽取及化驗樣本時間

- 2018年11月至12月

## 地點

- 不同連鎖或獨立食肆，例如快餐/外賣店、烘培店、餐廳等

## Sampling & testing period

- Nov – Dec 2018

## Location

- Different food premises (chain or individual), e.g. fast food/ takeaway shops, bakery shops, restaurants



# 測試項目

# Tested items

- 測試由食物安全中心食物研究化驗所進行
- 檢測樣本中的總脂肪、反式脂肪及飽和脂肪含量
- 產品中之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

- Tested by Food Research Laboratory of the Centre for Food Safety
- Tested for total fat, TFA, and SFA contents
- Industrially produced TFA in foods: Estimated using the Denmark's deduction method, i.e. excluding TFA from animals meat/ milk



# 參考水平 Reference values

不超過此參考水平

Not more than this level

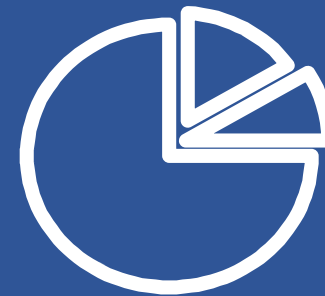
- 世衛反式脂肪每天攝取量 (以攝取2,000千卡能量計算)  
WHO daily TFA intake (Based on a 2,000 kcal diet)
- 世衛呼籲改良食品配方時，食物中工業生產的反式脂肪水平 (佔總脂肪比例)  
WHO's recommendation on industrially produced TFA level in food (Based on total fat) when reformulating products
- 「高脂」食物 (以每100克食物總脂肪含量計)  
'High fat' food (Based on total fat in 100g food)

2.2 克/天  
g/day

2%

20 克每100克食物  
g/100g

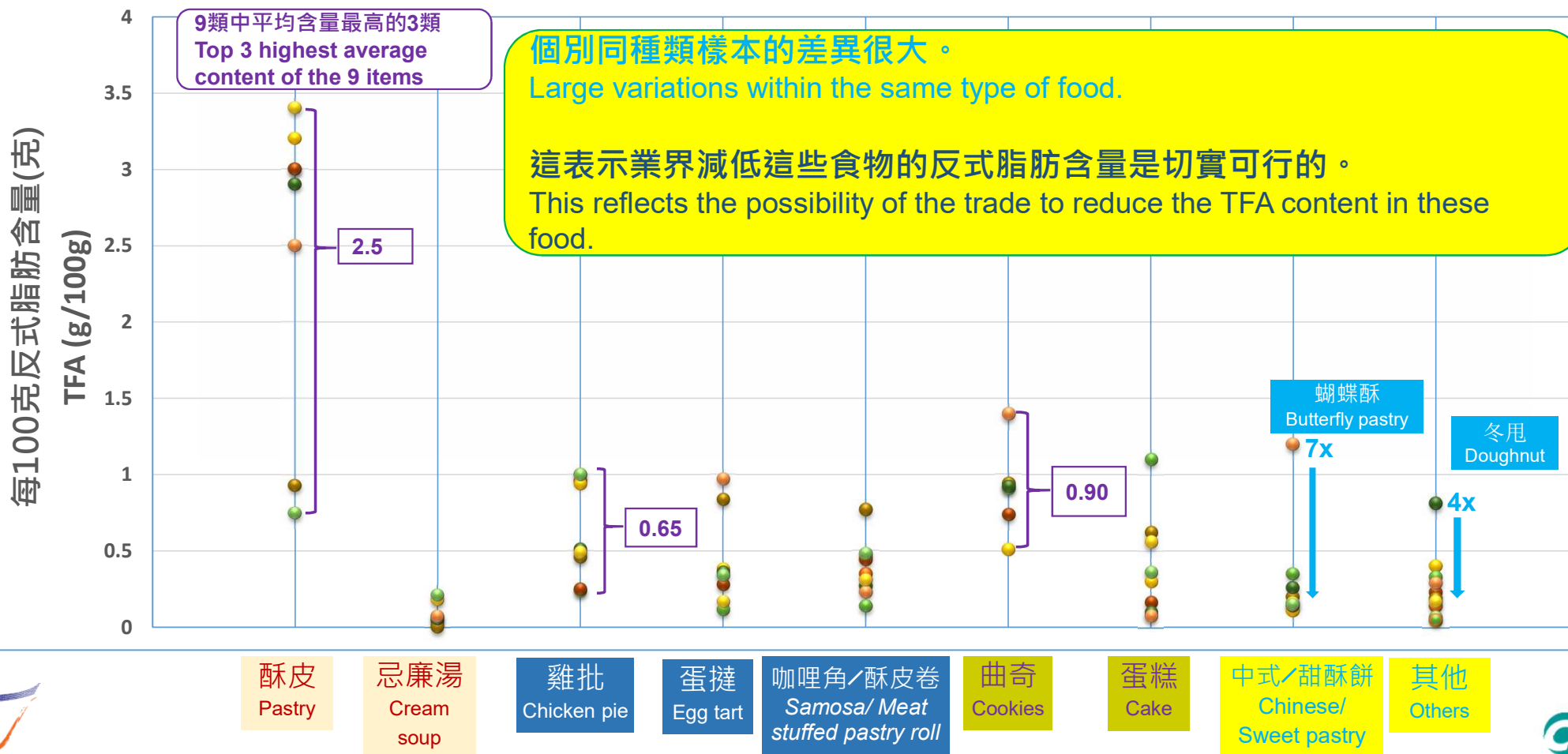
# 結果 Findings





# 食物中的反式脂肪含量分佈圖

## Distribution chart of TFA content in food



酥皮  
Pastry

忌廉湯  
Cream  
soup

雞批  
Chicken pie

蛋撻  
Egg tart

咖哩角/酥皮卷  
Samosa/ Meat  
stuffed pastry roll

曲奇  
Cookies

蛋糕  
Cake

中式/甜酥餅  
Chinese/  
Sweet pastry

其他  
Others

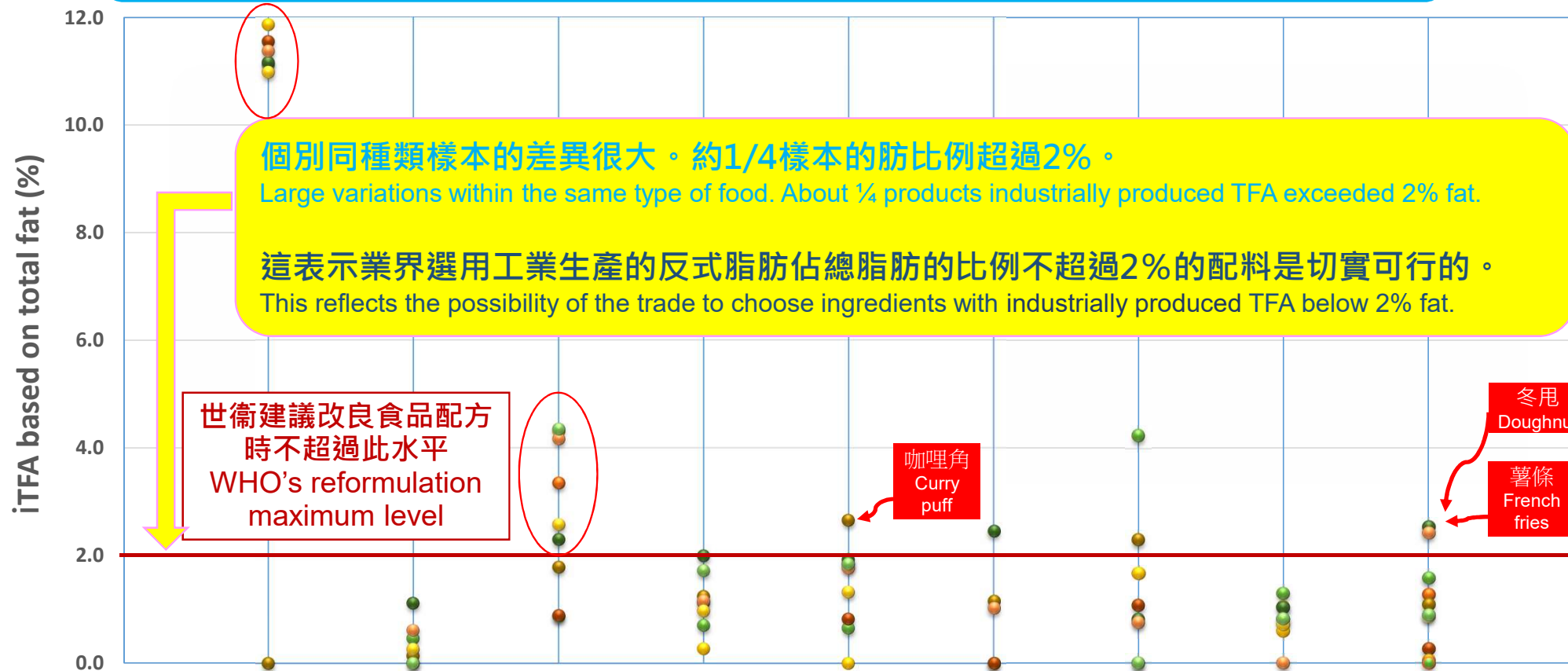
樣本 Food item	數目 Item no.	反式脂肪平均含量(範圍) (克/每100克食物) TFA Mean [Range] (g/100g food)
酥皮 Pastry	8	2.5 [0.75 – 3.4]
忌廉湯 Cream soup	8	0.082 [0.0036 – 0.21]
雞批 Chicken pie	9	0.65 [0.24 - 1.0]
蛋撻 Egg tart	8	0.43 [0.12 – 0.97]
咖哩角/酥皮卷 Samosa/ Meat stuffed pastry roll	9	0.38 [0.14 – 0.77]
曲奇 Cookies	6	0.90 [0.51 – 1.4]
蛋糕 Cake	8	0.41 [0.076 – 1.1]
中式/甜酥餅 Chinese/ Sweet pastry	8	0.32 [0.11 – 1.2]
其他 Others	11	0.25 [0.043 – 0.81]



# 食物中工業生產的反式脂肪佔總脂肪比例分佈圖

Distribution chart of industrially produced TFA based on % total fat in food

工業生產的反式脂肪佔總脂肪比例(%)



世衛建議改良食品配方時不超過此水平  
WHO's reformulation maximum level

個別同種類樣本的差異很大。約1/4樣本的脂肪比例超過2%。  
Large variations within the same type of food. About 1/4 products industrially produced TFA exceeded 2% fat.  
這表示業界選用工業生產的反式脂肪佔總脂肪的比例不超過2%的配料是切實可行的。  
This reflects the possibility of the trade to choose ingredients with industrially produced TFA below 2% fat.

咖哩角  
Curry puff

冬甩  
Doughnut

薯條  
French fries

酥皮  
Pastry

忌廉湯  
Cream soup

雞批  
Chicken pie

蛋撻  
Egg tart

咖哩角/酥皮卷  
Samosa/ Meat stuffed pastry roll

曲奇  
Cookies

蛋糕  
Cake

中式/甜酥餅  
Chinese/ Sweet pastry

其他  
Others



樣本 Food item	數目 Item no.	工業生產的反式脂肪佔總脂肪比例 平均含量[範圍] Industrially produced TFA /fat Mean [Range]	超過2%的 No. of items exceeding 2%
酥皮 Pastry	8	8.9% [0%-12%]	7
忌廉湯 Cream soup	8	0.32% [0%-1.1%]	0
雞批 Chicken pie	9	2.7% [0.87%-4.3%]	6
蛋撻 Egg tart	8	1.1% [0.28%-2.0%]	0
咖哩角/酥皮卷 Samosa/ Meat stuffed pastry roll	9	1.4% [0%-2.7%]	1
曲奇 Cookies	6	0.78% [0%-2.5%]	1
蛋糕 Cake	8	1.4% [0%-4.2%]	2
中式/甜酥餅 Chinese/ Sweet pastry	8	0.80% [0%-1.3%]	0
其他 Others	11	1.0% [0%-2.5%]	2

# 早餐 Breakfast

- 1杯港式奶茶(200毫升，不加糖)
  - 攝入0.13克反式脂肪，佔每天攝入上限6%
- 1件雞批(平均約重106克)
  - 攝入0.69克反式脂肪，佔每天攝入上限31%
- 進食1件雞批加1杯奶茶
  - 早餐合計攝入上限37%

- A cup of milk-tea (200 ml, no sugar)
  - 0.13g TFA intake; 6% daily intake limit
- A piece of chicken pie (average weight ~106g)
  - 0.69g TFA intake; 31% daily intake limit
- Consumed chicken pie + milk tea
  - contributes 37% daily intake



# 下午茶 Afternoon tea

- 1杯港式咖啡(200毫升，不加糖)
  - 攝入0.066克反式脂肪，佔每天攝入上限3%
- 1件蛋撻(平均約重67克)
  - 攝入0.29克反式脂肪，佔每天攝入上限13%
- 進食1件蛋撻加1杯咖啡
  - 下午茶合計攝入上限16%

- A cup of coffee (200 ml, no sugar)
  - 0.066g TFA intake; 3% daily intake limit
- A piece of egg tart (average weight ~67g)
  - 0.29g TFA intake; 13% daily intake limit
- Consumed egg tart + coffee
  - contributes 16% daily intake



酥皮忌廉湯  
Cream soup with puff pastry

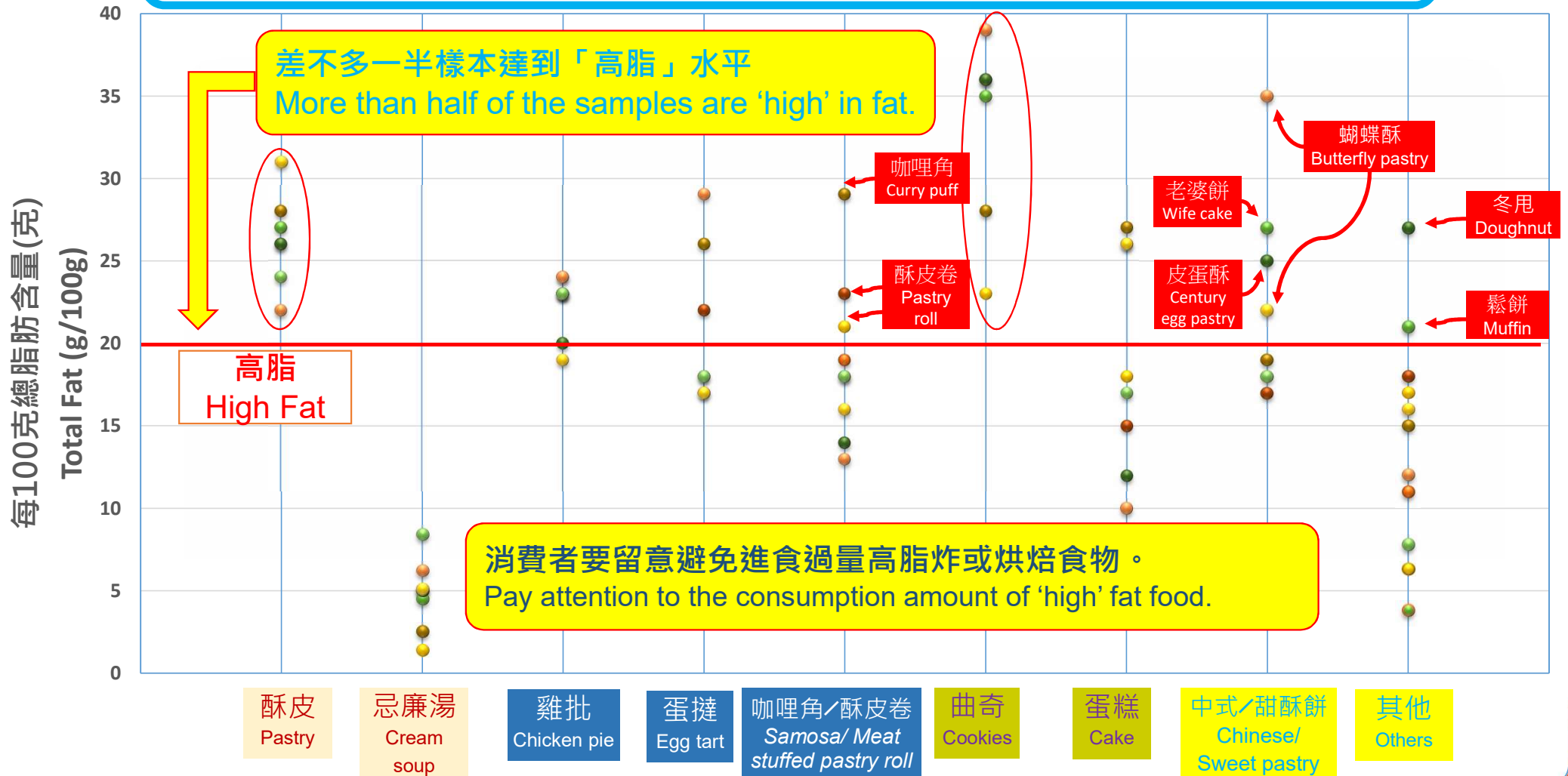
酥皮 Pastry	反式脂肪攝入 TFA intake	1.3 克/g
	佔每天攝入上限 Daily contribution	~59 %
湯 Soup	反式脂肪攝入 TFA intake	0.40 克/g
	佔每天攝入上限 Daily contribution	~18 %

~80%



# 食物中的總脂肪含量分佈圖

## Distribution chart of total fat content in food





# 是次研究與2012年研究比較 Comparison with 2012 study

*食物中脂肪含量(總脂肪、飽和脂肪、反式脂肪、及工業生產的反式脂肪佔總脂肪比例)沒有明顯下降趨勢*

*Fats (Total fat, SFA, TFA, & industrially produced TFA/fat) in food have no obvious downward trends*



# 總結與建議

## Summary & Advice



# 總結 Summary

- 部分樣本(酥皮和雞批)的反式脂肪含量仍偏高，進食一份或已達每天攝入上限2.2克約80%。
- 個別同種類樣本的反式脂肪含量差異很大。業界減低這些食物的反式脂肪含量是切實可行的。
- 25%食物的工業生產的反式脂肪佔總脂肪超過2%，尤其是酥皮和雞批。響應世衛的呼籲，業界可考慮先改良此類食品的配方。

- The TFA content of some products (e.g. puff pastry, chicken pie) remains high; consuming one portion of which could contribute to 80% of TFA daily intake limit.
- TFA content varies greatly within the same type of food. It is feasible for the trade to reduce the TFA content in these food.
- 25% of tested food industrially produced TFA exceeded 2% total fat, especially in pastry and chicken pie. To support WHO's calling, trade could prioritise reformulating these types of foods.

# 給消費者的建議

# Advice to Consumers

- 保持均衡及多元化的飲食。
- 限制食用油炸或高脂的烘焙食品，以及含有工業生產的反式脂肪的零食和食品（例如酥皮忌廉湯的酥皮、雞批、冬甩/沙翁、蛋糕、餡餅、曲奇、餅乾）的分量。
- 購買預先包裝食品時，應參閱營養標籤，查看反式脂肪、飽和脂肪及總脂肪含量。



- Maintain a balanced & varied diet.
- Limit the consumption of baked/ fried foods and snacks that contain industrially produced TFA (e.g. pastry of cream soup with puff pastry, chicken pie, doughnuts, cakes, pies, cookies, and biscuits).
- Read the nutrition label to note the content of TFA, SFA, and total fat when buying prepackaged foods.



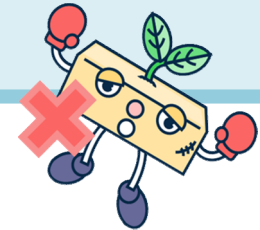
# 給業界的建議

# Advice to Trade

- 留意所供應食物中的反式脂肪、飽和脂肪及總脂肪含量，會否對公眾健康構成影響。
- 選用不含部分氫化油的配料和原材料。
- 改良食品配方，使用較健康的替代油來調整配方。



- Be aware of the content of TFA, SFA and total fat in foods on sale as they have public health implications.
- Choose ingredients without partially hydrogenated oils.
- When reformulating food products, replace the use of edible oil/fat with healthier alternatives.



謝謝!  
Thank you!

