

# BRITISH ASSOCIATION FOR NUTRITION AND LIFESTYLE MEDICINE (BANT)

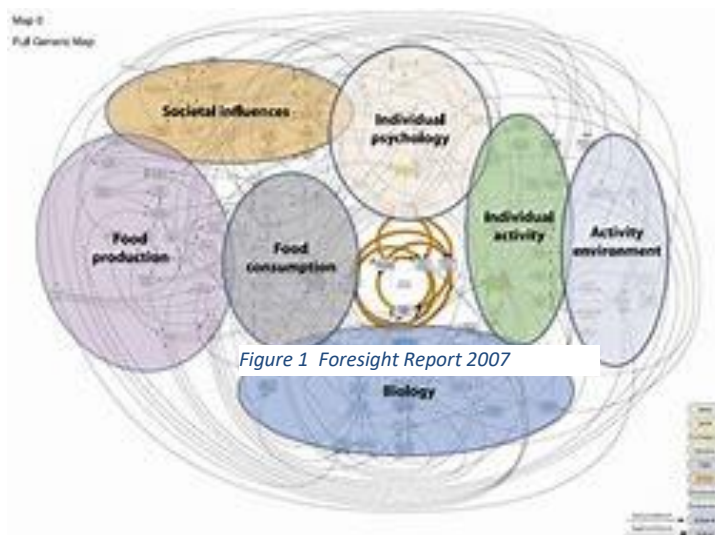
## EVIDENCE TO HEALTH SELECT COMMITTEE ON CHILDHOOD OBESITY

### Executive Summary

- Whatever the broader obesogenic environment the primary behaviour change needed is food choice.
- Food labelling should be honest and meaningful to the consumer – which is not the present case: all glycemic empty calories should be classified as ‘sugar’
- Maltodextrins (modified starches) have been used to replace fat to make lower calorie, and also to replace mono- and di-saccharides, often with artificial sweeteners, because they do not have to be labelled as sugar. The consumer is therefore misled as to the glycemic effect of the food in question.
- Breakfast cereals are the first priority area after sugar-sweetened beverages.

1. BANT is a professional association representing nutrition practitioners regulated by the CNHC, HCPC and others under the umbrella of the Professional Standards Authority. BANT members are all clinicians trained in functional personal nutrition using the model set out in BANT’s written evidence to the House of Lords Science and Technology Committee 2008 inquiry into Genomic Medicine<sup>i</sup> rather than one-size-fits all public health model. We hope this evidence gives the Committee a different perspective of the drivers of childhood obesity and offers some concrete ideas for rapid action.

2. The Committee will remember the diagram produced in 2007 by Foresight<sup>ii</sup> on the obesogenic environment which was zoned into seven domains. While this gives insight into all the drivers of the obesogenic environment it gives no insight to the most useful points of leverage in the network. While we all live in the obesogenic environment not everyone becomes overweight or obese.



3. BANT produced its own version to highlight that this is not just a network of networks but also a *hierarchy* and to help identify points of leverage in the system, which revolve around behaviour change. If consumers do not buy products then manufacturers will cease to make them – that is consumer power. But blunt actions taken by government risk both not producing results and unintended consequences – that is the nature of complex adaptive systems.

## Tackling Obesity + T2 Diabetes

### Network dynamics and system changes

A network of networks but also a *hierarchy*.

Dampening or amplifying effects mean not all networks are of equal influence: large perturbations can have small effects / small perturbations can have large effects.

We all live in the obesogenic environment. Individuals get obese and/or diabetic.

The points of leverage in the system which help prevent individuals succumbing to the maelstrom are not the same for everyone, and not the same as reversing the system.

*"There is no recipe, formula, standard approach or evidence-based 'best practice' for bringing about changes in systems. Instead the challenge appears to be to detect system components and connections between them, understand the behaviour of the system, and identify points of leverage in order to drive transformation."*  
Tsasis et al 2012

### References:

1. Foresight, 2007. Tackling obesities: future choices
2. Tsasis P, Evans JM, Owen S. Reframing the challenges to integrated care: a complex-adaptive systems perspective. *International Journal of Integrated Care*. 2012;12:e190.
3. Sieberts SK, Schadt EE. Moving toward a system genetics view of disease. *Mammalian Genome*. 2007;18(8-7):389-401

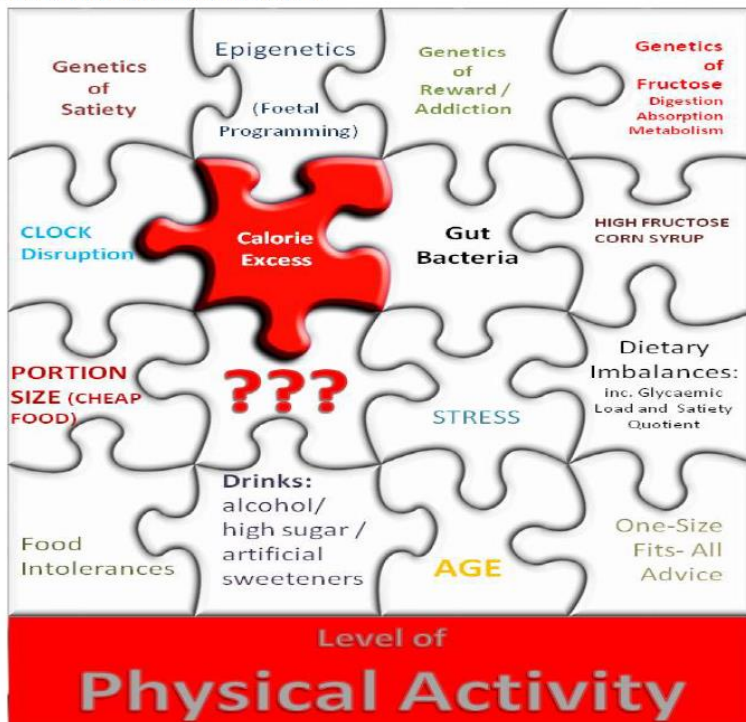
THE SEAL OF EXCELLENCE FOR NUTRITION HEALTH PROFESSIONALS November 2015 © BANT

# The Obesogenic Environment



4. Principal drivers in the epidemic of childhood obesity and type 2 diabetes at the level of the individual are consumption of sugars and seed oils leading to metabolic dysregulation and also excess calorie intake. High on the culprit list are 1) consumption of sugar sweetened beverages (SSBs); 2) high-glycemic calorific breakfast cereals; 3) high-glycemic dessert products, eg ice-creams, and 4) foods high in industrially processed seed oils.

### FACTORS INFLUENCING ADIPOSITY:



5. Consumer education is vital to change the system. BANT's evidence to the 2010 House of Lords Science and Technology Committee inquiry into Behaviour Change<sup>iii</sup> spotlighted the various features affecting an *individual's* propensity to increase adiposity. [BMI has turned out to be an unhelpful, if not useless, measure in terms of healthy metabolism and body composition.]

**Consumer self-knowledge and understanding of food information, primarily on food labels, is critical to behaviour change.**

6. BANT is very clear that tackling the question of food labelling needs to be of the highest priority. If Brexit happens then this is a golden opportunity to put in the place a modern consumer-centred label that is meaningful and empowering, using proven concepts of social incentives, immediate reward, progress monitoring to engender positive habits and control.<sup>iv</sup>

7. However the government's strategy to date has been:

- (1) The tax on sugar sweetened beverages; and
- (2) The sugar reduction programme, a voluntary engagement with the food industry<sup>v</sup>.

Data from Public Health England sugar reduction programme reveals:

(1) A substantial reduction in the purchase of sugary content beverages but no drop overall in drinks sales. From this we can surmise that consumers have switched to drinks containing low or no-caloric sweeteners. The tax has therefore changed behaviours, reduced caloric intake but the jury is out on whether this of itself, or combined with the overall sugar reduction programme, will have an impact on childhood obesity.

(2) The sugar reduction programme has to date been an abject failure. The first year report top-line summary showed of the top 20 brands:

- 33% showed a decrease in the sugar content
- 56% showed no change in the sugar content and
- 12% showed an increase in the sugar content

Out of the top 20 brands which showed a reduction in sugar:

- 37% did not change calorie or saturated fat levels
- 13% showed a decrease in both calories and the saturated fat content
- 6% showed an increase in both calories and the saturated fat content

Therefore we can see that the only calories withdrawn from the brands were in saturated fat. So the question is how did 33% show a decrease in sugar content but no reduction in 'sugar' calories?

(3) The second year report showed no substantive improvement on the previous year.

## **8. So what is going on? How can you have a sugar reduction without a reduction in glycemic calories?**

The answer is sleight of hand by the food industry which has been using a giant lacuna in EU food labelling regulations to its advantage.

Question: when is glucose not a 'sugar'  
 Answer: when it is 'maltodextrin'

PRODUCT: A SUCROSE



PRODUCT: B MALTODEXTRIN



PRODUCT	A	B
Constituent	Glucose + Fructose	Glucose
Known as	Sucrose	Maltodextrin
Calories	4 per gram	4 per gram
GI	High	High
Sweetness	Yes	No
Uses:	Sweetener	1) Fat replacer (for texture + lower cal) 2) (+ Sweetener) to replace Sucrose or HFCS (same cal but different label)
Labelled as 'Sugar'	Yes	<b>NO</b>

Maltodextrins are modified starches derived from wheat, corn, rice, potatoes to shorter lengths of glucose but which are not mono- or di-saccharides ('sugars').

To give an example of one breakfast cereal:

The image shows two boxes of Kellogg's Coco Pops cereal. The left box is labeled 'Old Recipe' and the right box is labeled 'New Recipe'. A large 'VS' is placed between them. Each box has a circular callout showing its nutritional information per 30g portion.

Recipe	Energy (kJ/kcal)	Fat (g)	Saturates (g)	Sugars (g)	Salt (g)
Old Recipe	491 / 116	0.8	0.3	9.0	0.23
New Recipe	486 / 115	0.6	0.3	5.1	0.21

Additional callouts on the boxes include: '50% MORE FIBRE' and 'NO ARTIFICIAL COLOURS OR PRESERVATIVES' on the Old Recipe box; and 'IMPROVED RECIPE LOVED BY KIDS LOVED BY MUMS' on the New Recipe box.

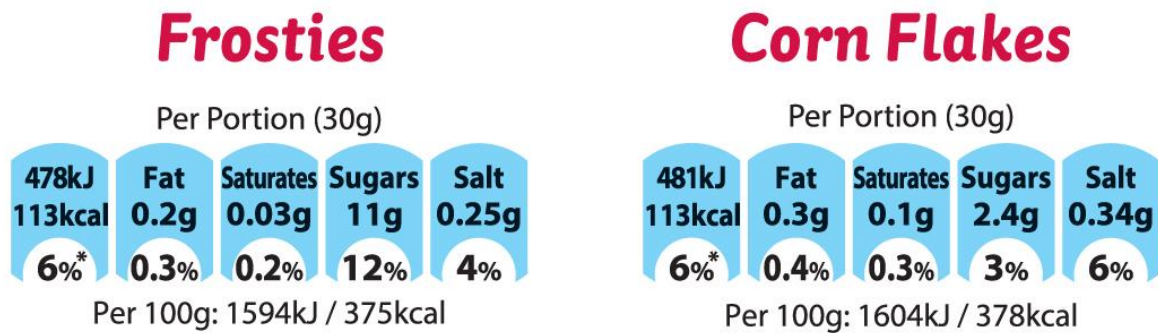
You can see that under the new recipe the reduction in calories is 1kcal per 30g portion and that is from fat. So where do the missing calories come from? Not protein, not fat, so must be carbohydrates that are by definition glycemic and not categorised as sugar. Kelloggs now (2018) admit this on their website:

[https://www.kelloggsnutrition.com/en\\_UK/knowledge/featured/reducing\\_sugar.html](https://www.kelloggsnutrition.com/en_UK/knowledge/featured/reducing_sugar.html)



## Myth: less sugar = lower calories

Reducing the sugar content of breakfast cereals in fact has little impact on the energy that they provide. This is because sugar and starch contain weight for weight the same number of calories. A 30g bowl of a low sugar cereal, will have a similar carbohydrate content as a higher sugar cereal. As the sugar is replaced by **starch** the calorie content will remain similar. This is demonstrated in the product panels below.



UK health authorities have allowed the food industry to make these cynical changes of substituting 'sugars' with 'modified starches' which basically means substituting different lengths of glucose, with exactly the same calories and equally rapidly digested to increase blood sugar.

The US Food and Drug Administration have taken a different view on maltodextrins:

Ingredients, such as maltodextrins, are used in many food products and may contribute more than 0.5 grams per serving in some foods. When maltodextrins are intentionally created through hydrolysis in amounts of greater than 0.5 grams per serving, their contribution to the overall diet would be consistent with the concept of empty calories, and when present, must be declared as added sugars on the label. Similarly, when mono- and disaccharides with DP1 and DP2 are created through hydrolysis and are present in other ingredients in amounts of 0.5 grams or greater, those mono- and disaccharides contribute empty calories to foods and must also be declared as added sugars on the label (21 CFR 101.9(c)(9)(iii)).

Also Food Standards Australia/New Zealand:

**S4—2****Definitions**

In this Schedule:

**maximum claimable amount** means the maximum claimable amount as prescribed by section 1.3.2—4 or 1.3.2—5.

**reference quantity** means the reference quantity specified for the food in the Table to section S17—4.

**Note** In this Code (see section 1.1.2—2):

**sugars:**

- (a) in Standard 1.2.7, Standard 1.2.8 and Schedule 4 (except where it appears with an asterisk as 'sugars\*')—means monosaccharides and disaccharides; and
- (b) otherwise—means any of the following products, derived from any source:
  - (i) hexose monosaccharides and disaccharides, including dextrose, fructose, sucrose and lactose;
  - (ii) starch hydrolysate;
  - (iii) glucose syrups, maltodextrin and similar products;

**So why not in EU?**

9. In 2010 responsibility for food and nutrition was moved from the Food Standards Agency to the Department of Health, and then later to Public Health England. There was a loss of oversight from experts in food science.

10. In 2010 the European Food Safety Authority produced a Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre<sup>vi</sup>. We reproduce the text below so that you can see that starch hydrolysates are listed as glucose syrup and high-fructose syrup, with no mention of maltodextrins.

## SCIENTIFIC OPINION

### Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre<sup>1</sup>

EFSA Panel on Dietetic Products, Nutrition, and Allergies (NDA)<sup>2,3</sup>

European Food Safety Authority (EFSA), Parma, Italy

#### ABSTRACT

##### 2.1.1. Glycaemic carbohydrates

The glycaemic carbohydrates provide carbohydrate to body cells, mainly in the form of glucose. The main glycaemic carbohydrates are (see also Table 1):

- Glucose and fructose (monosaccharides)
- Sucrose and lactose (disaccharides)
- Malto-oligosaccharides
- Starch (polysaccharide)

In this Opinion the term “sugars” covers monosaccharides and disaccharides. In the literature, various terms are used to differentiate between sugars naturally occurring in foods, e.g. “intrinsic” sugars, and sugars and sugar preparations added to foods, e.g. “added” or “extrinsic” sugars” (IoM, 2005; DoH, 1991). In this opinion the term “added sugars” refers to sucrose, fructose, glucose, starch hydrolysates (glucose syrup, high-fructose syrup) and other isolated sugar preparations used as such or added during food preparation and manufacturing.

However in 2018 the ILSI Carbohydrate Expert Group published a paper which referenced the original 2010 EFSA report. However here 'maltodextrins' are included. It is not acceptable behaviour in 2018 for ILSI to try to 'rewrite' EFSA 2010 documents in this duplicitous manner.

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REVIEW ARTICLE

**Dietary carbohydrates: a review of international recommendations and the methods used to derive them**

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**Table 5** Definitions of "added sugars" and their use in reports:

- Generally "sugars" are defined as "mono- and disaccharides". Accordingly, "added sugars" is often considered to be "added mono- and disaccharides".
- WHO report [2]: introduced the term "free sugars" as: "all mono-saccharides and di-saccharides added to foods by the manufacturer, cook, or consumer, plus sugars naturally present in honey, syrups, and fruit juices".
- US: United States Food and Drug Administration [38] and United States Department of Agriculture [16]: Added Sugars are all sugars that are either added during the processing of foods, or are packaged as such, and include sugars (free, mono- and disaccharides), syrups, naturally occurring sugars that are isolated from a whole food and concentrated so that sugar is the primary component (e.g., fruit juice concentrates), and other caloric sweeteners.
- UK: SACN report [9] adopted the term "free sugars from WHO", which now replaces the terms "added sugars" and "non- milk extrinsic sugars" (NMES), used previously. "Free sugars" comprises all monosaccharides\* and disaccharides\* added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and unsweetened fruit juices. Under this definition lactose (the sugar in milk) when naturally present in milk and milk products and the sugars contained within the cellular structure of foods (particularly fruits and vegetables) are excluded".
- EU: EFSA report [12]: added sugars are "mono-, disaccharides and starch hydrolysates (e.g., glucose syrup, fructose syrup, maltodextrins) added during food preparation and manufacturing".

<https://www.uge.ac/wissenscart/referenzwerte/>. 2014.

12. EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA). Scientific opinion on dietary reference values for carbohydrates and dietary fibre. EFSA J 2010;8:1462.

11. While UK food labelling is governed by EU, it was the responsibility of the SACN to highlight risks. The SACN Carbohydrates Expert Working Group failed to highlight the use of maltodextrins. The expert report included a mere passing remark on maltodextrin:



### *Oligosaccharides*

- 2.6 Oligosaccharides include maltodextrins, which principally occur from the hydrolysis of starch and are widely used in the food industry to modify the texture of food products. Maltodextrins are digested and absorbed in the small intestine. Oligosaccharides that are not digested and absorbed in the small intestine include

SACN should have highlighted the glycemic aspects of maltodextrins in 2015 as fat substitutes and also (with artificial sweeteners) as ‘sugar’ substitutes, which ought to have led them being labelled as ‘sugars’ so as not to mislead the public in the same way as the US, and Australia/NZ. [Quite separately we believe SACN should have pointed out in its risk assessment the emerging evidence of modified starches being associated with irritable bowel disease - identified by pet food manufacturers as a cause of canine IBD in the 1990s.]

12. We have further concerns about the 2015 SACN Carbohydrates Report<sup>vii</sup> when it stated that fructose is ‘not a nutrient of concern’. SACN did not review the totality of the evidence. In its comments on the consultation on the draft Carbohydrate report the Nutrition Society submitted that it was ‘improper’ to disregard the evidence that existed on **fructose** but SACN refused to change their inclusion criteria

	viewpoints on fructose is strictly kept in balance.	unlikely that fructose, as consumed as a component of most HFCS or other glucose-fructose syrups,...
Page 64 A3.8	<p><b>"insufficient evidence"</b></p> <p>• Because there is a larger literature than admitted in this review, it might be perceived that the review did not look sufficiently broadly at the available evidence. It would be improper to hide behind the criteria for study selection for substances with potential adverse effect.</p>	It would be inappropriate to change criteria which were set <i>a priori</i> and used throughout the report. SACN stands by the conclusion.
Page 64	"15 days" study. "pH 3.1"	These studies were in relation to tooth wear where few

The combination of high-fructose corn syrup and calorific maltodextrin is very useful for high performance athletes and highly deleterious for anyone trying to watch their energy intake. The Committee will be interested to read this article on a special fructose + maltodextrin drink:

<https://www.peakendurancesport.com/nutrition-for-endurance-athletes/fuelling-and-hydration-for-exercise/maltodextrin-plus-fructose-drink/>

13. BANT’s clear recommendation is priority needs to be given to have honest and transparent food labelling so consumers can reduce their empty glycemic calorie intake without being

hoodwinked. And it all starts with the breakfast cereals which are consumed by millions every day in excess of the 30g recommended single portion.

BANT

October 2019

[www.bant.org.uk](http://www.bant.org.uk)

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<sup>i</sup> <https://publications.parliament.uk/pa/ld200809/ldselect/ldsctech/107/107we14.htm>

<sup>ii</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/296290/obesity-map-full-hi-res.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296290/obesity-map-full-hi-res.pdf)

<sup>iii</sup> <https://www.parliament.uk/documents/lords-committees/science-technology/behaviourchange/BCwrittenevidenceAtoZ.pdf> Page 21

<sup>iv</sup> <https://www.youtube.com/watch?v=xp0O2vi8DX4>

<sup>v</sup> <https://www.gov.uk/government/collections/sugar-reduction>

<sup>vi</sup> <https://www.efsa.europa.eu/en/efsajournal/pub/1462>

<sup>vii</sup> <https://www.gov.uk/government/publications/sacn-carbohydrates-and-health-report>