

Sugar and Fat How Bad is that??

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Points to Consider..

- It can be argued that both sugar and fat should be consumed as part of a “healthy balanced diet”?
- What is a “healthy balanced diet”
- One size does not fit all?
- We live longer but are we in good health?
- How does fat and sugar contribute to poor health outcomes?
- Can we “blame” individual nutrients for health issues??

Is saturated fat the major issue?

- Well documented that intake of saturated fat should be restricted and therefore removed from food products to reduce the risk of CHD (Wallace et al 2009).
- However.. Scientists now debate the dietary fat “paradox” which -> increase in CHD (Mahotra 2013)
- Saturated fat from “dairy” MAY.. Decrease the risk of CHD..

The Seven Countries Study (Key's 1977)

- Goal: To identify CHD risk factors and disease rates
- Population: 13,000 men – 40-55 y.o. during a 5 year period in the following Countries: Greece, Italy, (Croatia, Serbia), Japan, Finland, Netherlands, U.S.A.
- Methods: RDs stationed in the homes of study subjects measuring everything eaten
  - Far more accurate than any questionnaire

The Seven Countries Study
Conclusions (main points)

- This study revealed the universal risk factors for CHD
  - **Blood cholesterol appears to have the strongest correlation**
  - Age
  - Blood Pressure
  - Cigarette smoking

The relationship between high-fat dairy consumption and obesity, cardiovascular, and metabolic disease

- The observational evidence does not support the hypothesis that dairy fat or high-fat dairy foods contribute to obesity or cardiometabolic risk.
- High-fat dairy consumption within typical dietary patterns is inversely associated with obesity risk.
- Although not conclusive, these findings may provide a rationale for future research into the bioactive properties of dairy fat and the impact of bovine feeding practices on the health effects of dairy fat. (Kratz et al 2013)

Furthermore..

- Trans-palmitoleic acid (dairy foods) shown to increase HDL, lower triglycerides and decrease CRP, Decreased IR, Low incidence of T2DM (Mozaffarian et al 2010)
- Processed meat more athrogenic than red meat (Micha et al 2010) ? Explained by use of nitrates and NA+ as preservatives..

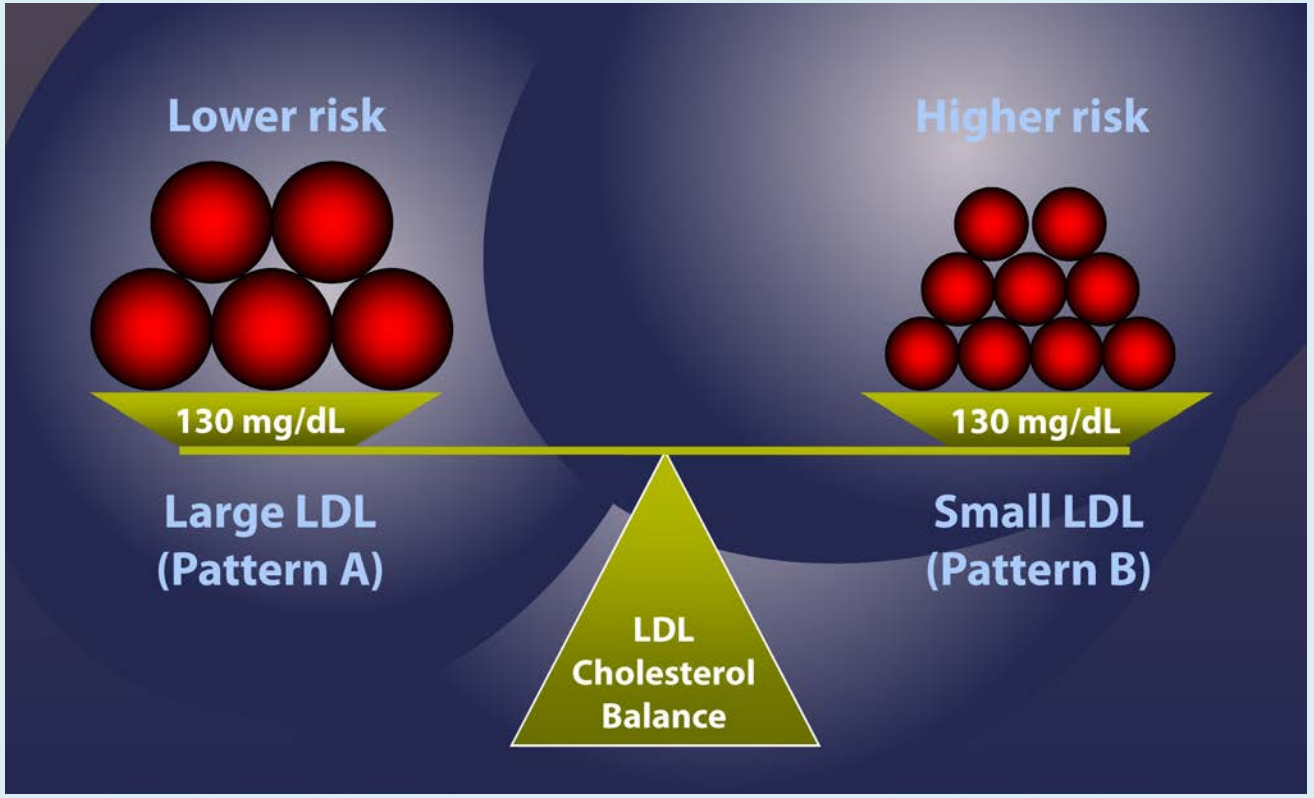
Correlation is NOT causation..(Malhotra 2013)

- However.. As saturated fat is believed to raise dietary LDL cholesterol hence why..
- It is recommended that total fat is cut to 30% daily total energy with less than 10% of this being saturated (COMA 1991)

American Heart Association Recommends

- Eating between 25 and 35% total daily energy intake
- Limiting the amount of saturated fat to 7% daily

Saturated fat reduction lowers type A particles..



Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease

- Design: Twenty-one studies identified by searching MEDLINE and EMBASE databases and secondary referencing qualified for inclusion in this study. A random-effects model was used to derive composite relative risk estimates for CHD, stroke, and CVD
- Results: During 5–23 y of follow-up of 347,747 subjects, 11,006 developed CHD or stroke. Intake of saturated fat was not associated with an increased risk of CHD, stroke, or CVD
- Consideration of age, sex, and study quality did not change the results.
- Conclusions: A meta-analysis of prospective epidemiologic studies showed that there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD or CVD.
- More data are needed to elucidate whether CVD risks are likely to be influenced by the specific nutrients used to replace saturated fat.

Siri-Tarino et al 2010 Am J Clin Nutr doi: 10.3945/ajcn.2009.27725

Are “low fat diets” healthy

Ebbeling 2012

- Low fat diets when compared to a Low carbohydrate/low glycaemic index diet can result in;
- Decreased energy expenditure
- Unhealthy lipid pattern
- Increased insulin resistance

Total Fat and Health

(Willett 2011)

“When we looked at total fat intake and coronary heart disease, there was no relationship..

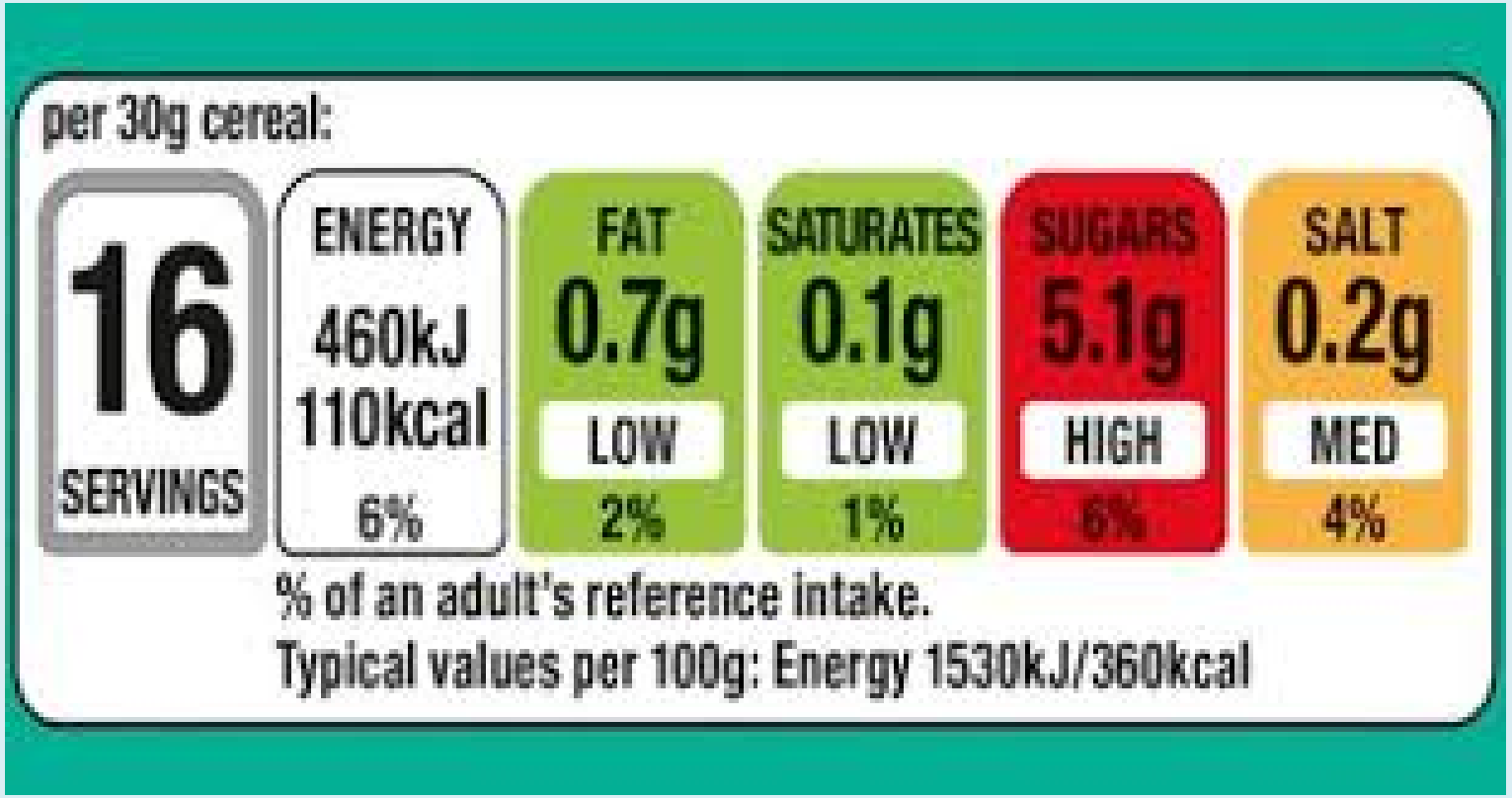
However the “type” of fat has turned out to be what’s really important..

NOT the total percentage of calories from the diet…

Obesity is a “Global Issue”

- The global obesity epidemic already affects more than two billion adults and children
- UK and US policies are failing to reverse trends in obesity.
- Energy consumption in USA diet fallen from 40-30% fat..
- Obesity has “rocketed”.. Certainly in USA
- The prevalence of obesity in England has more than doubled in the last twenty five years (PHE 2014)

When you take the fat out..
Food Technology..



Macgregor 2014 states..

- “Sugar is completely unnecessary part of our diets, contributing to obesity, type II diabetes and tooth decay. We strongly urge the World Health Organisation to recommend reducing sugar intakes to below 5% daily calories, as this will have the biggest impact on our health.”

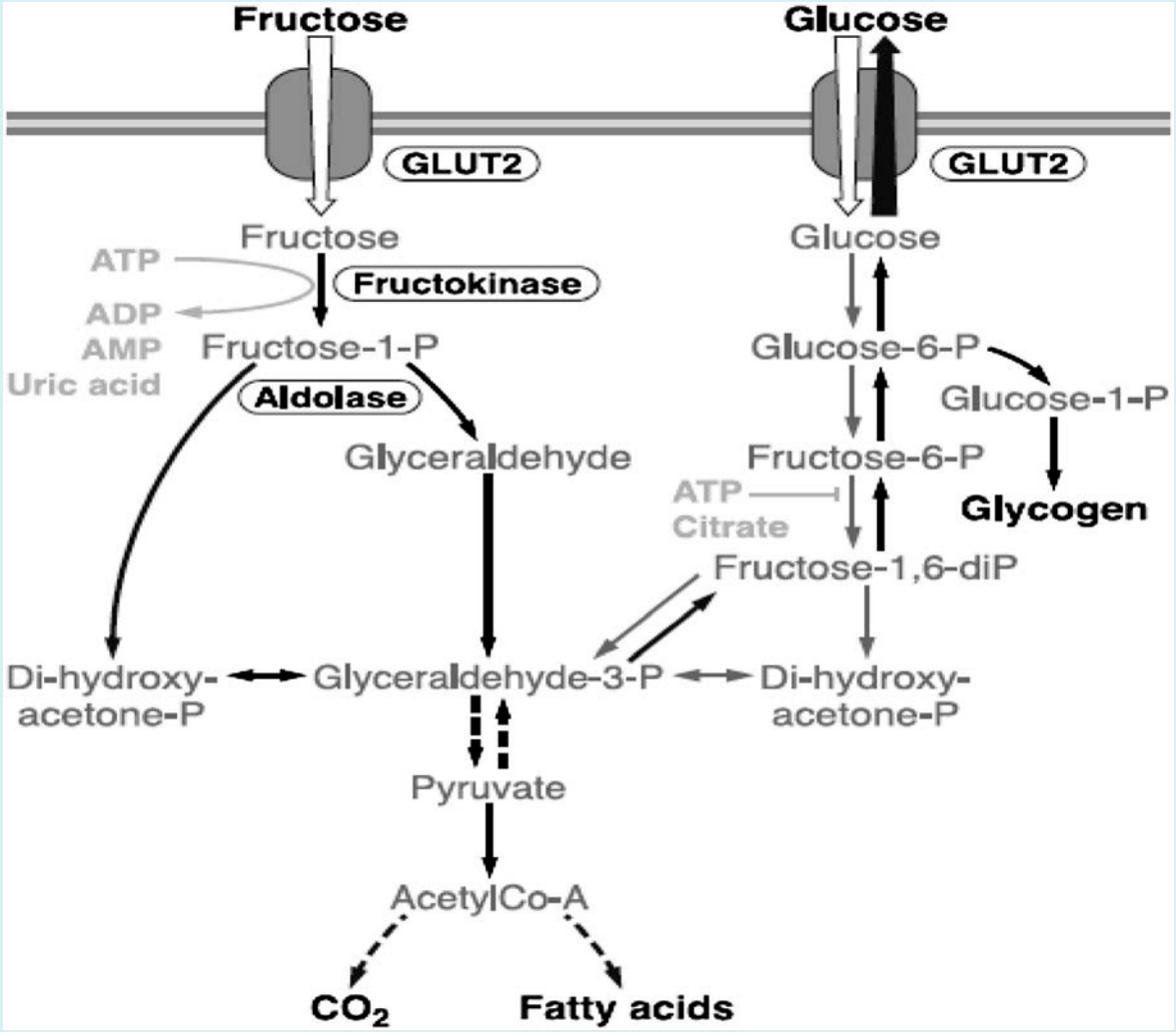
How much sugar do we eat?

- Over the past 50 years, consumption of sugar has tripled worldwide.
- In the United States, there is fierce controversy over the pervasive use of one particular added sugar — high-fructose corn syrup (HFCS) (Lustig 2012)
- National Diet and Nutrition Survey (2014) identified that sugar intake in all age groups is in excess of UK recommendations of 10-11% per day
- Teenagers consume more than 50% more sugar than is recommended
- Obese children = obese adults..
- Intake of sugar is higher in lower income groups

Public health: The toxic truth about sugar (Lustig et al 2012)

Chronic ethanol exposure	Chronic fructose exposure
Haematological disorders	
Electrolyte abnormalities	
Hypertension	Hypertension (uric acid)
Cardiac dilatation	
Cardiomyopathy	Myocardial infarction (dyslipidaemia, insulin resistance)
Dyslipidaemia	Dyslipidaemia (de novo lipogenesis)
Pancreatitis	Pancreatitis (hypertriglyceridemia)
Obesity (insulin resistance)	Obesity (insulin resistance)
Malnutrition	Malnutrition (obesity)
Hepatic dysfunction (alcoholic Steatohepatitis)	Hepatic dysfunction (non-alcoholic steatohepatitis)
Foetal alcohol syndrome	
Addiction	Habituation, if not addiction

Metabolism of fructose and glucose in the liver.



Rippe J M , and Angelopoulos T J Adv Nutr 2013;4:236-245

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Scientific Advisory Committee for Nutrition (SACN) evidence on fructose and health

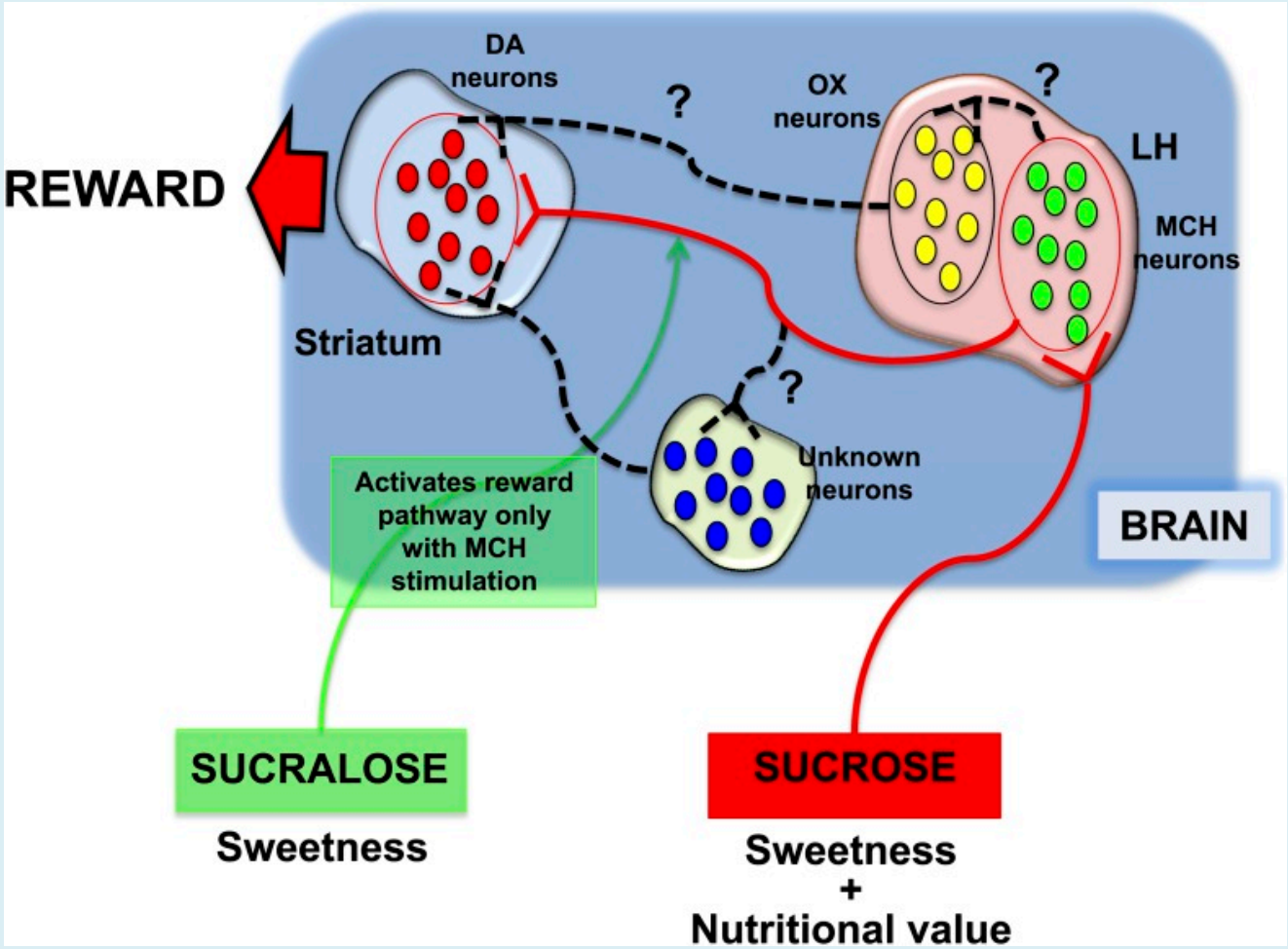
Fructose Exposure	Latest Evidence
Insulin Resistance (Swarbrick 2008 Stanhope 2009)	Refuted! Not RCT data, or data insufficient in duration < 6 weeks
Cardiometabolic health (Bantle et al 2001)	Refuted! No differences observed between fructose and glucose supplementation and increased triacylglycerol's.
Dyslipidaemia (Cholesterol) Zhang et al 2013	Systematic review and meta-analysis of RTC no statistically significant effect of feeding subjects pure fructose vs other CHO on concentrations of LDL and HDL cholesterol
Obesity (fructose vs glucose consumption) (Sievenpiper et al 2012) Johnston et al (2013)	Systematic review identified no difference in body weight when individuals fed pure fructose vs pure glucose HOWEVER.. Both studies did identify that subjects who increased their intake of glucose and fructose in addition to "normal" diet body weight increased BUT no significant difference shown between pure fructose OR pure glucose Trials NOT RCT and duration < 4 weeks!

SACN (2014) concludes..

Therefore.. It is considered that there is insufficient evidence to demonstrate that fructose intake, as consumed in the diet, leads to adverse health outcomes independent of any effects related to its presence as part of total and free sugars

Sugar Addiction?

Garcia Caceres & Tschop (2014)



“Sugar Hypothesis” (Public Health England (2014)

- The sugar addiction hypothesis is largely based on feeding studies conducted in animals and findings from these studies cannot be generalised to the complex eating patterns of humans..

World Health Organisation (2014)

- Sugars should be less than 10% of total energy intake per day.
- Reduction to below 5% of total energy intake per day would have additional benefits.
- Five per cent of total energy intake is equivalent to around 25 grams (around 6 teaspoons) of sugar per day for an adult of normal Body Mass Index (BMI).

Beware of “hidden sugars”

Product name	Serving size	Energy (kcal) per portion	Sugars* per portion (g)	Equivalent teaspoons of sugars* per portion (4g/teaspoon)
Starbucks caramel Frappuccino with whipped cream (with Skimmed Milk)	Tall (small)	273	44.3	11
Coca Cola Original	330ml	139	35.0	9
Pepsi Regular Cola	330ml	142	35.0	9
Mars chocolate bar	51g	230	30.4	8
Pret a Manger Very Berry Latte (with Milk)	295g	145	26.9	7
Muller Crunch Corner Strawberry Shortcake Yogurt	135g	212	23.6	6
Sharwood's Sweet & Sour Chicken With Rice	375g	420	22.1	6
Cadbury Hot Drinking Chocolate (with Semi-Skimmed Milk)	200ml	160	22.1	6
Yeo Valley Family Farm 0% Fat Vanilla Yogurt	150g	120	20.9	5
Solero Exotic Ice Cream	88ml	94	17.0	4
Kellogg's Frosties (with Semi-Skimmed Milk)	30g	172	17.0	4
Butterkist Toffee Popcorn	25g	105	16.5	4
Glaceau Vitamin Water, Defence	500ml	65	15.0	4
Heinz Classic Tomato Soup	300g	171	14.9	4
Ragu Tomato & Basil Pasta Sauce	200g	80	13.8	3
Kellogg's Nutri-Grain Crunchy Oat Granola Cinnamon Bars	40g	186	9.0	2
Pot Noodle Curry King Pot	114g	507	7.6	2
Heinz Tomato Ketchup	15ml	18	4.0	1
Heinz Salad Cream	15ml	50	2.6	0.7
Hovis Soft White Bread Medium	40g	93	1.4	0.4

Sugar and Acidity or pH of common drinks

Please note: Battery acid is listed below only for purposes of comparison, and should never be confused for any reason as a beverage. The pH scale measures the acidity or alkalinity of a solution with pure water in the middle at neutral pH 7. The lower the pH, the stronger the acid.

Drink or substance (12 oz. serving)	Acid pH	Tsp Sugar
Water	7.0 (neutral)	0
Barq's Root Beer	4	11
Minute Maid® Orange Juice	3.8	9
Propel® Fitness Water	3.4	1
Red Bull® Energy Drink	3.3	10
Sprite®	3.3 1	0
Mountain Dew	3.3	12
Diet Coke	3.1	0
Sierra Mist	3.1	10
Full Throttle Energy Drink	3	11
Diet Pepsi	3	0
Gatorade®	2.9	5
Sunkist® Orange Soda	2.9	13
Dr. Pepper	2.9	10
Vault™ Energy Soda	2.9	12
Mountain Dew AMP[1]	2.8	11
SoBe Energy Citrus	2.6	12
Minute Maid® Lemonade	2.6	10
Pepsi	2.5	11
Diet Schweppes Tonic Water	2.5	0
Coca Cola Classic[2]	2.4	10
Battery Acid[3]	1	0

1 Now called AMP Energy.
2 In some geographical areas of the U.S. and Canada known simply as "Coca-Cola."
3 Battery Acid is **NOT** a drink.
Test by Dr. John Ruby, University of Alabama, Birmingham School of Dentistry, 2007

© Minnesota Dental Association: Sip All Day, Get Decay.

Choc milk PH 7.1!!

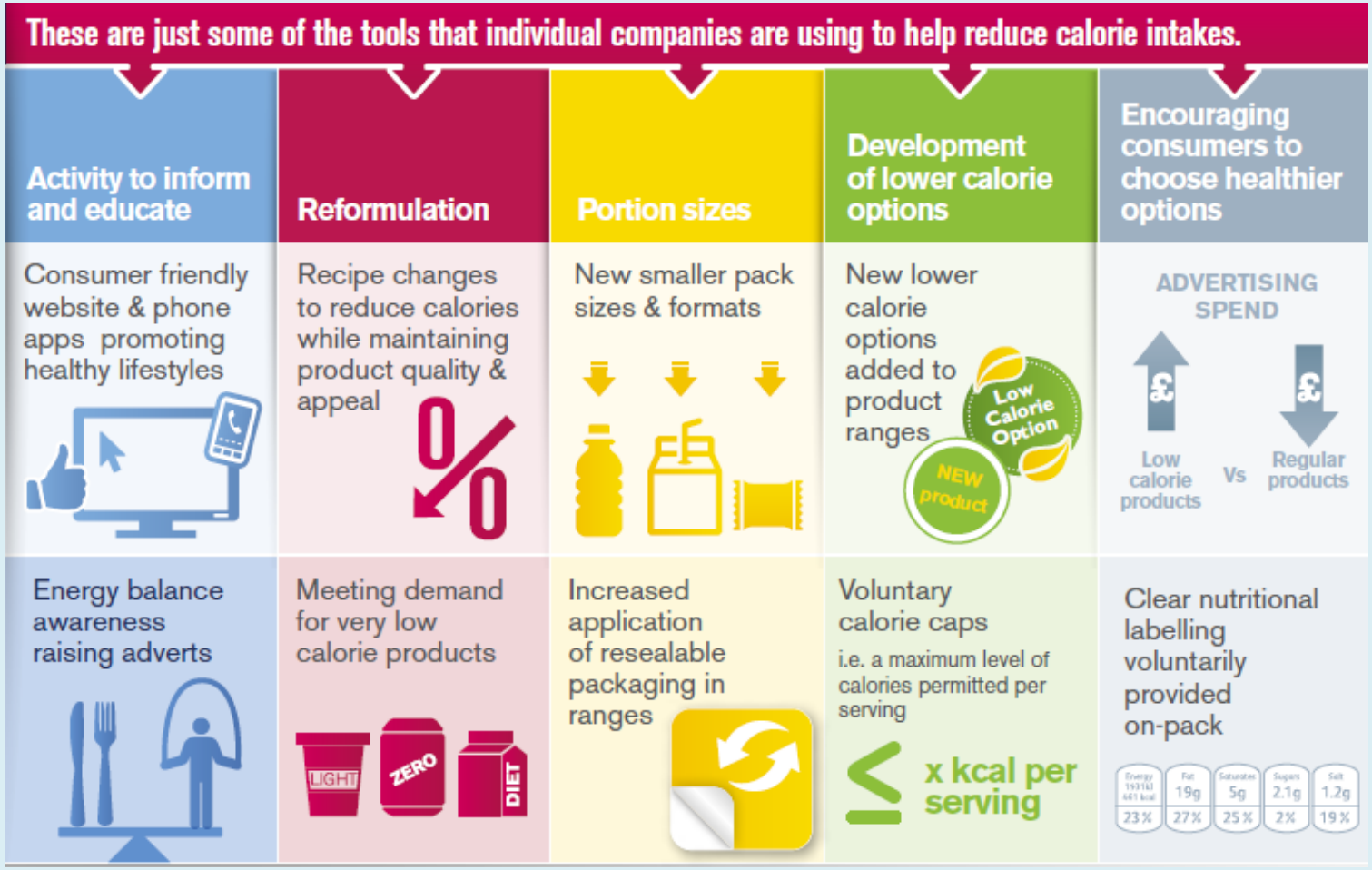
Diet Snapple w/ lemon more acidic than regular 2.5



Obesity is a “Global Issue”

- Most obesity treatments currently offered to people, such as advice or preventive medicines, are weak and poorly sustained.
- More effective policies are therefore urgently needed (Capewell 2014)

UK Public Health Responsibility deal



Sugar and Fat Tax??

- DH (2014) sugar tax “ruled out”
- However DH do propose15% reduction in fat in ultra processed foods by 2020 (alternative..??)
- Fat Tax fiasco in Denmark..

Abandoned after;

- Causing increase in inflation
- Limited impact on consumption of “healthy food”
- “California Health warning on Sugary drinks? (defeated??) NY Tax on soda ..

Food for thought…?

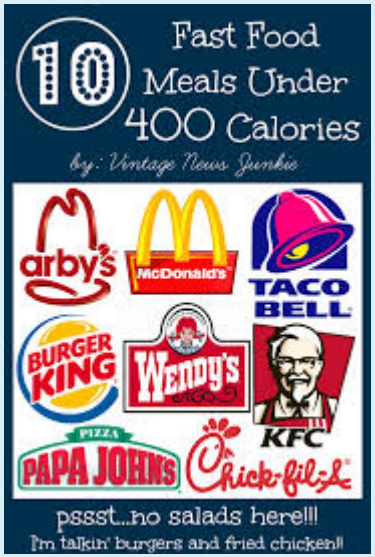


Health Policy and change IS vital..



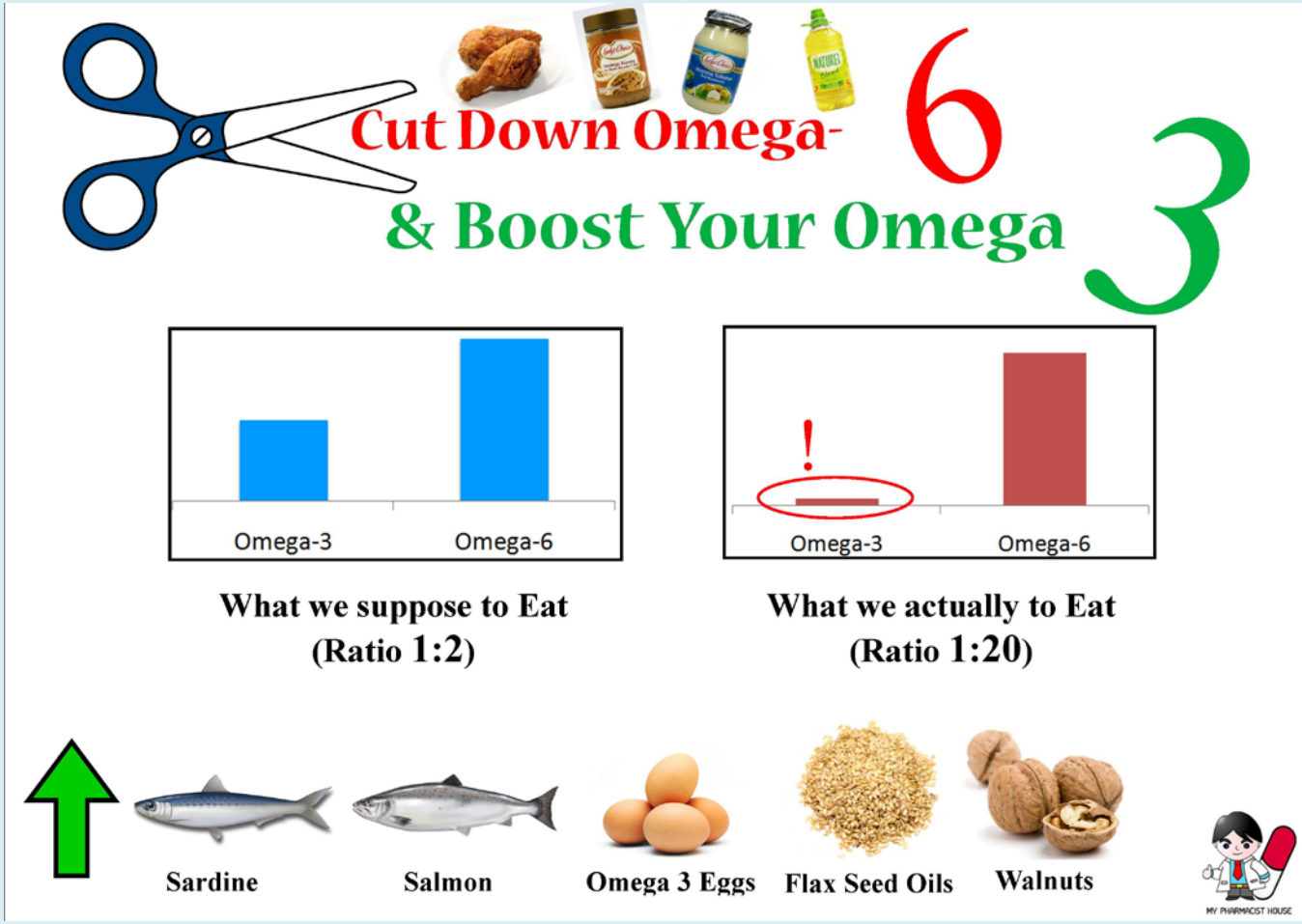
Finding the right balance..







Choose fats wisely..



Policy..Policy.. Policy..









Thank you..





EURESCOM BOBAN FTTx

Thank you for your attention!
Questions and comments are welcome!

Key references

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