What's the story: Why is sugar STILL a hot topic?

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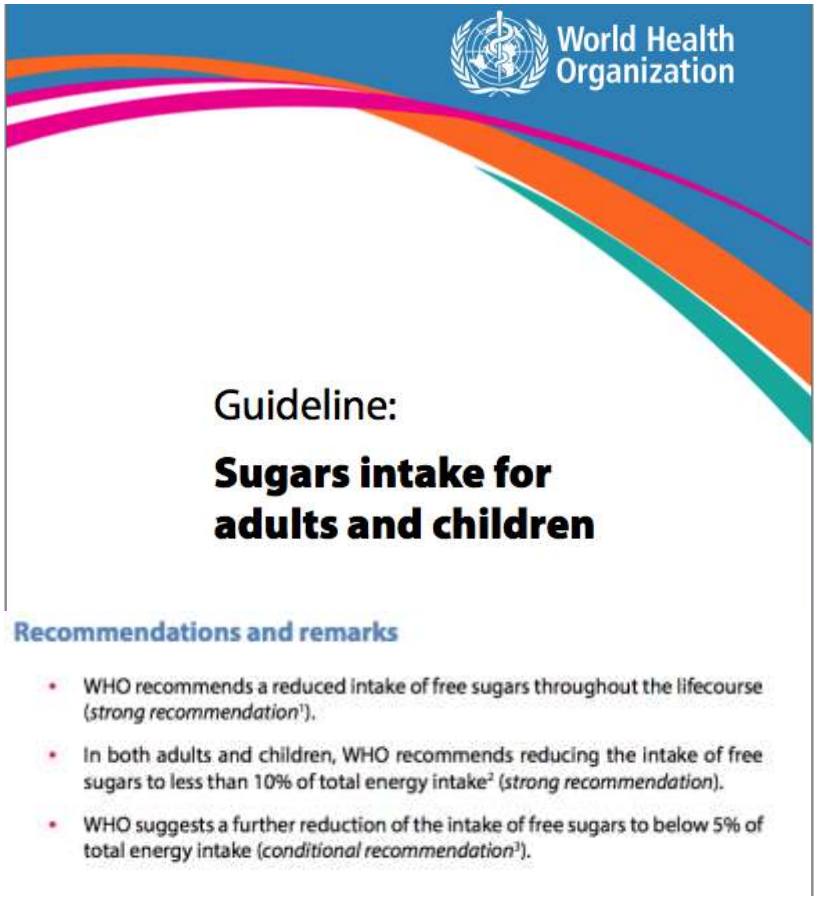
Riddet Institute
Food | Innovation | Health

Outline

- WHO guidelines
- The controversy
- The hype
- The reality

WHO sugars guideline



- Free sugars intakes should be <10% of energy intake
- <5% = additional benefits
- Free sugars: all sugars added to food by the manufacturer, cook or consumer, & sugars naturally present in honey, syrups, fruit juices & fruit concentrates.

10% energy from sugar (50g)

10% energy from sugar (50g)

Healthy looking muesli bar
6g

Heaped Tsp jam
6g

1 Cup juice
25g

Bowl of cereal
13g

CLINICAL REVIEW

P.J. Moynihan[1]* and S.A.M. Kelly[2]

[1]WHO Collaborating Centre for Nutrition and Oral Health, Centre for Oral Health Research, Institute for Ageing and Health, Newcastle University, UK; and [2]Institute of Public Health, University of Cambridge, UK; *corresponding author, paula.moynihan@ncl.ac.uk

Effect on Caries of Restricting Sugars Intake: Systematic Review to Inform WHO Guidelines

J Dent Res XX(X):1-11, 2013

BMJ

BMJ 2012;345:e7492 doi: 10.1136/bmj.e7492

RESEARCH

Dietary sugars and body weight: systematic review and meta-analyses of randomised controlled trials and cohort studies

Lisa Te Morenga *research fellow*[1 2], Simonette Mallard *research assistant*[1], Jim Mann *professor*[1 2 3]

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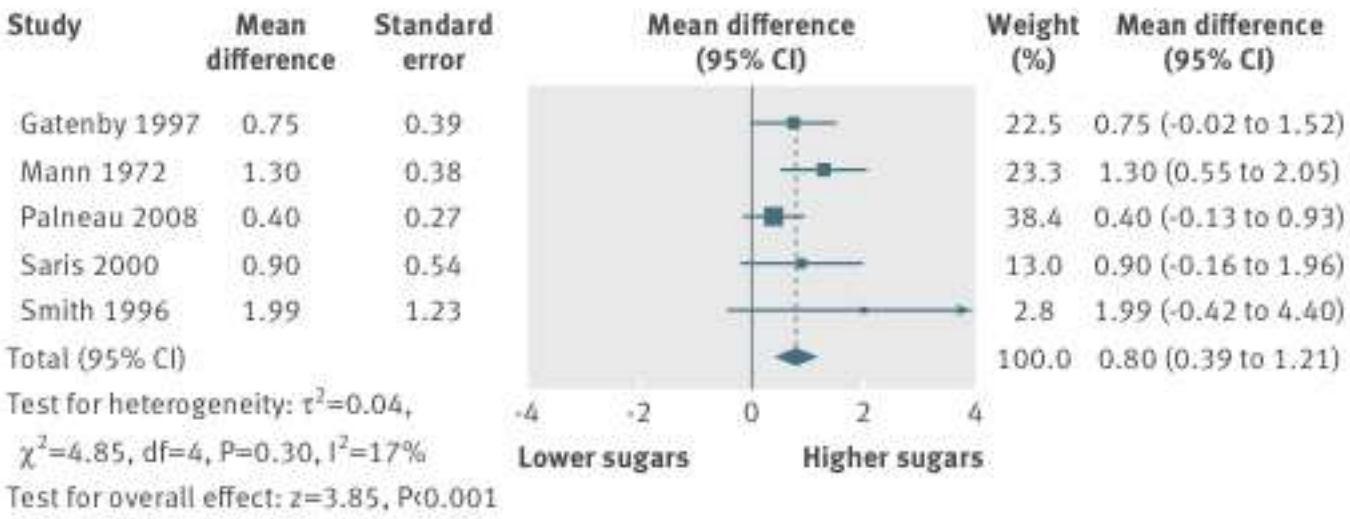
Reduced versus usual sugars in adults



Greater weight in the usual/higher sugars group

0.8 kg (95%CI: 0.39, 1.21); p <0.001

WHO trying to get Codex to

- label foods prominently with their “added sugar” content
- label foods with details of “recommended limit” of sugar to be eaten by individuals
- restrict marketing of most sugar-containing foods to all children (even if undernourished)
- “Profiling” of all foods to decide which may be marketed to children
- limit sugar content of foods on safety grounds

WORLD SUGAR RESEARCH ORGANISATION

What can we do?

- Take the threat seriously!
- Generate opposition to bogus science and opinion being used to justify bad policy
- Oppose 10% target on sugar consumption
- Be prepared to act quickly when NUGAG Report is published
- Demand that "health" policy on food considers all down-stream consequences

WORLD SUGAR RESEARCH ORGANISATION

US sugar industry attacks 'misleading' WHO guidelines

Scheherazade Daneshkhu, Consumer Industries Editor

A Mexican cane cutter wields his machete during a sugar harvest in the state of Morelos

The US sugar industry has slammed "misleading" new recommendations from the World Health Organisation that people should halve their daily intake.

The UN-affiliated body issued guidelines on Wednesday saying adults and children should limit the amount of sugar they consume to less than 10 per cent of their daily energy intake — which for an adult male would be the equivalent of less than two cans of Coca-Cola.

"This guideline misleads consumers by its use of **poor-quality, weak and inconsistent data** to link a level of sugars intake with reduced disease risk."

Tactics of Big Sugar

- Cast doubt: good science framed as "junk science"
- Commission "sugar-friendly" scientists to conduct reviews and sugar-friendly research
- Shift blame (personal responsibility, exercise, oral hygiene)
- Lobby to oppose regulation
- Promise to self-regulate
- Produce "healthier" products
- "Infiltrate" professional organisations

obesity reviews

doi: 10.1111/obr.12048

Pro v Con Debate: Role of sugar sweetened beverages in obesity

Will reducing sugar-sweetened beverage consumption reduce obesity? Evidence supporting conjecture is strong, but evidence when testing effect is weak

K. A. Kaiser[1], J. M. Shikany[2], K. D. Keating[1] and D. B. Allison[1]

Conflict of Interest Statement

In the last 36 months, Dr. Allison has received consulting fees from Kraft Foods. The University of Alabama at Birmingham has received gifts and grants from multiple organizations including but not limited to The Coca-Cola Company, PepsiCo, Red Bull and Kraft Foods. Drs. Kaiser, Keating and Shikany have no competing interests to report.

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ISSN: 1040-8398 / 1549-7852 online
DOI: 10.1080/10408398.2012.691574

Taylor & Francis
Taylor & Francis Group

The Effects of Sucrose on Metabolic Health: A Systematic Review of Human Intervention Studies in Healthy Adults

SIGRID GIBSON,[1] PIPPA GUNN,[1] ANNA WITTEKIND,[2] and RICHARD COTTRELL[2]

[1]Sig-Nurture Ltd., 11 Woodway, Guildford, Surrey, UK
[2]World Sugar Research Organisation, 70 Collingwood House, Dolphin Square, London, UK

We systematically reviewed interventions substituting sucrose for other macronutrients in apparently healthy adults to assess impact on cardiometabolic risk indicators. Multiple databases were searched to January 2012 and abstracts assessed by 2 reviewers. Twenty-five studies (29 papers) met inclusion criteria but varied in quality and duration. Weaknesses included small subject numbers, unclear reporting of allocation, unusual dietary regimes, differences in energy intake, fat composition or fibre between conditions, unhealt
to draw reliable conclusions exc
inconsistent, mostly explicable
significant effects on plasma glu
adverse effects on cardiometabol
that restricting sucrose in an isoe
metabolic abnormalities. Larger
needed in order to provide evide

"From the studies reviewed, it would appear that a moderate dietary sucrose intake **at levels up to 25% of energy** appears to have no significant adverse effects on lipid or carbohydrate metabolism in normal healthy adults when substituted for starch, at least in the medium term"

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Directory: IOM Member – **Victor J. Dzau, M.D.**

Victor J. Dzau, M.D.

*Elected **1998***

Profile | Other Participation

Biography: Victor J. Dzau is the eighth President of the Institute of Medicine (IOM). He is Chancellor Emeritus and James B. Duke Professor of Medicine at Duke University and the past President and CEO of the Duke University Health System. Previously, Dr. Dzau was the Hersey Professor of Theory and Practice of Medicine and Chairman of Medicine at Harvard Medical School's Brigham and Women's Hospital, as well as Chairman of the Department of Medicine at Stanford University.

- 8th President (current)
- Estimated to own more than 36,000 shares of **PepsiCo** stock, worth more than **$2.8 million**

Sugar

Toxic, addictive, and dangerous??

2 FEBRUARY 2012 | VOL 482 | NATURE | 27

ILLUSTRATION BY MARK SMITH

The toxic truth about sugar

Added sweeteners pose dangers to health that justify controlling them like alcohol, argue **Robert H. Lustig**, **Laura A. Schmidt** and **Claire D. Brindis**.

Fructose & health

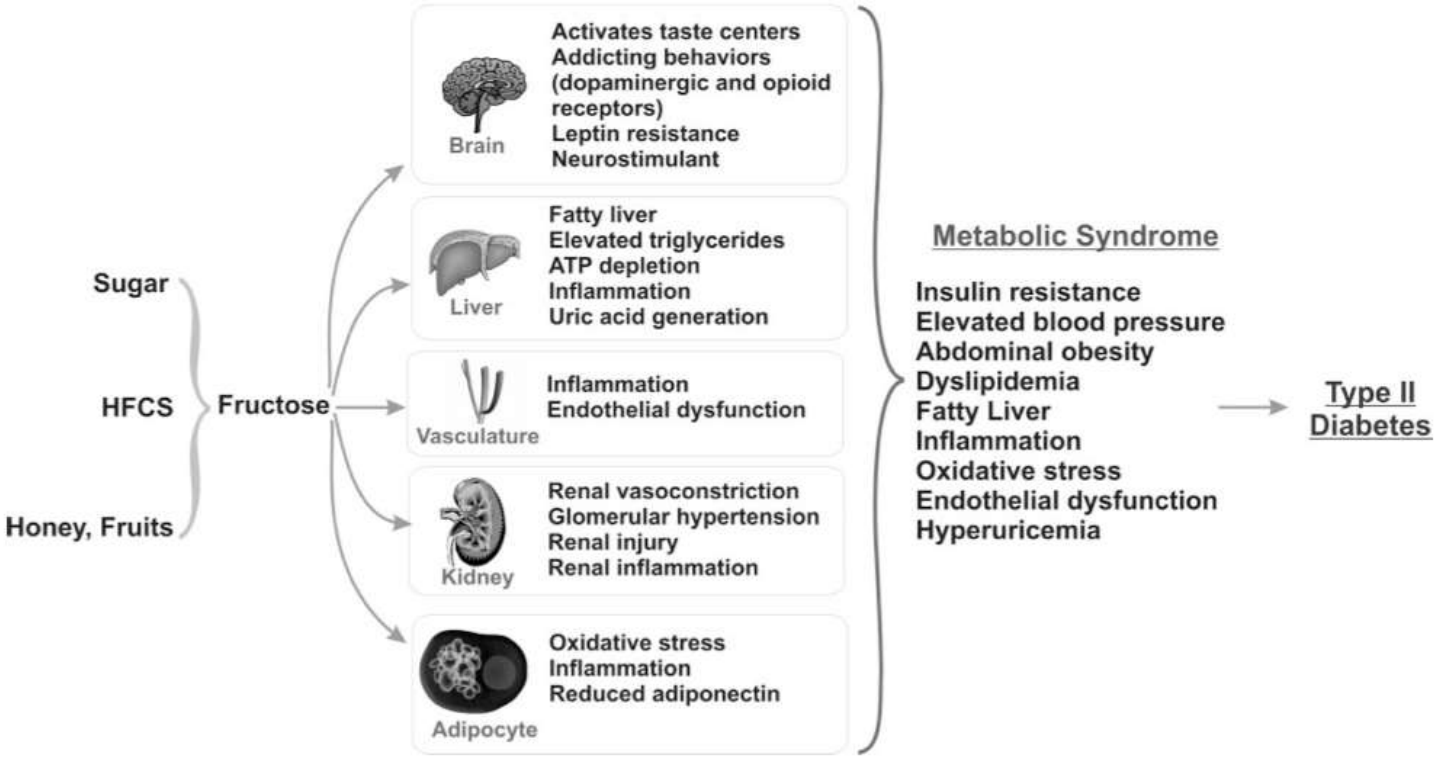


FIG. 2. Effect of fructose on various organ systems. Table sugar, HFCS, and natural sources provide fructose, which in excess has numerous effects on the brain, liver, vasculature, kidney, and adipocyte. The net effects induce all features of the metabolic syndrome and ultimately type 2 diabetes.

Johnson et al. 2009

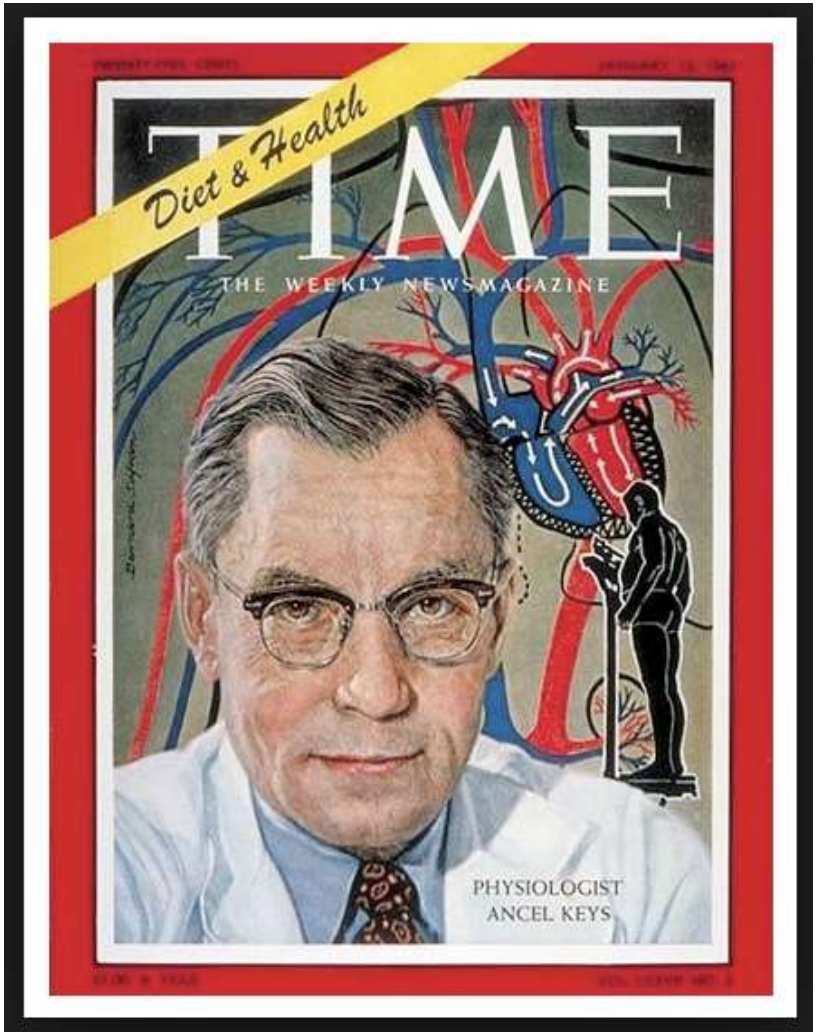
Sugar, honey, HFCS…

- WEAK evidence linking sugar with metabolic disease
- Animal studies ✓
- Human studies 
- Best evidence with sugary drinks

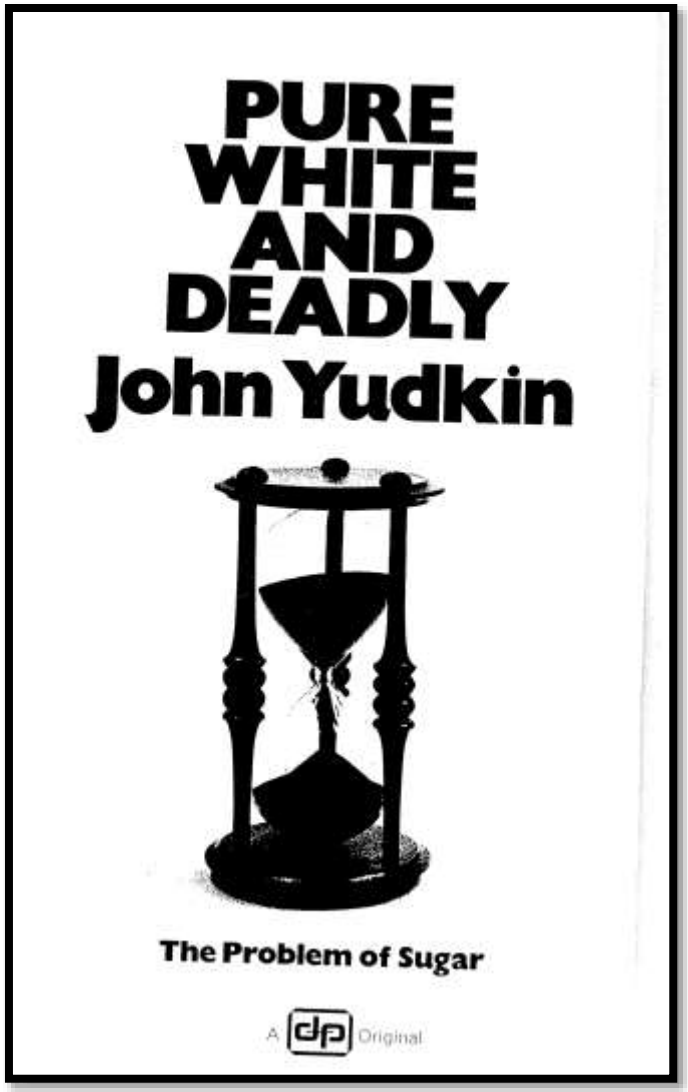
- Added to the diet in large amounts;
- Extremely palatable – encourages over consumption
- Major source of calories – especially in drinks

Sugar, not saturated fat, is killing us!


TIME
Eat Butter.
Scientists labeled fat the enemy. Why they were wrong
BY BRYAN WALSH



Villain!



Hero!

The Telegraph

Sugar is worse than salt for pushing up blood pressure, new research has found

Medical experts have hit back at new claims that sugar is worse for you than salt

SUGAR is a greater enemy to the body than salt: Added sugars in processed foods are more likely to cause high blood pressure, stroke and heart disease

- Sugar added to processed foods and fizzy drinks is greater threat than salt
- More likely to raise blood pressure, trigger heart disease and stroke
- New study calls for dietary advice to focus on cutting out sugar
- But experts warn both sugar and salt levels must be tackled to cut the number of deaths from cardiovascular disease by 25% by 2025

Health advice: Cutting out fruit on a low sugar diet

Britain's leading health and wellbeing specialists answer your questions

Should you give up fruit on a low sugar diet? Photo: ALAMY

Have low fat diets made us fatter?

Fat reduction: -1.6 kg

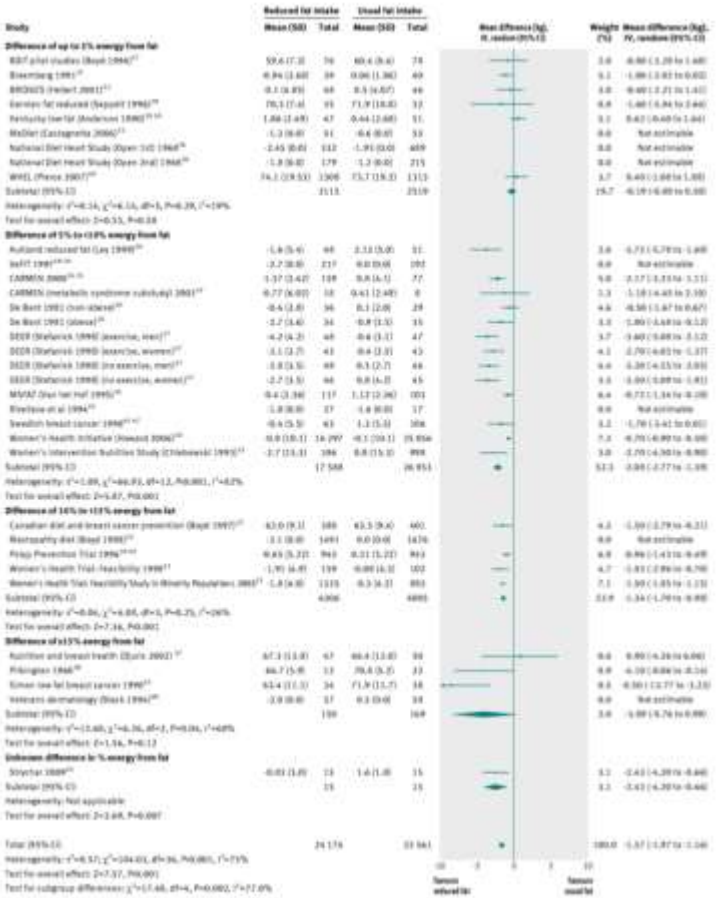
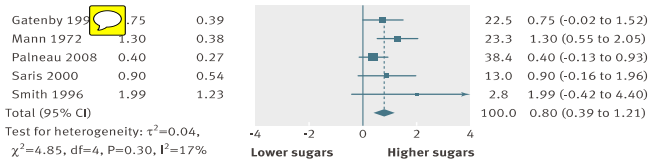
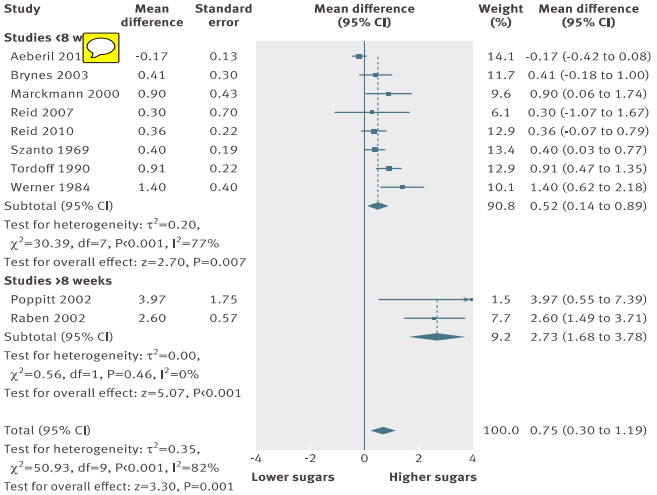


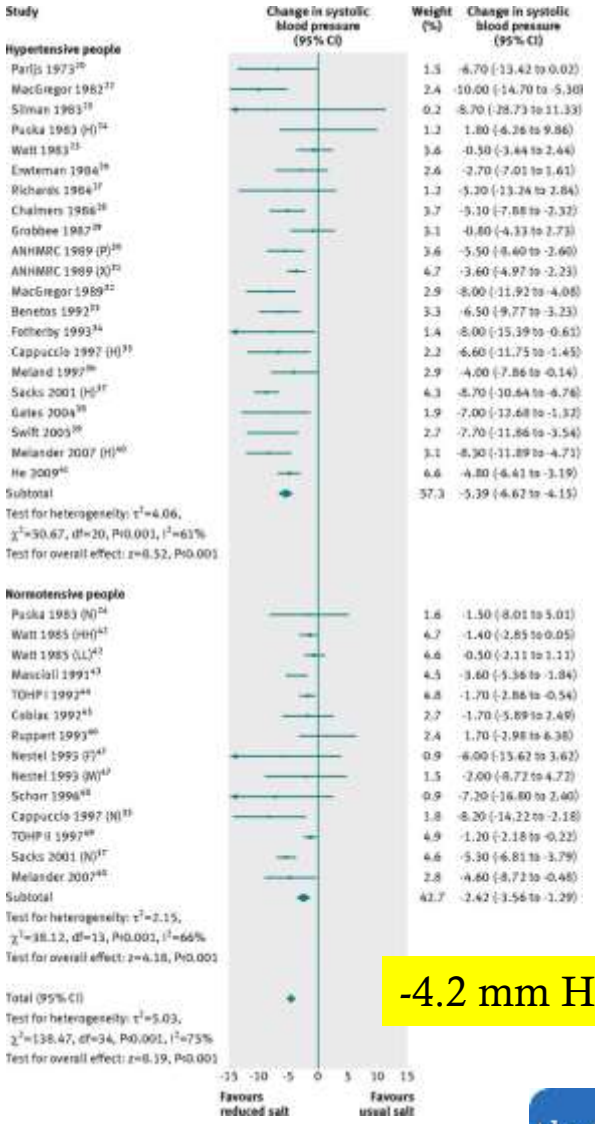
Fig 3 Effect of low fat versus usual fat diet on body weight (kg), subgrouped by difference in percentage of energy from fat between control and reduced fat groups

Sugar reduction: -0.8 kg





Effect of salt reduction on systolic BP



-4.2 mm Hg

Feng J He et al. BMJ 2013;346:bmj.f1325

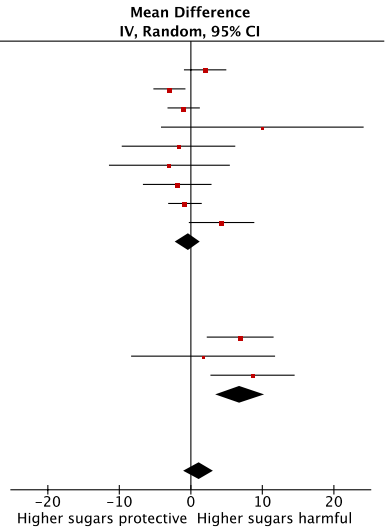
thebmj

The wrong white crystals: not salt but sugar as aetiological in hypertension and cardiometabolic disease

James J DiNicolantonio,[1] Sean C Lucan[2]

Effect of sugar reduction on systolic BP

Study or Subgroup	Mean Difference	SE	Weight	Mean Difference IV, Random, 95% CI	Year
1.1.1 Shorter term studies (less than 8 weeks)					
Israel 1983 (15)	2	1.516	11.9%	2.00 [-0.97, 4.97]	1983
Hallfrisch 1983 (14)	-3	1.141	13.2%	-3.00 [-5.24, -0.76]	1983
Cooper 1988 (13)	-1	1.157	13.2%	-1.00 [-3.27, 1.27]	1988
Koivisto 1993 (16)	10	7.23	2.0%	10.00 [-4.17, 24.17]	1993
Surwit 1997 (22)	-1.72	4.053	4.9%	-1.72 [-9.66, 6.22]	1997
Black 2006 (12)	-3	4.3135	4.5%	-3.00 [-11.45, 5.45]	2006
Njike 2011 (19)	-1.9	2.4469	8.7%	-1.90 [-6.70, 2.90]	2011
Aeberli 2011 (11)	-0.82	1.2	13.0%	-0.82 [-3.17, 1.53]	2011
Lewis 2013 (17)	4.3	2.3319	9.1%	4.30 [-0.27, 8.87]	2013
Subtotal (95% CI)			**80.5%**	**-0.42 [-2.13, 1.30]**	
Heterogeneity: $Tau^2 = 2.64$; $Chi^2 = 14.68$, df = 8 (P = 0.07); $I^2 = 46\%$					
Test for overall effect: Z = 0.48 (P = 0.63)					
1.1.2 Longer term studies (>= 8 weeks)					
Raben 2002 (21)	6.9	2.3854	8.9%	6.90 [2.22, 11.58]	2002
Poppitt 2002 (20)	1.72	5.136	3.5%	1.72 [-8.35, 11.79]	2002
Maersk 2012 (18)	8.625	3.0072	7.1%	8.63 [2.73, 14.52]	2012
Subtotal (95% CI)			**19.5%**	**6.88 [3.44, 10.32]**	
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.35$, df = 2 (P = 0.51); $I^2 = 0\%$					
Test for overall effect: Z = 3.92 (P < 0.0001)					
Total (95% CI)			**100.0%**	**1.09 [-1.04, 3.22]**	
Heterogeneity: $Tau^2 = 7.65$; $Chi^2 = 33.15$, df = 11 (P = 0.0005); $I^2 = 67\%$					
Test for overall effect: Z = 1.00 (P = 0.32)					
Test for subgroup differences: $Chi^2 = 13.84$, df = 1 (P = 0.0002), $I^2 = 92.8\%$					



-1.1 mm Hg

Te Morenga et al. AJCN 2014;100: 65-79

Fat & cholesterol

Reduced or modified dietary fat for preventing cardiovascular disease (Review)

Hooper L, Summerbell CD, Thompson R, Sills D, Roberts FG, Moore HJ, Davey Smith G

THE COCHRANE COLLABORATION®

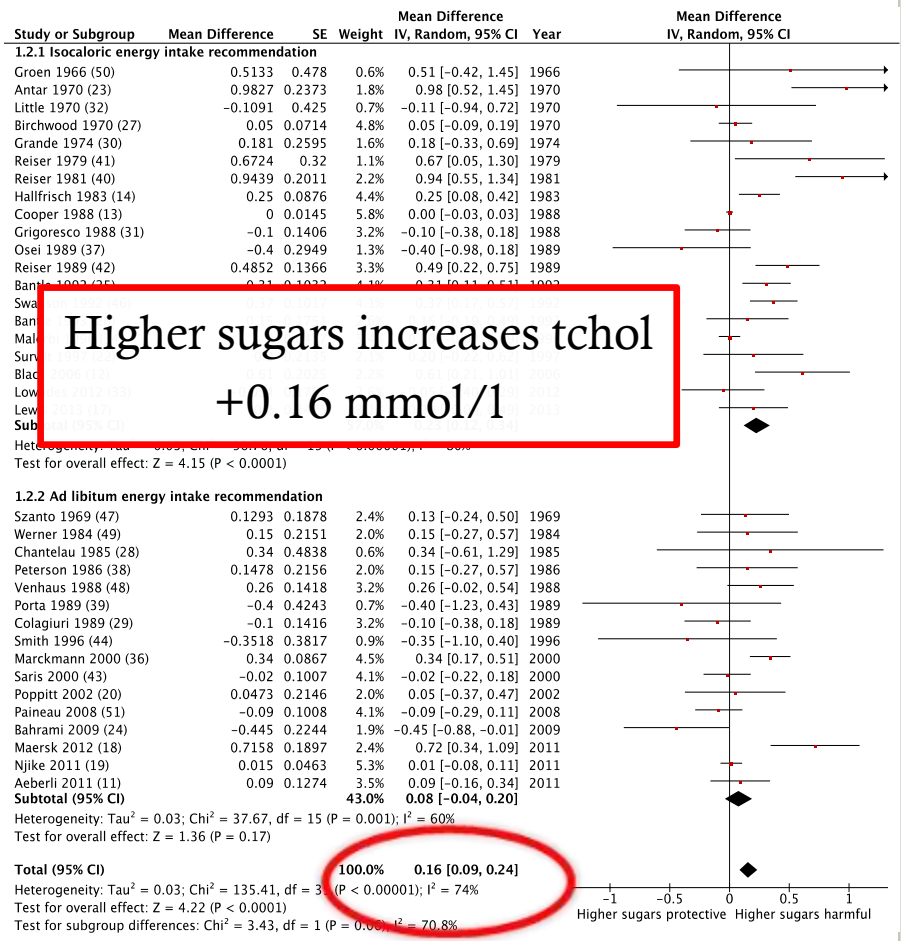
Fat modification reduces tchol

+0.44 mmol/l

Reduced fat reduces tchol

+0.10 mmol/l

Sugars & cholesterol



Higher sugars increases tchol

+0.16 mmol/l

	Low-carbohydrate	Low-fat/ vegetarian/vegan	Low-glycemic	Mediterranean	Mixed/balanced	Paleolithic
Health benefits relate to:	Emphasis on restriction of refined starches and added sugars in particular.	Emphasis on plant foods direct from nature; avoidance of harmful fats.	Restriction of starches, added sugars; high fiber intake.	Foods direct from nature; mostly plants; emphasis on healthful oils, notably monounsaturates.	Minimization of highly processed, energy-dense foods; emphasis on wholesome foods in moderate quantities.	Minimization of processed foods. Emphasis on natural plant foods and lean meats.
Compatible elements:	Limited refined starches, added sugars, processed foods; limited intake of certain fats; emphasis on whole plant foods, with or without lean meats, fish, poultry, seafood.					
And all potentially consistent with:	**Food, not too much, mostly plants[a,b,c].**					

[a]From Reference 135.
[b]Portion control may be facilitated by choosing better-quality foods which have the tendency to promote satiety with fewer calories.
[c]While neither the low-carbohydrate nor Paleolithic diet need be "mostly plants," both can be.

Katz DL, Meller S. 2014.
Annu. Rev. Public Health. 35:83–103

Limit:

- Added sugars
- Refined starches
- Processed foods
- Certain fats

"Ultra-processed Foods"

Conclusions

YES limit free sugars

BUT eliminating sugar is not a magic solution

We don't want to swap one baddie for another


"a definite must-see"
JAMIE OLIVER
THAT
Sugar
FILM