

Sugar and obesity

Let's start with *obesity*. Being merely overweight may not be a serious problem, although it will make physical activity more of an effort and make a person look less attractive in the eyes of many people. As a result it does sometimes lead to eating disorders in the teens, and for that reason alone it is a very bad idea to feed your family in a way that makes them put on too much weight. But I'm not really talking about being overweight. Being *obese* is much more serious, because it will, by definition, cause health problems. An obese person is someone who is so seriously overweight that sooner or later his health will suffer.

I've already listed the problems that obesity causes or at least exacerbates – heart disease, strokes, diabetes, cancer, arthritis, orthopaedic problems, asthma and sleep apnoea. An article in *The Lancet* in August 2011 said, 'As UN member states prepare to gather in New York in September, 2011, for the first High-Level Meeting of the UN General Assembly on non-communicable diseases (NCDs), the inexorable global rise of obesity will be the toughest challenge that they face. All countries are searching for answers about how to reverse the rising tide of adult and childhood obesity.'¹⁴⁵ The article puts the problem down to the fact that we are simply eating more calories than we need. And one of the three main sources of calories is, of course, sugar.

It's difficult to obtain an accurate idea of how sugar consumption has increased in the last 60 years or so, because a lot of it is hidden in pastry, biscuits, cakes and snacks, but nationally it has at least doubled. The consumption of breakfast cereals manufactured with sugar in them, tinned fruit, sweets, chocolates, alcoholic drinks and fruit have all increased. One particular new source of sugar is fruit juice. When I was a small child at the end of the war the only fruit juice we had was a tiny glass of orange juice once a day. It was made from small bottles of concentrated juice provided free of charge for children by the Ministry of Food, Agriculture and Fisheries. Nowadays many people have a large glass of fresh fruit juice for breakfast. Do you know how many oranges go into a 330ml glass of orange juice? The Tropicana website says at least four. Try to imagine sitting down and eating four whole oranges in quick succession. Wouldn't you regard that as both unnatural and greedy? Yet because the manufacture of fruit juice has become so cheap, many people are consuming all that fruit juice and more every day. A glass of milk at breakfast would be far healthier, with less sugar and more vitamins in it.

I'm not trying to say that fruit juice per se is unhealthy. Its vitamin C content is obviously good for you, and an occasional orange or apple or pear must be fine, otherwise God wouldn't have made them for us, or we wouldn't have evolved to enjoy and digest them, according to your point of view. However fructose, the sugar found in fruit, isn't nearly so friendly as one might think, and in any quantity it is positively dangerous. It is fructose that makes the sugar added to so much of our food harmful, as well as helping us to put on weight in just the wrong place.

In 2009 23 US scientists collaborated in an experiment involving 32 overweight men and women.¹⁴⁶ The research was devised and carried out very thoughtfully and thoroughly. Over

¹⁴⁵ Boyd A et al. *The global obesity pandemic: shaped by global drivers and local environments*. *The Lancet*, Volume 378, Issue 9793, Pages 804 - 814, 27, August 2011.

¹⁴⁶ Kimber L et al. *Consuming fructose-sweetened, not glucose-sweetened, beverages increases visceral adiposity and lipids and decreases insulin sensitivity in overweight/obese humans*. *Journal of Clinical Investigation*, 2009; 119(5):1322–1334.

a period of 10 weeks the subjects were asked to drink a measured quantity of sugar in a drink three times a day. Half of them had glucose and the other half fructose, with equal calorific values. Just to remind you, ordinary refined sugar is half fructose and half glucose. In both groups the research subjects put on about 3lb (1.5kg) of weight, because for the first 8 weeks the sugar drinks were in addition to their normal diets. However the fructose group put on *four times* as much weight around their stomachs as the glucose group did. This ‘visceral adipose tissue’, the so-called beer belly, is an alarm bell for the development of coronary heart disease and diabetes, so that was one major difference in the way that glucose and fructose affected the test subjects. Secondly, the fructose group suffered a worsening of blood glucose control and insulin sensitivity, in other words they experienced the beginning of diabetes. And thirdly, there was an increase in the small, dense LDL particles and oxidized LDL in their blood. Without going into detail, those are both factors that are strongly associated with the risk of a heart attack and may actually contribute to it. *None* of these changes occurred in the glucose group.

It is true that the amount of sugar they were given was at the high end of what most of us would drink in a day,¹⁴⁷ but most of us also consume substantial amounts of fructose in sugar added to our food. Moreover the experiment lasted only 10 weeks, so if one drank even a quarter as much fructose year after year the results might be similar at least. Research carried out in 2011 demonstrated that even low to moderate amounts of fructose-sweetened drinks caused problems for the young men who were subjects in the research. Inflammation is a stepping stone to heart disease,¹⁴⁸ and it was found that, while all sugar-sweetened drinks increased inflammatory factors, fructose-enriched drinks increased them the most.¹⁴⁹

In the light of such research, my advice would be to limit one’s fruit consumption to one or two pieces a day – certainly not a full glass of fresh fruit juice, which is the equivalent of four oranges or a small bunch of grapes.

In fact my conclusion from the 2009 experiment is that the Five-A-Day advice we keep hearing needs to be amended. I would suggest that instead of ‘Five Fruit and Veg’, a better rule would be ‘A Fruit and Five Veg’, or even ‘A Fruit and Seven Veg’ for vegetarians. ‘A Fruit and Five Veg’ would more than satisfy the minimum recommendations of the World Health Organization,¹⁵⁰ although some countries recommend more than the WHO does.¹⁵¹ In other words, I’m saying that many people should eat *less* fruit and drink *less* fruit juice, but most people should eat *more* vegetables.

Many studies have demonstrated the genuine health benefits of vegetables. Brassicas (broccoli, cabbage, sprouts, etc.) and small leaf salads (mustard, cress, rocket etc.) reduce the

¹⁴⁷ The research report says that the sugar dose provided 25% of their energy requirements. For most people that would be 500 to 750 kilocalories a day, equivalent to 125g to 190g of sucrose.

¹⁴⁸ Hotamisligil G S. *Inflammation and metabolic disorders*. Nature, 2006; 444:860-867.

¹⁴⁹ Aeberli I et al. *Low to moderate sugar-sweetened beverage consumption impairs glucose and lipid metabolism and promotes inflammation in healthy young men: A randomised controlled trial*. American Journal of Clinical Nutrition, 2011; 94:479-485.

¹⁵⁰ In 1991 the World Health Organization recommended a minimum intake of 400g fruit and vegetables a day. One portion of fruit and vegetables is 80g, so five portions add up to 400g.

¹⁵¹ In Australia the recommendation is two fruit and five vegetables per day, and in France it is ten portions of fruit and vegetables a day.

risk of bladder, colon and lung cancer,¹⁵² and type 2 diabetes.¹⁵³ Eating eight portions of fruit and vegetables a day can reduce the risk of dying from heart disease by 22%.¹⁵⁴ And here's something really interesting: replies from recent censuses in England, Scotland and Wales indicate that the more fruit and vegetables people eat the better their mental health and the greater their happiness!¹⁵⁵ So next time your little one pulls a face and spits out his Brussels sprout you can tell him, "Eat it up, dear. It will make you feel happy!" Speaking for myself, I'd much rather feel happy than have curly hair, which is what I was told would happen if I ate my cabbage. In any case, I soon discovered that eating cabbage didn't work! Or maybe I secretly spat it out again. I can't remember now...

¹⁵² *Cruciferous Vegetables, Isothiocyanates and Indoles*. World Health Organization, International Agency for Research on Cancer report, 2004.

¹⁵³ Carter P et al. *Fruit and vegetable intake and incidence of type 2 diabetes mellitus: systematic review and meta-analysis*. British Medical Journal, 2010; 341, c4229.

¹⁵⁴ Crowe et al. *The EPIC trial*. European Heart Journal, 2011; 32,1235.

¹⁵⁵ Blanchflower D G, Oswald AJ & Stewart-Brown S. *Is Psychological Well-being Linked to the Consumption of Fruit and Vegetables?* Social Indicators Research, October 2012.