

Fruit juice: just another sugary drink?

The evidence for a role of sugar-sweetened beverages (SSBs) in the development of obesity and associated comorbidities, although not fully resolved, is becoming increasingly convincing, with supporting data from both prospective cohort studies and randomised trials.¹ The obesogenic effect of SSBs seems to be simply a consequence of the excess calories provided by their consumption, rather than of any specific adverse effects of fructose-containing sugars that they contain,² with no clear evidence that excess energy intake from SSBs is any more harmful than is excess energy intake from any other source.³ However, liquids have a smaller satiating effect than do solid foods, and consequently excess calories consumed in liquid form are not fully compensated for by reduction of intake of other foods.⁴ Although more evidence is needed to fully elucidate the probable effect size on obesity of reduction of SSB intake at a population level, evidence exists that non-alcoholic beverages contribute a substantial proportion of daily sugar intake (about a quarter of sugar intake in the UK),⁵ are consumed separately from other dietary components, are of little nutritional benefit, and that alternatives in the form of low-sugar drinks and water are readily available. Thus, to target their reduction represents low-hanging fruit in terms of public health nutritional policy, and debate is ongoing regarding the potential advantages and disadvantages of an increase in taxation on SSBs as a mechanism to reduce intake.⁶

By contrast with the growing consensus to limit SSB intake, consumption of fruit is regarded as virtuous, with WHO guidelines recommending consumption of fruit and vegetables—eg, in the UK, the guidelines recommend five servings per day, and one of these portions can be in the form of fruit juice. However, fruit juice has a similar energy density and sugar content to SSBs: 250 ml of apple juice typically contains 110 kcal and 26 g of sugar; 250ml of cola typically contains 105 kcal and 26.5 g of sugar. Additionally, by contrast with the evidence for solid fruit intake, for which high consumption is generally associated with reduced or neutral risk of diabetes,⁷ high fruit juice intake is associated with increased risk of diabetes.^{7,8} Of course, SSBs and pure fruit juices are not identical—unlike (unfortified) SSBs, fruit juices contain vitamins and minerals, so could conceivably be of value for

individuals consuming micronutrient-poor diets. However, this micronutrient content might not be sufficient to offset the adverse metabolic consequences of excessive fruit juice consumption—eg, consumption of 480 ml of high-antioxidant concord grape juice per day for 3 months increased insulin resistance and waist circumference in overweight adults in one randomised controlled trial.⁹ Thus, contrary to the general perception of the public, and of many health-care professionals, that drinking fruit juice is a positive health behaviour, their consumption might not be substantially different in health terms from consumption of SSBs.

To reduce sugary drink intake requires dietary behaviour change. Although taxation and other government policies—eg, restriction of vending machines—might play a part in mediation of dietary behaviour changes, nutritional knowledge and awareness are also key.⁶ We hypothesised that public perception of the healthiness of fruit juices might be based on poor awareness of their sugar content. To test this, we surveyed a nationally representative group of 2005 adults, living across the UK, using validated online polling methods,¹⁰ to assess knowledge of sugar content of a range of SSBs, fruit juices, and smoothies. We showed participants pictures of full containers of different non-alcoholic beverages and asked them to estimate the number of teaspoons of sugar contained in the portion shown. Although the sugar content of all

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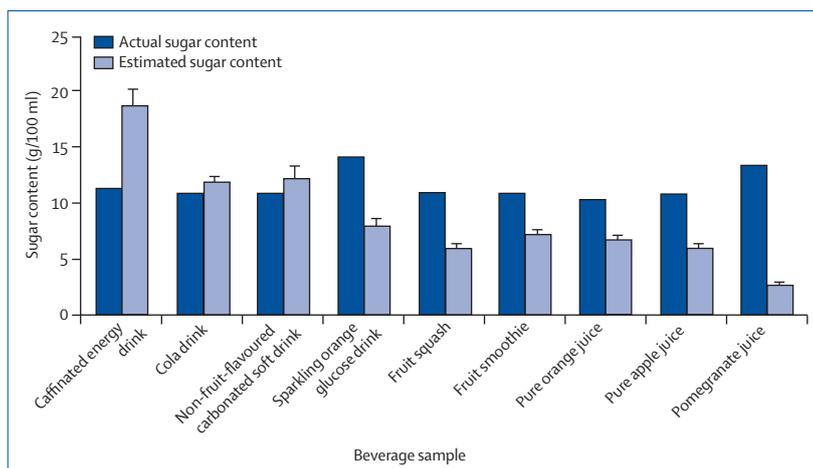


Figure: Actual and estimated (mean \pm SEM) sugar content in a range of popular high-sugar beverages in a nationally representative survey of 2005 UK adults (983 men, 1022 women)

The survey was commissioned by Grayling and was done online between March 30, 2012, and April 1, 2012, in accordance with Market Research Society Code of Conduct and the rules of the British Polling Council.

drinks presented was similar, the sugar content of fruit juices and smoothies was underestimated by 48% on average, whereas the sugar content of carbonated drinks was overestimated by 12% (figure). Thus, there seems to be a clear misperception that fruit juices and smoothies are low-sugar alternatives to SSBs.

Although it is implicit in present nutritional guidance to limit fruit juice intake—eg, in the UK only the first 150 ml of fruit juice consumed can count towards the five-a-day target—the inclusion of any fruit juice at all as a fruit-equivalent in this recommendation is probably counterproductive because it fuels the perception that drinking fruit juice is good for health, and thus need not be subject to the limits that many individuals impose on themselves for consumption of less healthy foods. Accordingly, we suggest that better labelling of fruit juice containers is needed, to include explicit recommendations on maximum recommended daily intake. A further, more radical suggestion would be to re-examine whether any fruit intake in the form of juices should be permissible within guidelines for daily fruit and vegetable intake. This change would be in line with calls in the USA that recommend elimination of all fruit juice consumption by children.¹¹ In the modern context, where society is faced with an energy surfeit, health-care providers and policy makers must take every opportunity to help individuals to cut unnecessary calories from their diet. Many would now agree that policies and guidance should be put into place to limit intake of SSBs. We suggest that, like SSBs, fruit juices are sugary drinks with a probable net adverse effect on health. A fruit juice tax is

probably not warranted; however, in the broader context of public health policy, it is important that debate about SSB reduction should include fruit juice.

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