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# Sugar and human health

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Mark L Wahlqvist

Recent well publicised moves to encourage sugar consumption in Australia led us to ask Professor Mark Wahlqvist, Professor of Human Nutrition at Deakin University (Victoria) for a comment on sugar and human health.

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## Sucrose vs carbohydrate

A renewed emphasis on carbohydrate in the western diet is evident from dietary guidelines formulated for several countries, including Australia.<sup>1</sup>

The recommendation is to increase the consumption of carbohydrate from wholegrain cereals, fruits and vegetables and to decrease the consumption of sucrose. The rationale behind this is that carbohydrate foods rich in dietary fibre are *nutrient dense* rather than *energy dense* and is in recognition of the trend (with increased affluence) towards energy dense foods and a reduction in physical activity. The corollary is that if physical activity is maintained or increased there is more scope for the use of energy dense foods. In decreasing order of energy density are fat (37 kJ/g or 9kCal/g), alcohol (29kJ/g or 7 kCal/g) protein (17 kJ/g or 4

kCal/g) and carbohydrate (16 kJ/g or 4 kCal/g).

The extent to which sucrose differs from other carbohydrates in human nutrition is important to consider. From food consumption data, it would seem Australians have not significantly changed their total per capita sucrose consumption for many years, but more sucrose now comes from processed food than by addition during food preparation or at the table.

The implication would be that Australians need to be informed about the sucrose and other constituents of the food and beverages they purchase, by way of food labelling or a food composition data bank accessible to consumers. Informed choice is then more likely.

Newer analytical procedures such as High Performance Liquid Chromatography (HPLC) have

allowed the food and nutrition research group at Deakin University to analyse Australian foods for fructose, glucose, sucrose, maltose and lactose content. In the past these have often been grouped together. In the food industry there is a growing use of invert sugar — the glucose and fructose monomers that make up sucrose — rather than sucrose, because of greater sweetness per unit cost, so these analyses will assume more importance.

## Health concerns

The main concerns about sucrose have been dental caries, obesity, coronary heart disease and diabetes.<sup>2,3</sup> The most evidence relates to dental caries where epidemiological studies indicate that total sucrose consumption is related to prevalence<sup>4</sup> but further work

is required to develop a reliable cariogenic index of foods with reference to frequency and manner of consumption.

Clinical experience would suggest that a subgroup of obese people is particularly attracted to sweet foods, but whether this is the general case is less clear. The dietary factors of most importance in coronary disease would appear to be an excessive consumption of saturated fat and an inadequate consumption of complex carbohydrate — rather than excessive consumption of sucrose.<sup>2</sup>

It has been traditional to restrict simple sugar consumption in diabetics. However the extent to which sucrose can be accommodated in the diabetic diet needs re-examination in light of the current recognition that a relatively higher contribution of carbohydrate to energy requirements can improve glucose tolerance and that certain dietary fibres may improve carbohydrate control.<sup>1</sup>

## Conclusion

A useful interim guideline for Australians would be to restrict the use of sucrose as much as possible to where it is an additive and reduce its use as a major component of food, or as a food in itself. This would recognise man's quest for sweetness in the things he eats but discourage the excessive intake of soft drinks and confectionery.

## References

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