The role of low-calorie sweeteners in weight management

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Amid rising obesity rates, low-calorie sweeteners have been proposed as a potentially useful tool for weight management. By providing the sweet taste without the calories, low-calorie sweeteners can be a palatable way to reduce the energy density of the diet. This can help people to achieve and maintain a healthy body weight when combined with a balanced diet and healthy lifestyle.

Global obesity

More than half a billion adults around the world were classified as living with obesity in 2008 – almost double the number in 1980.[1] This is a growing global trend which is leading to a marked rise in diet- and lifestyle-related health problems. Carrying excess body fat is associated with raised blood pressure, raised cholesterol, and insulin resistance. It also increases the risk of coronary heart disease, stroke, type 2 diabetes mellitus, and certain types of cancer.

As obesity rates continue to climb, strategies are needed to support individuals in achieving and maintaining a healthy body weight. From a dietary perspective, substituting low-calorie sweeteners for sugar is one potentially useful way of helping people to manage their weight.

Weight management with low-calorie sweeteners

Weight loss occurs when the energy consumed from food and drink is less than the energy burned. Replacing sugar (e.g. sucrose, glucose, glucose-fructose syrup) with low-calorie sweeteners is one way of reducing the energy density of the diet while preserving the palatability of sweet foods and beverages, and has been shown to lower energy intake and aid weight loss.

In a review of 16 randomised controlled trials, consuming the low-calorie sweetener aspartame in place

of sugar resulted in a 10% reduction in total energy intake.[2] According to the authors' calculations, this could equate to a rate of weight loss of about 0.2 kg per week for a 75 kg adult. It is reasonable to assume that this degree of weight loss would also be observed in people living with overweight or obesity. A recent theoretical study from the Netherlands also showed that using low-calorie sweeteners instead of added sugar in carbonated soft drinks could lower body mass index (BMI) in a population of healthy, young adults.[5] More evidence is needed to confirm if this is a true cause-effect relationship as the results are based on assumptions about people's sugar consumption.

One pitfall of using low-calorie sweeteners for weight loss is that people tend to compensate for the reduced calories by increasing their energy intake from other food and drink.[2] However, it seems motivation can override this effect: people who are committed to a weight loss regime are able to successfully use low-calorie sweeteners as part of a healthy lifestyle for long-term weight loss and weight maintenance.

Role in appetite

Despite the evidence, there is still concern that low-calorie sweeteners are more "fattening" than sugar. Early studies reported that low-calorie sweeteners in non-energy-yielding products such as soft drinks can increase appetite, but subsequent studies have not observed this link.[7] The literature also does not support the physiological mechanisms by which sweeteners may increase energy intake.

At the same time, low-calorie sweeteners do not suppress appetite and are therefore not a 'magic' solution to obesity. Instead, they should be seen as a tool for weight loss in the context of a balanced diet and physically active lifestyle.

Future use

The available evidence suggests that low-calorie sweeteners can decrease energy intake and aid weight control in healthy adults when used as a substitute for sugar in human intervention trials. However, it should be emphasised that many factors affect weight management. As such, any effort to achieve and maintain a healthy weight needs to form part of an overall healthy lifestyle.

Further information

EUFIC Sweeteners

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