



International  
Sweeteners  
Association



## FACTSHEET

# Diabetes and Blood Sugar Control with Low/no Calorie Sweeteners

Diabetes is one of the fastest growing health challenges. The incidence among adults has tripled in the past 20 years with around 1 in 10 adults worldwide, approximately 463 million people, now living with diabetes, the majority with Type 2 diabetes, according to the International Diabetes Federation (IDF).

More than one million children and adolescents under the age of 20 also live with Type 1 diabetes. IDF estimates that there will be 578 million adults with diabetes by 2030, and 700 million by 2045.<sup>1</sup>

People with diabetes have to manage their intake of carbohydrate and sugars to maintain effective glycaemic (blood glucose or blood sugar) control. Blood sugar control is important because complications of diabetes are mainly the result of long-term side-effects of high levels of glucose in the bloodstream, called hyperglycaemia.



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### No adverse effect on blood sugar control

Studies show that unlike carbohydrates low/no calorie sweeteners do not raise blood sugar levels<sup>2</sup>, and that people with diabetes can use them safely.

Meta-analyses (a statistical analysis that combines the results of multiple studies) of randomised controlled trials (RCTs - studies providing the highest quality evaluations of cause and effect), have confirmed that all types of low/no calorie sweeteners have no adverse glycaemic effect for consumers, with or without diabetes.<sup>3,4,5</sup>

These findings have been endorsed by the European Food Safety Authority (EFSA) which authorised the health claim that low/no calorie sweeteners used as a replacement for sugars induce a lower blood sugar rise after consumption compared to sugar-containing foods and drinks.<sup>6</sup> This claim may be used in the EU on labels of low/no

calorie sweeteners-containing food and drink and in their advertising.

Two 2020 reviews of all available studies did not find any short- or long-term effect on glucose responses or insulin secretion from consuming low/no calorie sweeteners.<sup>4,5</sup>

Observational studies, as opposed to RCTs, have reported a link between higher low/no calorie sweeteners use and risk of diabetes or metabolic syndrome. However, when confounding factors such as overweight or obesity are taken into account the reported associations become statistically insignificant in most studies.

It is also acknowledged that 'reverse causation' may produce a false link between higher low/no calorie sweeteners consumption and risk of Type 2 diabetes and metabolic syndrome because people at risk of these conditions, or who already have

diabetes, are likely to use low/no calorie sweeteners to reduce their intake of sugars.

### Type 2 Diabetes

In Type 2 diabetes the body becomes resistant to insulin, or insufficient insulin is produced. Insulin is needed to transport glucose from the blood into body cells. Being overweight and inactive are often contributing factors to developing Type 2 diabetes.

### Aid for weight and glycaemic control in diabetes

Diabetes UK's latest evidence-based guidelines for prevention and management of diabetes concludes that low/no calorie sweeteners can be recommended because they have no effect on blood sugar and are useful for people trying to reduce calorie intake.<sup>7,8</sup>

Similarly, the consensus of the Latin-American Association of Diabetes (ALAD) is that the consumption of low/no calorie sweeteners is safe within Acceptable Daily Intake (ADI - the amount of a substance that can be ingested over a lifetime without risk) levels. The Association also recognises low/no calorie sweeteners use can have benefits of calorie reduction, weight loss and glucose control, when used to replace sugar in the context of a structured dietary plan.<sup>9</sup> A Consensus Report by the American Diabetes Association (ADA) on nutrition therapy for adults with diabetes or pre-diabetes, also concludes that low/no calorie sweeteners sugar substitutes could decrease daily intake of carbohydrates and calories, which in turn could beneficially affect blood sugar and weight control.<sup>10</sup>



### References

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