

The Food Energy Value of Polyols

Food energy is the amount of energy in a food that is released through digestion. The result is expressed as a value in kilocalories (kcal) and/or kilojoules (kJ). The energy value for sugar is 17kJ/gram (4kcal/gram).

Depending on consumption patterns and various testing protocols, slightly different values for polyols have been reported, but the standardised recognised value by European regulators for polyols is 10 kJ/g or 2.4 kcal/g (0 kcal/g for erythritol). This means that polyols have a lower calorific value than sugars.

The calorific value of polyols is lower than that of sugars because of the way they are digested. Most polyols are primarily fermented in the large intestine, rather than absorbed in the small intestine, which has important consequences for their energy value. The polyol erythritol, which is almost completely absorbed in the small intestine and eliminated unchanged via urine, is not calorific.

If a carbohydrate is absorbed in the small intestine and not excreted via urine, it becomes fully available to the body as energy, whereas if a carbohydrate is fermented in the colon, only about half of it (50%) will be available as energy. When a polyol is ingested, a significant part of it (varying from 10% to 99% depending on the individual polyol) is not absorbed in the small intestine and therefore enters the large intestine.

The energy value of a polyol is therefore dependent on the following three factors, which must all be taken into account when calculating a polyol's energy value:

- the percentage of polyol that is absorbed in the small intestine as opposed to the percentage that is fermented in the large intestine
- the extent to which the body can use any energy from the polyol absorbed in the small intestine
- the part that ends up in the large intestine.



The low energy value of polyols is important for nutrition labelling purposes. European regulation (Directive 90/496/EC) prescribes a single value for all permitted polyols except erythritol, unlike, for example, the USA, Canada and Australia where individual polyol specific values are laid down in food legislation.

Low calorie foods are now recommended to help prevent obesity and to help weight management for people with type-2 diabetes - where obesity is a key risk factor. Polyols are well placed to enable manufacturers to meet the demand for foods with reduced calorie content because they can be used to fulfil all the functions associated with sugar, both in terms of taste and structure, yet have lower energy and calorific values due to the way they are digested.

For more information on polyols visit www.polyols-eu.com