

# Lactose

## *the unsung hero*

Often, the first thought that springs to mind when thinking about lactose, is lactose intolerance. This is such a pity because lactose has so much more to offer. This summary will outline what lactose is and how it contributes to better health in ways one may never have imagined.

Lactose is an intrinsic 'sugar', naturally found in milk. It is a disaccharide consisting of two monosaccharides – glucose and galactose – and is called 'milk sugar' colloquially.<sup>1</sup> But should we even be talking about lactose as a sugar?

Consumers may be led to think that lactose is comparable to free sugar because they share the same 'last name' (i.e. sugar).<sup>2</sup> This could not be further from the truth because free sugars are different from intrinsic sugars when it comes to non-communicable diseases (NCDs), obesity, and even dental health.<sup>3</sup> Intrinsic sugars are naturally present within the structure of intact fruits and vegetables (fructose) and in plain milk (lactose). On the other hand, free sugars are defined as monosaccharides and disaccharides that are added to foods and beverages by the manufacturer, cook or consumer.

**The World Health Organization (WHO) advocates the curbing of free sugar intake to no more than 5% to 10% of total energy intake. Only then can obesity levels and related NCDs begin to decrease.<sup>3</sup> One of the main focus points for health authorities is to educate the public about reducing intake of energy-dense, nutrient-poor, sugar-sweetened beverages (SSB). But lactose is not an free sugar, is it? That is exactly the point ...**

Consumers should be encouraged to choose foods based on their entire nutrient profile rather than denigrating a single nutrient (like sugar).<sup>2</sup> Instead, the focus should be on choosing unprocessed or minimally processed foods and not on single nutrients. Lactose, as a disaccharide, cannot be absorbed. It must be broken down first into monosaccharides before being actively transported from the intestinal lumen into the blood. Lactase is the enzyme that does this, splitting lactose into glucose and galactose. It

is known as a brush border enzyme because it is located in the brush border of the small intestine.<sup>2</sup>

The amount of lactase produced by the body – and thus lactose digestibility – is variable. It is influenced by many factors, such as age and genetics. It is usually high at birth, which is necessary because human milk is high in lactose, but starts declining as one gets older.<sup>2</sup> Genetically, some adults continue to produce high levels of lactase and are known to be lactase-persistent. Since there is enough lactase, lactose is broken down easily by these individuals.<sup>2</sup>

A person who produces less lactase is known to be lactase-deficient or to have lactase non-persistence. In lactase non-persistence, some of the consumed lactose remains undigested (there is some lactose malabsorption). The undigested lactose makes its way to the end of the ileum and to the colon where it is fermented by the intestinal microbiota.<sup>2</sup>

This malabsorption and subsequent fermentation of lactose does not always result in any noticeable symptoms.<sup>2</sup> However, there is a subset of lactase non-persistent individuals who do experience symptoms like flatulence, osmotic diarrhoea, or intestinal cramps. These individuals are known to be lactose intolerant.<sup>2</sup>

As lactose tolerance varies, it is virtually impossible to determine a single threshold of lactose. For that reason, having lactase non-persistence (lactose intolerance) does not mean that one needs to avoid dairy altogether. It is also important to distinguish between lactose intolerance and a milk protein allergy. Many consumers do not know the difference and wrongly avoid milk and dairy products.



**The reason why consumers must understand these differences is to avoid unnecessary avoidance because lactose has a number of health benefits, namely:**

- ♦ acting as a prebiotic and potentially improving gut health<sup>2</sup>
- ♦ influencing energy homeostasis, insulin sensitivity and fat storage, and thus having an effect on weight loss or weight management and subsequent chronic diseases<sup>2</sup>
- ♦ having a low glycaemic index (GI) and so being suitable for diabetics<sup>2</sup>
- ♦ improving calcium absorption (vital for bone health)<sup>2,4</sup>
- ♦ being the best sugar for dental health.<sup>2</sup>

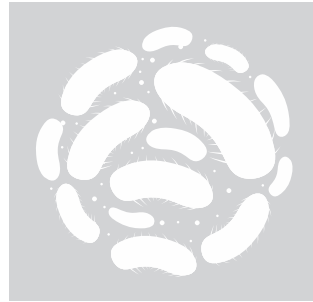
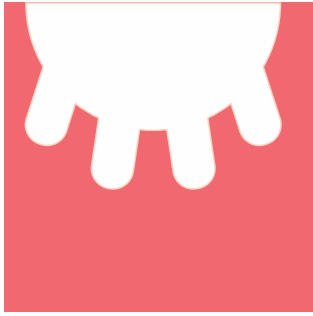
**The food matrix should never be underestimated.**

Nutrients are not consumed in isolation, and this includes lactose. Although it is a type of sugar, it is an intrinsic sugar. It is consumed together with a variety of very important nutrients, and because of this, should not be compared to free sugars.

When talking about nutrition, it is important to follow a food-centric approach. Encourage consumers to choose nutritious and healthful whole foods regularly and educate them to identify fear mongering towards specific nutrients, like lactose.<sup>5</sup>

This is one of the reasons why the South African food-based dietary guidelines focus on food and not on nutrients. These guidelines encourage all South Africans to consume milk, maas or yoghurt every day.<sup>6</sup>

**The average South African's diet quality would improve significantly by adding these foods, because they contain three of the four nutrients that most of our population are lacking: calcium, potassium and vitamin A. The nutritional importance of dairy products in the context of a balanced diet and the key role that dairy plays in helping to reduce NCDs cannot be denied.**



## References

1. Raymond J, Morrow K. Krause and Mahan's food & the nutrition care process. 15th ed. Missouri: Elsevier; 2021.
2. International Dairy Federation. fil-idf.org; 2021. <https://fil-idf.org/publications/bulletin/bulletin-of-the-idf-509-2021-lactose-an-important-nutrient-advocating-a-revised-policy-approach-for-dairy-its-intrinsic-sugar/>
3. World Health Organization. Guideline: sugars intake for adults and children. who.int; 2015. <https://www.who.int/publications/i/item/9789241549028>
4. Walsh C, Reynders T. rediscoverdairy.co.za; <http://www.rediscoverdairy.co.za/wp-content/uploads/2016/07/Lactose-Nutrition-Review-2016-98507.pdf>
5. Heaney RP. Dairy Intake, Dietary Adequacy, and Lactose Intolerance. Adv Nutrition, Volume 4, Issue 2, March 2013, Pages 151–156, <https://doi.org/10.3945/an.112.003368>
6. Vorster H, Wenhold F, Wright H, Wentzel-Viljoen E, Venter C, Vermaak M. 7. SA J Clin Nutr. 2013;26(S): S57–S65. <http://sajcn.co.za/index.php/SAJCN/article/view/746>

Evidence-based review with full references:  
[https://www.rediscoverdairy.co.za/evidence-based\\_reviews/](https://www.rediscoverdairy.co.za/evidence-based_reviews/)



 @RediscoverDAIRY

An Initiative by the Consumer Education Project of Milk SA | Email: [info@rediscoverdairy.co.za](mailto:info@rediscoverdairy.co.za) | Website: [www.rediscoverdairy.co.za](http://www.rediscoverdairy.co.za)

