



Addiction and dietary sugars

Key Messages:

- **Sugar is not considered addictive by scientific or medical standards.** Extensive scientific research has found no evidence that sugar meets the criteria for addiction.
- **We have a natural preference for sweet tastes.** Humans are born with a liking for sweet flavours, an evolutionary trait that helped identify safe and energy-rich foods.
- **Liking and enjoyment of sweet foods should not be confused with addiction.** Enjoying foods reflects normal taste preferences rather than an addiction. Like other pleasurable activities, enjoying food activates the brain's reward system, but this normal response is not the same as dependence or addiction.

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Addiction

Addiction, also known as substance dependence, is a physiological and psychological process which causes dependence and, in turn, withdrawal symptoms if the addictive substance is no longer taken. The term is sometimes also applied to behavioural disorders, such as gambling addiction, which causes psychological dependence that is uncontrolled and compulsive.

Dietary sugars and risk of addiction

There is a popular belief that sugar can be addictive. However, scientific evidence, including the large multidisciplinary NeuroFAST project involving ten research groups across seven countries, does not support the idea that sugar, or any other foodstuff, is addictive (1-9). Furthermore, addiction to sugar is not recognised by any set of independent criteria which have gained general medical acknowledgement, such as the World Health Organization International Classification of Diseases (5,10,11), nor is it listed as an addictive substance in the latest Diagnostic and Statistical Manual of Mental Disorders (12).

Eating something you enjoy can stimulate a rewarding response in the brain, and the secretion of dopamine, which plays a role in the feeling of pleasure. This response is not specific to sugars, and pleasure is not the same as an addiction (1). For example, the release of dopamine can occur with other pleasurable experiences, such as sharing a joke or taking part in physical activity.

The pleasurable feeling of reward is a result of complex brain signalling processes, which are generated upon seeing, smelling, tasting, and digesting an enjoyable food. There is an overlap between pathways in the brain involved in the rewarding property of foods and those involved in substance dependence. However, the overlap in neuronal pathways does not validate the



concept of food addiction or that food or sugar behaves like a drug (1,10). Sugars, unlike addictive drugs, also don't cause alterations in the brain (9). In addition, symptoms of addiction, such as withdrawal, craving, and tolerance, have not been found in human studies examining sugars (5).

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Preference for sweet taste

Addiction should not be confused with a preference for sweet taste (1). Sugars taste sweet, and we are born with a tendency to like sweet taste. This was inherited from our ancestors, as sweetness suggested a food was safe to eat and provided a useful source of energy. Although there is a genetically determined liking for sweetness, individuals differ in their response to sweetness, and preference declines with age, opposite to what would be expected if sugars were addictive (5). In addition, scientific evidence is mixed as to whether individuals who have a strong liking for sweet tastes are more likely to overeat and become overweight (13).

Last reviewed August 2026. Next review due August 2029.

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