

Feeling euphoric on a low-carb diet? The effect on your brain is similar to an illicit drug

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Credit: AI-generated image ([disclaimer](#))

Some people on very low-carb diets say they feel [euphoric](#), [have clear minds](#) and lose their appetite.

Going low-carb might even mimic the effects of GHB – the [recreational](#)

[drug](#) better known as fantasy, liquid ecstasy or grievous bodily harm – on the brain.

To understand why we need to look at how the body processes a very [low-carb diet](#), one that typically limits carbohydrates to no more than [50 grams a day](#). That's one cup of rice, two slices of bread or roughly 10% of your total daily energy needs.

Your body thinks it's starving

A very low-carb [diet](#) flips your metabolic switch from burning more carbs than fat, to more fat than carbs. This usually takes a few days in a process known as ketosis.

During this time, your body thinks it's starving. Once it uses up most of your glucose (carb) reserves, the body stimulates the breakdown of stored fat into [fatty acids](#) and releases them into the blood.

When fatty acids reach the liver they're converted into acetoacetate, an excellent metabolic fuel that belongs to a family of chemicals called ketones. That's why very low-carb diets are sometimes called "ketogenic" diets.

Acetoacetate decomposes to carbon dioxide and acetone, the smelly solvent best known for its ability to remove nail polish. This is why very low-carb dieters and people who are fasting often have sweet smelling breath.

A healthy liver minimises the acetone lost via the lungs by converting most of the acetoacetate it produces to a more stable substance, called beta-hydroxybutyrate or BHB. And this is where those euphoric feelings could come from.

[BHB is almost identical to GHB](#), the naturally occurring neurotransmitter, called gamma-hydroxybutyrate, that in synthetic form is used as a recreational drug.

BHB and GHB have exactly the same chemical formula. Both consist of just 15 atoms, with the only difference being the position of one hydrogen and oxygen atom. It's not too surprising, therefore, the two molecules share the [same carrier](#) across the blood-brain-barrier, the impermeable tissue that protects the brain.

During ketosis, BHB can reach high levels [in the brain](#), where it can bind to the same anxiety-reducing [receptors as GHB](#). They bind with [sufficient affinity](#) that they may have [similar effects](#).

There are no reports of [BHB supplements](#) or low-carb diets causing any of GHB's adverse effects, like loss of consciousness, seizures and death.

So, apart from the similar-sounding name, what evidence is there that BHB produced by the liver by people on a very low-carb diet has euphoric, GHB-like effects in the brain?

Fasting for the original 'natural high'

The first case of euphoria directly attributed to ketosis was reported by Walter Bloom, who pioneered therapeutic fasts for obesity [in the 1950s](#). After several days without food, his patients lost their appetite, felt remarkably well, and experienced a mild intoxication: "not dissimilar to the effects of ethanol."

Bloom speculated that acetoacetate had caused the inexplicable jubilation.

Other people have observed similar effects, including three Scottish

doctors whose patients fasted for [up to 249 days](#) in the 1960s. After several days without food, their appetites subsided and all patients felt an increased sense of well-being which:

"in some amounted to frank euphoria."

Unfortunately, no studies of the euphoria reported by low-carb dieters have been conducted, as far as we know.

So, researchers don't know the exact cause of these feelings.

Acetoacetate, acetone and BHB, or any of their metabolites, may all be involved, as well as the effects of [low blood sugar](#), which can cause [euphoria and giddiness](#).

A good place to start might be to image brain activity in people on a very low-carb diet and compare activity with people on a normal, non-calorie restricted diet. The aim would be to see if [brain](#) imaging of people on a very low-carb diet has similar effects on [brain activity](#) seen when [people take GHB](#).

And if you're thinking of going on a very low-carb diet to get that high, beware. Side effects include [loss of calcium from bones](#), increased risk of [kidney stones](#) and [growth retardation](#).

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