

Sugar, we all eat it. I have my 2 - 4 squares of dark chocolate daily but am rethinking the daily aspect of even that after writing this! It seems to be everywhere & is often unavoidable as it's slipped into nearly every processed or packaged good we consume, along with the naturally occurring sugars in our fruits & even some vegetables. For a more detailed look at the addiction connection sugar has on our brains read my ['Food Addiction'](#) post.



In Brain Foods part 1, we looked at supporting your brain health through Omega-3s, which also help with heart health, reduced risk for certain diseases, & greatly helps to reduce inflammation in many areas including the all-powerful brain.

So while we can add in foods to help us think and feel better, we can also cut out a few certain types of foods to help us think more clearly, feel more emotionally stable & have better overall energy for our minds & bodies.

We'll start from the top down because the brain controls the rest of the body & without addressing the health in our heads, the body may never truly be at its best.

Types of Sugar

The most common types of sugars we see in our foods, both natural & processed, are:

- **Glucose** - primarily found in fruits, vegetables, honey
- **Fructose** - primarily found in fruits & honey
- **Sucrose** - made up of glucose & fructose, primarily found in plants (ie. sugarcane, sugar beets, dates & coconut)
- **Lactose** - found in milk & made from galactose & glucose
- **Galactose** - found in milk & dairy products
- **Maltose** - primarily found in barley
- **Xylose** - primarily found in wood or straw
- **High Fructose Corn Syrup** - made from corn & used a sugar substitute the vast majority of processed & packaged foods, 45/55 split of glucose & fructose
- **Granulated White Sugar** - a 50/50 split of glucose & fructose

Fuel Source

Our brain & bodies primary source of fuel is glucose, a form of sugar found primarily from carbohydrates. You may also know it as 'blood glucose' or 'blood sugar' & when these are within range (100 mg/dL or 5.6 mmol/L) is normal, the body will function as it should & we likely won't be any the wiser (2).

However, when these levels are too high or low, it can lead to a variety of conditions such as dehydration, heart disease, neuropathy, joint problems & more, especially if you are already diabetic. So while the brain does need glucose to form connections via neurotransmitters, excess can lead to poor memory & cognitive deficiencies (1).

The not so sweet side of Sugar

- Glucose is essential to brain function, however when blood glucose levels are too low in the body we will notice a loss of energy for brain function which is linked to poor attention & cognitive function.
- Excess glucose in the bloodstream has been linked with memory & cognitive deficiencies. More commonly though with the onset of Diabetes, specifically type 2.
- Long term effects of high blood glucose can cause the brain to atrophy & shrink. There is ongoing research to assess the correlation between obesity & brain size (this does not mean obese people are not intelligent!).
- Sugar can stimulate cravings for more sugar by triggering a reward response due to dopamine. It has a drug like effect that leaves you craving more & may result in overeating, poor nutrition, deficiencies, loss of self-control & weight gain.
- Sugar can affect hormone balance leading to irritability, mood swings & more, primarily by disrupting the natural role of insulin which works closely with other hormones like estrogen & testosterone.

- Sugar may cause resistance to Leptin, the hormone that regulates hunger & tells your body to stop eating (5)
- Sugar has been linked with depression & anxiety as per the Whitehall II study (3) & multiple others also implicating high sugar diets with depression, mood swings, anxiety & inflammation, all resulting in negative impacts on mental health (13, 14, 15)
- Sugar can increase inflammation throughout the body, & the brain is no exception, potentially leading to reduced function & suppressed immune function in some cases.
- Elevated glucose levels can harm blood vessels, one of the leading causes of vascular complications in type 2 diabetes.
- Elevated glucose levels have also been very closely linked with decreased cognitive function, thought to be a combination of hyperglycaemia, hypertension, insulin resistance & elevated cholesterol.
- Some studies suggest that high sugar diets also reduce the production of brain derived netropic factor, BDNF, a chemical that is essential for new memory formations & learning. Low levels have been linked to the likes of Alzheimer's according to a study published in the journal of Diabetologia (4).
- Research done on long term diabetics showed progression in damage to the brain leading to deficits in memory, motor speed, & learning among other cognitive functions.
- Much of the evidence suggests that diets high in sugar, can lead to obesity, inflammation, high triglycerides, blood sugars & blood pressure; all risk factors for heart disease (8). Often increased again due to a less active lifestyle.
- Sugary foods spike blood glucose & insulin levels which in turn increases androgen secretion, inflammation, & oil production, which may play a role in poor skin & the development of acne (9)
- High sugar diets as mentioned, increase the risk of obesity which means higher levels of inflammation leading to increased insulin resistance, all of which lead to an increased risk of cancer (10, 11,12). Research in this area is ongoing & more studies are needed to fully understand the complex links.

How we can help to correct the potential damage

- **Reduce** your intake of sugary beverages, or stop them all together. Pop, soda, juice, fizzy drinks etc. all contain high amounts of fructose which increases hunger & the desire for more sugar (6). The consumption of empty calories often leads to an increase in weight, primarily visceral fat, the type found around the belly & associated with diabetes & heart disease (7).
- **Think** in terms of glycaemic control since cutting out all sugar is nearly impossible, plus fruits & vegetables provide far too many benefits to be removed from the diet. So what I mean by this is remove refined sugars, the likes of: *pasta, white bread, potatoes, white rice, & baked treats*. **Replace** them with: *whole grains, quinoa, bulgar wheat, oats, brown or wild rice etc*.
- **Increase** your health fats, protein & fibre to help keep you feeling full, while stabilizing blood sugar, thereby reducing the spikes in insulin, see post [here](#).
- **Swap** refined carbohydrates (sugars) for whole ones - **Add** in more vegetables, primarily the green leafy kind & cabbages - **Choose** fruits like berries, apples, lemons, & melons - **Increase** 'good' fats like nuts & seeds, avocados & fish for brain & cardiovascular supporting Omega-3's - **Opt** for organic free range eggs, aged cheeses, lean meats or protein sources like tofu, edamame, tempeh, or miso & you'll be fueling your body with beneficial micro & macronutrients that can help to balance insulin & blood sugar levels over time.
- **Limit** or swap out your low fat foods, these are often much higher in sugar than their full fat counterparts & have less nutritional benefits. Opt for full fat greek yogurts, milks & cheeses. Not only will they keep you fuller longer but there will often be lower sugars in these products & fat can be good for us in moderation & from the right sources.
- **Increase** your water intake by aiming for 2 litres daily depending on your activity levels (up to 3 litres if very active). The benefits of proper hydration are undisputable & noticeable in every aspect, from energy, skin, hair & nails, to memory & alertness. For a full explanation read '[Water...your secret weapon to feeling awesome](#)'.
- **Add in** exercise, aerobic exercise in particular has been shown to increase BDNF, the chemical that could help prevent certain types of cognitive decline & neurodegenerative disease, along with improved memory. Start with a short walk 1-2x daily for 30 minutes & build up from there.
- **Swap** cereal for eggs, oatmeal, or [smoothies](#) in the mornings to prevent a spike in glucose first thing.

There are many ways to improve your health, brain function, energy levels & more. Not all have to be hard & most can be brought in gradually so you don't feel overwhelmed with changes, we are already faced with enough of that in the rest of day. Health doesn't have to be hard, it just takes small steps in the right direction to reach big results.