

EVERY SOFT DRINK IS A BULLET TO OUR BRAIN!

Could cerebral fructose metabolism be a driver of Alzheimer's disease?



WHY?

Soft drinks deliver a large, rapid dose of sugar into our circulation, which triggers an acute spike in blood insulin levels and **a drop in brain cell energy (ATP)**. A reduction in brain cell energy — known as **cerebral glucose hypo metabolism** — is a hallmark of Alzheimer's.

In addition, over a period of years, even one small (12 ounce or 355 mL) soft drink per day leads to insulin resistance, type 2 diabetes (T2D), high blood pressure and abdominal (visceral) obesity, each of which doubles the risk of Alzheimer's.



A CLOSER EXAMINATION OF THE EFFECTS OF SUGAR ON THE BRAIN

Sugar (chemical name: sucrose) is made up of two smaller sugar molecules (monosaccharides) **fructose and glucose**.

When humans consume excessive amounts of FRUCTOSE, it leads to mitochondrial oxidative stress, local inflammation and progressive reduction in cerebral energy (ATP) levels. The fall in intracellular ATP generates uric acid which leads to insulin resistance and reduced endothelial nitric oxide. All these factors lead to insufficient energy for neurons to remain functional and viable, eventually leading to the clinical picture of Alzheimer's.

Fructose also alters hundreds of genes in the hippocampus and hypothalamus that regulate learning, memory, metabolism and hunger. Consuming fructose inhibits satiety (by inducing leptin resistance) which drives over-eating and a self-perpetuating destructive spiral. After only one week, rats fed high amounts of fructose show a drop in their ability to learn and remember new information, accompanied by a shrinkage of their hippocampus (the brain's major memory centre and the first region of the brain to be affected in Alzheimer's).

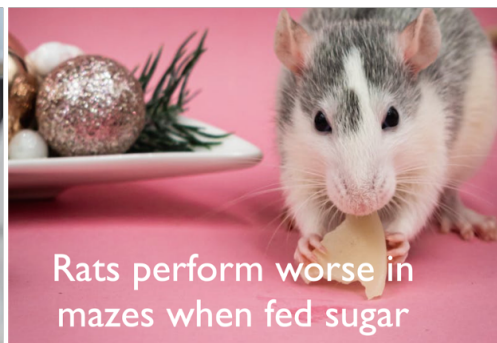
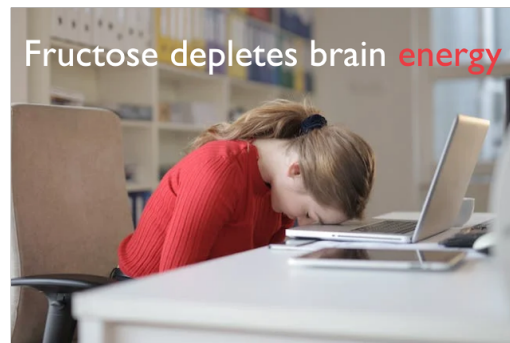
The other half of the sugar molecule, GLUCOSE, also causes brain damage when consumed in excess (by eating a diet high in refined starches) because it leads to insulin resistance and is itself converted to fructose. This adds to the toxic effects of fructose discussed above. The enzyme (aldose reductase) required for the conversion of glucose to fructose is enhanced in the presence of salt, alcohol or dehydration. All of these are modifiable dietary factors.

WORLDWIDE EVIDENCE OF THE HARMFUL EFFECTS OF SUGAR ON THE BRAIN

In 2011, a study of 737 Puerto Ricans aged 45 to 75 found that greater intakes of sugar-sweetened beverages (SSBs) and added sugars (not sugars occurring naturally in fruits and vegetables) was linked to lower cognitive function and diminished ability to learn lists of words.

A 2016 New York study of 800 men and women aged 23 to 98 found that the higher their intake of sugar-sweetened soft drinks, the worse their performance in tests of memory, concentration, decision-making and problem-solving. The sugar in the soft drinks was either sucrose or high fructose corn syrup, both of which contain fructose & glucose.

A 2019 study of 1200 Malaysian men and women aged 60 and over found that higher intake of food and drinks containing fructose, sucrose, glucose and maltose was linked to lower MMSE (Mini Mental State Examination) scores and poorer overall memory and cognition. In contrast, the more real, whole, unadulterated foods and home-cooked meals they ate, the better their brain function.



WHAT CAN WE DO ON A PERSONAL LEVEL TO REDUCE OUR RISK OF ALZHEIMER'S?

1. Quit all sugar-sweetened beverages (SSBs) including soft drinks, energy drinks, sports drinks, fruit juices*, cordials and flavoured milks.
2. Limit consumption of sweets, pastries, cakes, biscuits, donuts, ice creams and dried fruits** to no more than once per month.
3. Quit refined starches such as white bread, bagels, muffins, scones, crackers, noodles, French fries, crisps/potato chips, muesli and breakfast cereals.
4. Quit processed foods that contain added sugar such as sauces, salad dressings and ready-made meals (frozen and tinned).
5. Eat real, whole food supplied by nature, such as vegetables, nuts, seeds, fish, meat, offal, eggs, dairy, poultry and fruit.
6. Cook at home from scratch as often as possible.
7. Move all soft drinks to the laundry because they make excellent cleaning agents.

This information is of critical importance given the ubiquity of sugar in our modern diet, and the potential to prevent dementia on a massive scale through reducing its intake. If people understand the brain-damaging effects of excess sugar (especially when combined with salt & alcohol), they will be more motivated to make dietary changes. This knowledge also provides incentives for governments to regulate the marketing of ultra processed foods and drinks that are high in sugar, and to implement health warning labels.

*The problem with fruit juices is that the fibre has been removed and what remains is simply water and a lot of sugar — almost as much as in the equivalent amount of soft drink.

**The problem with dried fruit is that the water has been removed and what remains is a small amount of fibre and a concentrated amount of sugar.

