ISOWHEY® SPORTS

OPTIMAL
— PERFORMANCE —
NUTRITION

› WHY CHOOSE PRODUCTS WITH NO ADDED FRUCTOSE?

INTENSIVE TRAINING REQUIRES AN EATING PLAN THAT MAXIMISES ENERGY INTAKE AND OPTIMISES HEALTH FOR ENHANCED RECOVERY AND OVERALL WELLBEING.
WHILE IT'S ESSENTIAL TO INCLUDE SPECIFIC NUTRIENTS, IT'S JUST AS IMPORTANT TO AVOID CERTAIN ADDITIVES – SUCH AS ARTIFICIAL SWEETENERS AND FRUCTOSE.

Fructose is a form of sugar with a very sweet taste. When consumed occasionally, in its natural form (e.g. as part of a whole fruit), fructose is not detrimental to health. On the contrary, when ingested frequently within foods and drinks that are unnaturally high in fructose (e.g. fruit juices, or foods and drinks where fructose is added), the risk of health concerns may creep in.

Here are some of the main reasons why fructose should be limited when your aim is to achieve optimal performance and maximum nutrition:

1

FRUCTOSE IS LINKED TO NON-ALCOHOLIC FATTY LIVER DISEASE

Non-alcoholic fatty liver disease (NAFLD) is the most common form of liver disease in Australia.[1] It is characterised by the accumulation of triglycerides – or the bad fatty acids – in liver cells of people who consume little or no alcohol. NAFLD is strongly associated with obesity and insulin resistance, and growing evidence is pointing to the role of fructose in the NAFLD epidemic.[2]

Fructose is absorbed by the small intestines and is transported directly through the blood to the liver. Studies show fructose is linked to NAFLD by creating poor blood glucose metabolism.[2]

Once taken up by liver cells, fructose becomes involved in various metabolic pathways where it is converted into fatty acids.[3,4] Most fatty acids are incorporated into triglycerides in the body.[5]

Both excessive and moderate fructose consumption has been linked to high triglyceride levels,[3] which is also unhealthy for the heart.

2

FRUCTOSE – 'ALCOHOL WITHOUT THE BUZZ'

Fructose is often compared with glucose, as they are both sugars. However, they differ considerably in how they are utilised by the body. While every cell in the body has the capacity to use glucose for energy, there isn't one biochemical reaction that requires dietary fructose.[4]

While fructose can serve as an energy source, its actions are thought to more closely resemble those of ethanol (alcohol). Fructose and ethanol are similar in terms of their metabolism in the liver: neither stimulate insulin secretion (unlike glucose) and, when calorie availability is high, both will increase fatty acid build-up in the liver.

Although fructose does not exhibit the same acute toxic effects as ethanol (i.e. central nervous system disturbances), its long-term impact on health resembles that of ethanol. For this reason, it can be argued that fructose is 'alcohol without the buzz'.[4]

FRUCTOSE MAY **INCREASE RISKS OF DEHYDRATION.**

3 GLUCOSE VS FRUCTOSE

Muscle glycogen is an essential fuel during intense exercise, and recovery requires replenishment of depleted fuel stores.[6] Glucose oxidised by muscles during exercise comes from exercise-induced translocation of the glucose transporter GLUT4, or from muscle glycogen stores.[3]

While evidence is not conclusive, it has been demonstrated that muscle glycogen recovery was significantly higher with glucose compared to fructose.[7] Several factors may contribute to glucose's superiority, including slower fructose absorption and increased cellular uptake of glucose due to insulin.[6]

4 ADVANTAGES OF GLUCOSE OVER FRUCTOSE DURING EXERCISE

Another concern with the use of fructose during exercise is the possibility of incomplete absorption from the gut, with subsequent fermentation by intestinal bacteria. This can cause gas, bloating, discomfort and diarrhoea, and may limit the amount of fructose that can be used before these adverse gastrointestinal symptoms occur.[3]

Furthermore, preliminary evidence suggests fructose can reduce the thermoregulatory processes in the body (when compared to glucose).[8] This makes fructose less ideal for athletes as it may increase risks of dehydration and complications linked to over-heating.

References

1. *Rebello A, Roglans N, Alegret M, et al. Way back for fructose and liver metabolism: bench side to molecular insights. World J Gastroenterology 2012;18(45):6552-6559.*
2. *Yilmaz Y. Review article: fructose in non-alcoholic fatty liver disease. Aliment Pharmacol Ther 2012;35:1135-1144.*
3. *Tappy L, Le K. Metabolic effects of fructose and the worldwide increase in obesity. Physiol Review 2010;90(1):23-46.*
4. *Lustig RH. Fructose: it's 'alcohol without the buzz'. Adv Nutr 2013;4(2):226-235.*
5. *Whitney E, Rolfes SR, Crowe T, et al. Understanding Nutrition 2011, Cengage Learning, Australia.*
6. *Ivy JL. Regulation of muscle glycogen repletion, muscle protein synthesis and repair following exercise. J Sports Sci Med 2004;3(3):131-138.*
7. *Van Den Bergh AJ, Houtman S, Heerschap A, et al. Muscle glycogen recovery after exercise during glucose and fructose intake monitored by 13C-NMR. J Appl Physiol 1996;81(4):1495-1500.*
8. *Suzuki A1, Okazaki K, Imai D, et al. Thermoregulatory responses are attenuated after fructose but not glucose intake. Med Sci Sports Exerc 2014;46(7):1452-1461.*