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How Fructose Impairs the Memory

New study reveals how the simple sugar impedes recall

By Aimee Cunningham | July 3, 2009

Americans consume more fructose than ever before, yet concerns remain that the sugar, used to sweeten beverages and processed foods, poses health risks. In animals, fructose-rich diets increase the production of fat and promote resistance to the energy-regulating hormone insulin. New research suggests that memory suffers as well, at least in rats.

Neuroscientist Marise B. Parent of Georgia State University and her colleagues fed 11 adolescent rats a diet in which fructose supplied 60 percent of the calories. For 10 other rats, cornstarch took the place of the sweetener. The scientists trained the rats to find a submerged platform in a pool, with the help of surrounding cues.

Two days after the training ended, Parent's group removed the pool's platform and recorded where the rats—now adults—swam. Whereas the control group spent most of its time around the platform's old location, the fructose-fed rats visited this area significantly less often. "They can learn" the platform's location, Parent notes, "but they just can't remember it for long periods."

Another research group has shown in hamsters that insulin resistance can affect the hippocampus, a part of the brain critical for learning and remembering facts and events. Parent's team is examining whether the hippocampus of the memory-impaired rats became resistant to the hormone. Parent is also interested in how the addition of glucose, another sugar, would affect her results. The body metabolizes fructose and glucose differently, she explains. People tend to consume both sweeteners at the same time, as high-fructose corn syrup (which is most commonly 55 percent fructose and 45 percent glucose) and table sugar (half fructose and half glucose), and glucose aids the body's absorption of fructose.

Note: This article was originally printed with the title, "Forget the Fructose."