

## **“Sweet N’ Low” Makes you Big And Fat?**

By Denise Gellene, Los Angeles Times Staff Writer

Casting doubt on the benefit of low-calorie sweeteners, research released Sunday reported that rats on diets containing saccharin gained more weight than rats given sugary food. The study in the journal *Behavioral Neuroscience* found that the calorie-free artificial sweetener appeared to break the physiological connection between sweet tastes and calories, driving the rats to overeat.

Lyn M. Steffen, an associate professor of epidemiology at the University of Minnesota, who was not involved in the latest report, said the study offered a possible explanation for the unexpected association between obesity and diet soda found in recent human studies. Researchers have puzzled over whether diet soda is a marker for poor eating habits or diet soda ingredients cause people to put on pounds, she said. “This rat study suggests a component of the artificial sweetener may be responsible for the weight gain.”

Steffen’s own recent research has shown that people who drink diet soda have a higher risk of developing metabolic syndrome — a cluster of symptoms including obesity — than do people who drink regular soda. Her research was published last month in the American Heart Assn.’s journal *Circulation*.

An industry group rejected Sunday’s report. “The causes of obesity are multifactorial,” said a statement by Beth Hubrich, a dietitian with the Calorie Control Council, which represents low- and reduced-calorie food and beverage marketers. “Although surveys have shown that there has been an increase in the use of ‘sugar-free’ foods over the years, portion sizes of foods have also increased, physical activity has decreased and overall calorie intake has increased.”

The number of Americans who consume soda, yogurt and other products containing sugar-free sweeteners more than doubled to 160 million in 2000 from fewer than 70 million in 1987, according to the report. Over the same period, the incidence of obesity among U.S. adults rose to 30% from 15%. One interpretation of the trends is that people have been turning to lower-calorie foods to control an increasing problem with weight gain. An alternative interpretation is that artificial sweeteners lead to biological or behavioral changes that cause people to eat more. This possibility is easier to test in rats than in people because scientists can control the animals’ diets and measure exactly what they eat, said the study’s lead author, Susan E. Swithers, an associate professor of psychological sciences at Purdue University in Indiana.

In the experiment, funded by the National Institutes of Health and by Purdue, nine rats received yogurt sweetened with saccharin and eight rats received yogurt sweetened with glucose, which is close in composition to table sugar. After receiving their yogurt snack, the animals were given their usual chow. At the end of five weeks, rats that had been fed sugar-free yogurt gained an average of 88 grams, compared with 72 grams for rats that dined on glucose-sweetened yogurt, a difference of about 20%. Rats fed sugar-free yogurt were consuming more calories and had 5% more body fat.

In a related experiment, scientists gave the two groups of rats a sugary drink and measured changes in the animals’ body temperatures. Body temperatures typically rise after a meal because it takes energy to digest food. The rats in the saccharin group experienced a smaller average temperature increase, scientists said — a sign that regular consumption of artificial sweeteners had blunted their body’s response to sweet foods, making it harder for the animals to burn off their extra calories.

Swithers said that normally, sweet tastes signal that the body is about to receive a lot of calories, and the digestive system prepares to react. When sweet tastes aren’t followed by lots of calories, as in the case of artificial sweeteners, the body becomes conditioned against a strong response. Although the experiment looked only at saccharin, other artificial sweeteners may have the same effect, Swithers said. A controlled study is needed to determine whether sweeteners have the same effect in people as in rats, she said, but some epidemiological studies have been consistent with her findings. Swithers’ next step, she said, will be to determine whether dietary changes could reverse the rats’ physiological responses.

Adam Drewnowski, director of the nutrition sciences program at the University of Washington, cautioned against interpreting the results broadly. “It is unreasonable to claim that results obtained studying saccharin in rats translate to every sweetener in humans,” said Drewnowski, who has received research funding from the beverage industry in the past. He added: “We now have studies showing that sugar calories are associated with obesity and the absence of sugar is associated with obesity. Pity those people trying to do something about obesity.”

*Now what? For questions and guidance on learning to live without dieting, contact:*  
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