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Fat substitutes linked to weight gain

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Synthetic fat substitutes used in low-calorie potato chips and other foods could backfire and contribute to weight gain and obesity, according to a study published by the American Psychological Association.

The study, by researchers at Purdue University, challenges the conventional wisdom that foods made with fat substitutes help with weight loss. "Our research showed that fat substitutes can interfere with the body's ability to regulate food intake, which can lead to inefficient use of calories and weight gain," said Susan E. Swithers, PhD, the lead researcher and a Purdue psychology professor. The study was published online in the APA journal Behavioral Neuroscience.

The study used laboratory rats that were fed either a high-fat or low-fat diet of chow. Half of the rats in each group also were fed Pringles potato chips that are high in fat and calories. The remaining rats in each group were fed high-calorie Pringles chips on some days and low-calorie Pringles Light chips on other days. The Pringles Light chips are made with olestra, a synthetic fat substitute that has zero calories and passes through the body undigested.

For rats on the high-fat diet, the group that ate both types of potato chips consumed more food, gained more weight and developed more fatty tissue than the rats that ate only the high-calorie chips. The fat rats also didn't lose the extra weight even after the potato chips were removed from their diet. "Based on this data, a diet that is low in fat and calories might be a better strategy for weight loss than using fat substitutes," Swithers said. However, she warned that it can be difficult to extrapolate

laboratory findings about rats to people, even though their biological responses to food are similar. The study was conducted by Swithers along with Purdue psychology professor Terry L. Davidson, PhD, and former Purdue undergraduate student Sean Ogden.

Why would a fat substitute confuse the body? Food with a sweet or fatty taste usually indicates a large number of calories, and the taste triggers various responses by the body, including salivation, hormonal secretions and metabolic reactions. Fat substitutes can interfere with that relationship when the body expects to receive a large burst of calories but is fooled by a fat substitute.

There is some good news if a diet is naturally low in fat. The rats that were fed a low-fat diet didn't experience significant weight gain from either type of potato chips. However, when those same rats were switched to a high-fat diet, the rats that had eaten both types of potato chips ate more food and gained more weight and body fat than the rats that had eaten only the high-calorie chips.

Swithers and Davidson have reported similar findings in previous rat studies that showed saccharin and other artificial sweeteners also can promote weight gain and increased body fat. The use of artificial sweeteners and fat substitutes has increased dramatically over the past 30 years, mirroring the increase in obesity in America. Dieters have turned to these artificial means to lower calories while still eating foods that taste sweet or fatty. So what is a dieter supposed to do to drop a size?

"Unfortunately, there is no silver bullet," Swithers said. "Eating food which is naturally low in fat and calories may be a better route than relying on fat substitutes or artificial sweeteners."

More information: "Fat Substitutes Promote Weight Gain in Rats Consuming High-Fat Diets," Susan E. Swithers, PhD, Sean B. Ogden,

and Terry L. Davidson, PhD, Purdue University; Behavioral Neuroscience, Vol. 125, No. 4