

'American Diet' v. Atkins Diet

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The behavioral testing conducted by Diamond revealed for the first time that high and low carb diets differentially affected the expression of anxiety-related behaviors.

(PhysOrg.com) -- If people can learn anything from rats, what to eat might be one of the most useful lessons. University of South Florida Professor David Diamond, in the Departments of Psychology, Molecular Pharmacology and Physiology, and a career scientist at the Tampa VA Hospital, investigated the effects of a typical American diet, which is high in fat and sugar, compared to an Atkins-type diet, which is high in animal and vegetable fat but low in sugar, on the physiology and behavior of rats. Lesson learned: choosing between the so-called American diet and the Atkins diet can make a difference in managing weight and one's response to stress. They found that rats fed the American diet exhibited greater anxiety and gained more weight than rats which were fed either the Atkins diet or a control diet, which was

low in both fat and sugar.

Diamond presented his findings to colleagues at the Annual Society for Neuroscience conference in Chicago, Ill., Oct. 17. This work was supported by Veterans Affairs Merit Review Funding. Diamond has also done groundbreaking work on the affects of stress, [anxiety](#) and trauma in relation to poverty and addiction, as well as emotion, stress and memory and PTSD ([post traumatic stress disorder](#)).

The behavioral testing revealed for the first time that high and low carb diets differentially affected the expression of anxiety-related behaviors. Rats fed the high carb diet exhibited stronger evidence of fear memories in response to a frightening experience. Rats fed the low carb diet had the opposite effect - they appeared less fearful on tests of memory and anxiety than the rats fed the American diet.

The research team led by Diamond with graduate student Shyam Seetharaman studied groups of rats under different diet conditions. After consuming an American, Atkins, or control diet for two weeks, the rats were placed in a chamber where they were given a mild electric shock. Five weeks later, the groups were given behavioral tests aimed at measuring fear memory and anxiety. They found that rats in the American diet group were more fearful when re-exposed to the chamber where they were shocked. These animals also demonstrated other evidence of anxiety, such as greater startle responses and fear of a novel place. The Atkins diet [rats](#), by contrast, exhibited no signs of anxiety when they were in the novel environment. The researchers also found that the American diet group gained significantly more weight than the groups fed the Atkins and control diets.

According to Diamond, “These findings are consistent with research demonstrating that excessive sugar, eaten in conjunction with fat, is a primary factor that contributes to obesity. More importantly, it is known

that the Atkins (low carb) diet is an effective strategy for reducing weight, and our findings suggest that it may also reduce anxiety and potentially enhance cognitive performance under stress.”

This research has implications for how people can respond more effectively to stress. The work of these researchers indicates that the combination of high fat and sugar diets, as is found in typical American foods such as donuts, cheeseburgers and french fries, not only contributes to obesity, but may also contribute to the development of anxiety disorders.

Provided by University of South Florida

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