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Anti-obesity drug derived from chili peppers shows promise in animal trials

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A novel drug based on capsaicin, the compound that gives chili peppers their spicy burn, caused long term weight loss and improved metabolic health in mice eating a high fat diet, in new studies from the University of Wyoming School of Pharmacy. The drug, Metabocin, was designed to slowly release capsaicin throughout the day so it can exert its anti-obesity effect without producing inflammation or adverse side effects.

"We observed marked improvements in blood sugar and cholesterol levels, insulin response, and symptoms of fatty liver disease," reported Dr. Baskaran Thyagarajan, lead investigator, describing how Metabocin reversed many damaging effects of the high fat diet. He presented the results this week at the annual meeting of the Society for the Study of Ingestive Behavior, the leading international conference of experts on food and fluid intake.

The research team developed Metabocin, which can be taken orally, to target receptors called TRPV1 (transient receptor potential vanilloid subfamily 1) that are found in high numbers in fat cells. Stimulating the TRPV1 receptors causes white fat cells to start burning energy instead of storing it, which, in theory, should cause weight loss. An important question for the researchers was whether the drug remains effective when used long term, and whether adverse effects would outweigh its benefits. The mice in this experiment remained on the drug for 8 months, maintaining the weight loss with no evidence of safety problems. Additional ongoing experiments will see how long that can be maintained.

"It proved safe and was well tolerated by the mice," Thyagarajan concluded. "Developing Metabocin as a potent anti-obesity treatment shows promise as part of a robust strategy for helping people struggling with obesity."

Although these results may give some people the idea to eat more spicy food to lose weight, that would not work as intended. Most of the capsaicin in spicy food is not well absorbed into the body so it would not produce these effects. The researchers specifically modified the capsaicin in Metabocin for proper absorption and sustained release.

Obesity is a growing public health concern, resulting in metabolic diseases including type 2 diabetes, hypertension, atherosclerosis and heart diseases. Currently one in three individuals world-wide is either overweight or obese. Exercise and diet are the standard recommendation, but those are difficult for most people to maintain in the long term, and rebound weight gain usually occurs. The Wyoming researchers advocated for continuing to pursue medical options that stay effective in the long term to counter obesity and its metabolic impacts, to assist people seeking to maintain a healthier weight.

More information: Pharmacological and Safety Analyses of Subchronic Oral Metabocin Feeding in Mice, 26th Annual Meeting of the Society for the Study of Ingestive Behavior.

Provided by Society for the Study of Ingestive Behavior