

Overeating and depressed? Team finds connection—and maybe a solution

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Chronic overeating and stress are tied to an increased risk of depression and anxiety, and in a new study, Yale researchers explain why that happens and suggest a possible solution.

The researchers report that the anesthetic ketamine reverses [depression](#)-like symptoms in rats fed a high-fat diet in a similar way it combats

depression and synaptic damage of [chronic stress](#) in people.

"The effects of a high-fat diet overlap with those of chronic stress and could also be a contributing factor in depression as well as [metabolic disorders](#) such as Type 2 diabetes," said Ronald Duman, the Elizabeth Mears and House Jameson Professor of Psychiatry, professor of neurobiology, and senior author of the paper published in the journal *Neuropharmacology*.

Scientists at Yale have shown that ketamine, also known as "Special K" and abused as a recreational drug, can quickly and dramatically reduce symptoms of [chronic depression](#) in patients who are resistant to typical antidepressant agents. Subsequent research showed that ketamine activates the mTORC pathway, which regulates the synthesis of proteins involved in creation of [synaptic connections](#) in the brain that are damaged by stress and depression.

The pathway is also involved in cellular responses to energy and metabolism, and people with metabolic disorders like Type 2 diabetes are also at higher risk of depression. A Yale team headed by lead author Sophie Duthail in Duman's lab decided to explore whether diet might influence behavior of rats fed six times the normal amount of fat. They found that after four months of the diet, pathways involved with both [synaptic plasticity](#) and metabolism were disrupted, and the rats exhibited signs of depression and anxiety.

They also found that a single low dose of ketamine reversed those symptoms quickly, and reversed the disruption of mTORC signaling pathways.

Duman cautioned that the effects of ketamine on metabolism need more research and its proper dosage and use for depression are still a subject of clinical trials.

Provided by Yale University

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