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Researchers uncover how kappa opioid receptors drive anxiety

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University of North Carolina researchers uncovered a cellular mechanism by which kappa opioid receptors (KOR) drive anxiety. These proteins inhibit the release of the neurotransmitter glutamate in a part of the brain that regulates emotion. KORs have been of great interest as a drug target for the treatment of addiction and anxiety disorders.

Thomas L. Kash, PhD, associate professor of pharmacology and the lead author of the study published today in the journal *Cell Reports*, used mice to show the effects of KORs on behavior.

"When KORs are inactivated, glutamate is released properly and mice showed significant signs of feeling less anxious," said Kash, who is also a member of the Bowles Center for Alcohol Studies. "But when kappa opioid receptors are activated, this glutamate release associated with 'safety' was tamped down. There were clear signs of more anxiety. So, in essence, KORs shut off an anxiety-reducing pathway in the brain."

Humans also have kappa opioid receptors that work in the same way.

Several pharmaceutical companies are already working on developing KOR antagonists as a treatment for anxiety and drug abuse, Kash said. The new study in *Cell Reports* adds to a growing body of literature showing how these drugs may work.

Profiling neurons to define new target proteins for drug development is among the next logical steps in this line of research. Kash also said that future projects could include the study of forms of anxiety that are more pathological, such as those associated with excessive alcohol intake or opiate abuse.

Provided by University of North Carolina Health Care

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