Researchers at the University of South Florida have synthesized novel analogs of ketamine showing anesthetic, analgesic and anti-depressant properties.

Ketamine, a phencyclidine (PCP) analog, is an intravenous anesthetic capable of inducing analgesia at both low and high doses. It has relatively superior anesthetic properties and lower (psychedelic) side effects over other PCP analogs. It produces analgesia superior to opioids and has shown great potential as an anti-depression agent, especially for patients suffering from neuropathic pain. It inhibits NMDA receptors in order to reduce excitatory input. Despite its clinical advantages, ketamine is still a hallucinogenic drug of abuse.

Scientists at USF have developed ketamine analogs that block NMDA receptors. They selectively modulate GABAa receptors, which are exclusively found in abundance in the cerebellum of the brain. By targeting GABAa receptors in the cerebellum, phantom pain, epilepsy and depression can be treated.

This invention reveals ketamine analogs that demonstrate unique analgesic properties effective at one-tenth the induction dose. By having a much lower effective dose these analogs greatly reduce the potential for drug abuse. Unlike most anesthetics, these analogs increase blood pressure and heart rate, making them suitable for patients with severe bleeding and hypovolemia. They also show anti-depressant properties superior to commonly prescribed anti-depressant drugs. This technology shows excellent promise as an anti-depression agent and an effective anesthetic with reduced side effects.

**Advantages:**

- Effective at very low doses
- Superior anti-depressant properties compared to traditional drugs
- Treatment of phantom pain, epilepsy and depression
- Reduced hallucinogenic effect

**Ketamine Analogs for Phantom Pain, Epilepsy and Depression**

![Graph showing GABAa receptor activity](image)

**Ketamine Analogs, Oxime Monosalt and Oxime Disalt, Demonstrate Prominent Agonistic Activities on GABAa Receptors**

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