

Scientists report on safe, non-addictive opioid analgesic in animal model

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Various pills. Credit: Wikipedia

Since the isolation of morphine from opium in the 19th century, scientists have hoped to find a potent opioid analgesic that isn't addictive and doesn't cause respiratory arrest with increased doses.

Now scientists at Wake Forest Baptist Medical Center report that in an animal model a novel pain-killing compound, BU08028, is not addictive and does not have adverse respiratory side effects like other opioids. The research findings are published in the Aug. 29 online edition of the *Proceedings of the National Academy of Sciences*.

"Based on our research, this compound has almost zero abuse potential and provides safe and effective pain relief," said Mei-Chuan Ko, Ph.D.,

professor of physiology and pharmacology at Wake Forest Baptist and lead author of the study. "This is a breakthrough for opioid medicinal chemistry that we hope in the future will translate into new and safer, non-addictive pain medications."

Pain, a symptom of numerous clinical disorders, afflicts millions of people worldwide. Despite the remarkable advances in the identification of novel targets as potential analgesics in the last decade, including nociceptin-orphanin FQ peptide (NOP) receptor, mu opioid peptide (MOP) receptor agonists remain the most widely used drugs for pain management even though they are addictive and have a high mortality rate caused by [respiratory arrest](#), Ko said.

This study, which was conducted in 12 non-human primates, targeted a combination of classical (MOP) and non-classical (NOP) opioid receptors. The researchers examined behavioral, physiological and pharmacologic factors and demonstrated that BU08028 blocked the detection of pain without the side effects of respiratory depression, itching or adverse cardiovascular events.

In addition, the study showed [pain](#) relief lasted up to 30 hours and repeated administration did not cause physical dependence.

"To our knowledge, this is the only opioid-related analgesic with such a long duration of action in [non-human primates](#)," Ko said. "We will investigate whether other NOP/Mop receptor-related compounds have similar safety and tolerability profiles like BU08028, and initiate investigational new drug-enabling studies for one of the compounds for FDA's approval."

More information: A novel orvinol analog, BU08028, as a safe opioid analgesic without abuse liability in primates, *Proceedings of the National Academy of Sciences*, www.pnas.org/cgi/doi/10.1073/pnas.1605295113

Provided by Wake Forest University Baptist Medical Center

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