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Light, a non-invasive alternative to painkillers

Turning on the light to turn off pain: this is the principle behind a new analgesic method called LIA (Light-Induced Analgesia), discovered by scientists from the CNRS[1] in rodents. Non-invasive and drug-free, LIA proves to be more effective and longer-lasting than commonly used analgesics such as ibuprofen. The study is published in *Nature Communications* on 26 January 2026.

LIA relies on the direct inhibition of pain receptors. In rodents, a protein called TRAAK, whose function is to dampen pain signal transmission, can be activated by an illumination centered at 380 nm (near violet), produced by a simple light source. Just a few minutes of exposure, without injection or additional stress for the animal, are sufficient to relieve pain, including in models of chronic pain. By selectively targeting pain receptors, this non-pharmacological approach avoids the side effects of conventional analgesic drugs, which act throughout the body. Applicable in particular to new companion animals (NCAs) such as chinchillas and hamsters, as well as to more exotic species including Hermann's tortoises and boas, LIA offers a simple, effective, and low-cost approach to pain management in veterinary practice.

However, this light sensitivity observed in rodents is not shared by humans: a single difference in the sequence of the TRAAK protein is sufficient to render LIA ineffective in humans. Nevertheless, the study identifies TRAAK as a promising new therapeutic target and opens the way for the development of alternative, non-light-based strategies to activate this channel and relieve pain in a targeted and effective manner in human clinical settings.

Notes

1. Working at the Institut de biologie Valrose (CNRS/Inserm/Université Côte d'Azur) and at the Institut des maladies neurodégénératives (CNRS/université de Bordeaux)

Bibliography

Light-Induced Analgesia Provides A Drug-Free Optical Method for Pain Relief via Activation of TRAAK K+ Channels.
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