Drug that strengthens analgesic effect of opioids without increasing constipation tested

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Scientists from the University of Granada have taken part, alongside the Esteve laboratory, in the development of a new drug that multiplies the analgesic effect of opioids (drugs for treating intense pain), without increasing constipation, one of the most common side-effects of these drugs, among which is morphine.

This important scientific breakthrough has been published in The Journal of Pharmacology and Experimental Therapeutics, and has been chosen as its outstanding article in the month of January. So far, the University of Granada researchers have published the results from testing this molecule on mice.

Opium derivates have been used since ancient times to treat pain. Currently, these and similar products (opioids) are the drugs used to treat various types of intense pain, such as post-operatory pain, cancer pain or internal-organ pain. The prolonged use of opioids causes strong constipation, which is a substantial drawback to their administration, since it substantially diminishes patient well-being.

The recently-published article proves that S1RA, a drug that blocks the sigma-1 receptor, manages to multiply solely the beneficial effect of the opioids; that is, their pain-killing properties.

The sigma-1 receptor is a very small protein that acts as a neuro-modulator, physically linking to other proteins (among which are the opioid receptors) and modifying their function.

As Enrique Cobos del Moral, one of the authors and a researcher at the University of Granada Institute of Neuroscience, explains, opioids are basically "centrally-acting" drugs; that is, they act directly upon the brain and the spinal medula.

However, when opioids are associated with sigma-1 receptor blockers, their pain-killing effects are brought about by acting upon other areas; specifically, on the peripheral nervous system. From this, it is deduced that the sigma-1 receptor is a biological brake that prevents peripheral opioid analgesia, and that this brake can be eliminated by pharmacological treatment so as to increase the pain-killing power of opioids.

This scientific breakthrough is of huge importance for the well-being of patients suffering from pain, since, in the short term, it will allow the development of more efficient painkillers with fewer side-effects.

More information: "Modulation of Peripheral μ-Opioid Analgesia by sigma1 Receptors," Sánchez-Fernández C, Montilla-García Á, González-Cano R, Nieto FR, Romero L, Artacho-Cordón A, Montes R, Fernández-Pastor B, Merlos M, Baeyens JM, Entrena JM, Cobos EJ. *The Journal of Pharmacology and Experimental Therapeutics*. 348:32–45, January 2014. dx.doi.org/10.1124/jpet.113.208272

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