Neuroregeneration and repair

Molecular Neuropharmacology

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STRATEGIC OBJECTIVES

Chronic pain affects a high percentage of the adult population and is difficult to treat even with the most potent analgesic compounds, being one of the main challenges in the current research of pain. Our main objective is to investigate new effective strategies for the treatment of different types of pain by using genetic, molecular and pharmacological approaches.
MAIN RESEARCH LINES

1) Study the antinociceptive effects produced by the activation of several transcription factors in animals with acute (inflammatory, visceral, response to heat) and chronic pain (arthritis, inflammatory, neuropathic) as well as its interaction with other neurotransmitter systems.

2) Establish new strategies to enhance the analgesic actions of opioids and/or cannabinoids during acute and chronic pain in mice, avoiding the development of side effects.

3) Identify new approaches for treating painful diabetic neuropathy and oxidative stress, two main complications of diabetes, by using specific drug combinations.

4) Investigate the role played by nitric oxide-carbon monoxide systems in the modulation of the emotional and nociceptive responses induced by a chronic peripheral inflammation in the central nervous system of mice.

FEATURED PUBLICATIONS

• Carcolé M, Castany S, Léanez S, Pol O
  Treatment with a heme oxygenase 1 inducer enhances the antinociceptive effects of µ-opioid, δ-opioid, and cannabinoid 2 receptors during inflammatory pain

• Hervera A, Leánez S, Motterlini R, Pol O
  Treatment with carbon monoxide-releasing molecules and an HO-1 inducer enhances the effects and expression of µ-opioid receptors during neuropathic pain
  Anesthesiology. 2013, 118:1180–1197

• Hervera A, Gou G, Leánez S, Pol O
  Effects of treatment with a carbon monoxide-releasing molecule and a heme oxygenase 1 inducer in the antinociceptive effects of morphine in different models of acute and chronic pain in mice
  Psychopharmacology. 2013, 228:463–477

• Negrete R, Hervera A, Leánez S, Martín-Campos JM, Pol O
  The antinociceptive effects of JWH-015 in chronic inflammatory pain are produced by nitric oxide-cGMP-PKG-KATP pathway activation mediated by opioids
  PLoS ONE. 2011, 6(10): e26688

• Hervera A, Negrete R, Leánez S, Martín-Campos JM, Pol O
  The role of nitric oxide in the local antiallodynic and antihyperalgesic effects and expression of δ-opioid and cannabinoid-2 receptors during neuropathic pain in mice

See more O. Pol in PubMed.