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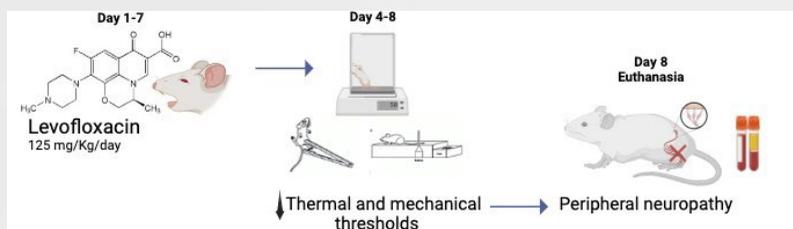
## An experimental rat model for the evaluation of levofloxacin-induced nociceptive alterations and protective alternatives

**Statement of the problem:** Fluoroquinolone antibiotics are widely used to treat infections of the urinary, respiratory, and gastrointestinal tracts. Despite their efficacy, these drugs have been associated with several clinically significant adverse effects, including tendinopathy and peripheral neuropathy. Levofloxacin, a fluoroquinolone, is particularly linked to a high incidence of peripheral neuropathy, characterized by numbness, pain, loss of reflexes, and hyperesthesia. Notably, the specific mechanisms underlying levofloxacin-induced peripheral neuropathy remain poorly understood. The purpose of this study is to evaluate levofloxacin-induced nociceptive alterations aiming to establish a preclinical Wistar rat model of peripheral neuropathy for testing protective strategies.

**Methodology:** To establish this model, two groups of Wistar rats were used: a control group and a levofloxacin group using a scheme of administration equivalent to that used for pneumonia treatment in humans. Thermal and mechanical pain nociceptive tests were assessed daily to determine the duration of the exposure to levofloxacin. Blood was also collected for cellular count and plasma enzymatic levels.

**Findings:** Rats treated with levofloxacin exhibited significant differences in nociceptive responses compared to the control group after seven days, as demonstrated by reduced thresholds in the paw and tail pressure tests.

**Conclusions and Significance:** The administration scheme with levofloxacin during seven days is sufficient to generate nociceptive threshold alterations in rats and it is useful for testing potential protective principles. This study constitutes pioneering research into levofloxacin-induced peripheral neuropathy in a Wistar rat model.



**Figure 1.** Levofloxacin induces nociceptive alterations in rats, suggesting a potential association with peripheral neuropathy.

## Biography

Lizeth Vargas-Nuñez is a biologist currently pursuing a master's degree in Basic Biomedical Sciences at the Industrial University of Santander. Building upon her undergraduate studies in biology, she is now immersed in the intricate world of pharmacology and neuroscience. Her research focuses on elucidating the mechanisms underlying levofloxacin-induced peripheral neuropathy in a Wistar rat model. By understanding these mechanisms, she aims to contribute to the development of strategies to mitigate or prevent this adverse drug reaction.

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