***In vivo* PK, side effect profile, and efficacy of multiple classes of analgesics in rats**

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In collaboration with the NIH HEAL Initiative Preclinical Screening Platform for Pain (PSPP), we evaluated clinically used analgesics, including morphine, gabapentin, duloxetine and ketoprofen through the tiered approach established to profile potential novel analgesics. First, pharmacokinetic studies were conducted to guide dosing, select the route of administration, and to determine the time course, supporting subsequent behavioral studies. Next, the modified Irwin (n=4) and rotarod tests (n=10) were conducted to evaluate potential neurologic, physiologic, and fine motor effects that may impact outcome measures in the pain models. Following side effect profile assessment, efficacy was evaluated in the plantar incisional pain (n=10) and L5/L6 spinal nerve ligation (SNL; n=10) models. The rat plantar incisional pain model is an established model of acute post-operative pain induced by incision of the skin and the plantaris muscle (Brennan et al. 1996). The model is characterized by transient hind paw tactile allodynia and spontaneous guarding behaviors. SNL is a model of peripheral neuropathic pain resulting from chronic nerve compression in which tactile and cold allodynia are produced (Kim and Chung, 1992). All experiments were conducted in a blinded manner with both sexes included. Power analysis was used to determine the group sizes for the various assays. The results of these studies of clinically used analgesic standards demonstrate the validation of the models and endpoints within the PSPP program and highlight the goal of providing a robust platform to accelerate the discovery and preclinical development of non-opioid, non-addictive treatments for pain.