AN INJECTABLE OLEOGEL-BASED BUPIVACAINE FORMULATION FOR PROLONGED NON-OPIOID POST-OPERATIVE ANALGESIA

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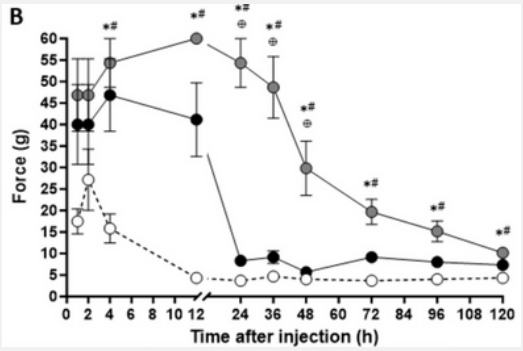
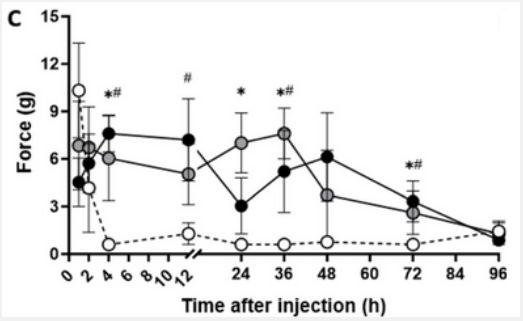
RESULTS



Von Frey efficacy testing. In the incisional model, ALX005 demonstrated a sustained, dose-dependent analgesic effect in the von Frey assay, with the high dose lasting ~120 h and the low dose ~24 h, compared to bupivacaine HCl (12 h).



Von Frey efficacy testing. In the sciatic nerve block model, both doses of ALX005 were effective for up to 72 h, with the high dose providing a more sustained effect.

OBJECTIVES

Local anesthetics are effective at controlling the intense pain after surgery but their short duration of effect limits their clinical utility in post-operative pain management. In this study, an optimized injectable oleogel-based formulation of bupivacaine for multi-day post-operative pain management was characterized on the benchtop and assessed in two clinically-relevant porcine post-operative pain models.

PRECLINICAL MODEL

Incisional Post-Operative Pig Pain Model: an incision was made in the lower lumbar region of the pigs, parallel and lateral to the spine, cutting through the fascia and muscle retraction. One of three treatment groups was injected into the wound space before suturing.

Sciatic Nerve Block Post-Operative Pain Model: ultrasound-guided nerve block techniques were used to inject one of the three treatment groups perineurally into the fascial plane of the sciatic nerve. After the injection, an incision was made on the front of the hind limb, distal to the injection site, and sutured.

Pain was assessed in both models using the von Frey technique, distress behavior scoring, and the approaching test. Additionally, pharmacokinetics and histological assessment were conducted.

CONCLUSIONS

In vivo assessment in two pig post-operative pain models demonstrated that the oleogel-based bupivacaine formulation can provide statistically significant multi-day analgesia in two routes of administration: local instillation directly into a surgical site and ultrasound-guided peripheral nerve block injection. Using standardized pig post-operative pain models, ALX005 provided 2.8 and 3.5 days longer duration of anesthetic effect than bupivacaine HCl in the porcine nerve block and incisional models, respectively. The long-acting local anesthetic preparation has potential of producing a safe, effective, and economical solution for post-operative pain.

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