List of Studies Comparing ALZET® Osmotic Pump Vs. Pellet Drug Delivery

P6278  Azar MR, Ahmed SH, Lintz R, Gutierrez T, Stinus L, Koob GF. A non-invasive gating device for continuous drug delivery that allows control over the timing and duration of spontaneous opiate withdrawal. J Neurosci Methods 2004; 135(1-2):129-135. >>> Heroin; Saline; SC; Rat; 2ML2; 192 hours; Comparison of sc injections & pellet vs. ALZET pump; dependence; 3 day recovery period; pumps connected to a novel gating device to allow on-off delivery; assembly schematic (p. 131); infusions were delivered in 48 hour intervals.


P5134  Thompson CI, Munford JW, Buell EH, Karry RJ, Lee CT, Morgan BL et al. Plasma constituents and mortality in rat pups given chronic insulin via injection, pellet, or osmotic minipump. Can J Physiol Pharmacol 2002; 80:180-192. >>> Insulin, bovine; Saline; SC; rat (neonate); 1002; 10 days; controls received ALZET pump w/ vehicle; functionality of ALZET pump verified by plasma insulin levels and residual aspiration; comparison of pellet vs. sc injections vs. ALZET pump; no stress (see p. 186); "The minipumps appeared to be well tolerated and caused no obvious difficulty with nursing" (p. 186); teratology; peptides; "...pups tolerate insulin more readily from a minipump than from a pellet..." (p. 190) "pellets caused high mortality within 24 h" (abstract).

P4966  Stafford K, Gomes AB, Shen J, Yoburn BC. Mu-opioid receptor downregulation contributes to opioid tolerance in vivo. Pharmacology Biochemistry and Behavior 2001; 69:233-237. >>> Etorphine hydrochloride; Morphine sulfate; Saline; SC; mice; 2001; 7 days; controls received placebo pellet; functionality of ALZET pump verified by analgesia "tail-flick" dose-response test; comparison of morphine pellets vs. mp; tolerance; receptor down regulation.

P4790  Vanderah TW, Suenaga NMH, Ossipov MH, Malan TJ, Lai J, Porreca F. Tonic descending facilitation from the rostral ventromedial medulla mediates opioid-induced abnormal pain and antinociceptive tolerance. J Neurosci 2001; 21(1):279-286. >>> Morphine; Saline; SC; rat; 2001; 7 days; Controls received ALZET pump w/ vehicle; comparison of pellets vs. ALZET pump; also used morphine pellets; pain.

P4160  Turner ND, Byers FM, Kenison DC. Plasma kinetics of zeranol in steers receiving variable doses in implant or mini-osmotic pump form. Unknown 1999;71-75. >>> Zeranol; Water; cattle (steer); 56 days; comparison of pellets vs. ALZET pump; long-term study, pumps replaced after 28 days.

P3823  Huang Y, Snyder R, Kligshteyn M, Wickstrom E. Prevention of tumor formation in a mouse model of burkitt's lymphoma by 6 weeks of treatment with anti-c-myc DNA phosphorothioate. Molec Medicine 1995; 1(6):647-658. >>> Oligodeoxynucleotide, phosphorothioate antisense; Saline; SC; mice; 2002; 6 weeks; Controls received ALZET pump w/saline or scrambled DNA; comparison of pellets and SC injections vs. ALZET pump; long-term study, pumps replaced every 2 weeks; "Total amount of DNA in the pellets and the rate of release from each pellet varied widely and unpredictably." (pg. 649); cancer; toxicology; antisense.

P3145  Stegelmeier BL, Molyneux RJ, Elbein AD, James LF. The lesions of locoweed (astragalus mollissimus), swainsonine, and castanospermine in rats. Vet Pathol 1995; 32(3):289-298. >>> Swainsonine; Castanospermine; SC; rat; 2ML4; 28 days; controls received ALZET pump with saline; comparison of locoweed pellets vs. ALZET pump; immunology; toxicology; half-life of swainsonine estimated to be 30 minutes.

P2653 Bronstein DM, Day NC, Gutstein HB, Trujillo KA, Akil H. Pre- and posttranslational regulation of B-endorphin biosynthesis in the CNS: effects of chronic naltrexone treatment. J Neurosci 1993; 60:40-49. >>> Naltrexone; SC; rat; 8 days; controls received ALZET pump w/ water; comparison of ip injections, NIDA pellets and ALZET pump.

P3777 Ellison G, Switzer III RC. Dissimilar patterns of degeneration in brain following four different addictive stimulants. NeuroReport 1993; 5:17-20. >>> Phencyclidine HCl; SC; rat; 5 days; comparison of pellets vs. ALZET pump.

P2527 Miller SC, Marks SC. Local stimulation of new bone formation by prostaglandin E1: quantitative histomorphometry and comparison of delivery by minipumps and controlled-release pellets. Bone 1993; 14:143-151. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received undiluted vehicle which was 1:1 mixture of Emulphor:80% ETOH; tissue perfusion (bone); comparison of pellets vs. ALZET pump; pumps replaced weekly; authors state that subperiosteal bone formation was greater for comparable doses when PGE1 was delivered by minipumps as compared to pellets.

P2442 Tordoff MG, Hughes RL, Pilchak DM. Different effects of three aldosterone treatments on plasma aldosterone and salt intake. Physiol Behav 1993; 54:129-134. >>> Aldosterone; Propylene glycol; SC; rat; 2ML2; 14 days; controls received no treatment or anesthesia only; functionality of ALZET pump verified by plasma levels; replacement therapy (adrenalectomy); comparison of daily injections vs. controlled-release pellets; "The most consistent and stable elevation of plasma aldosterone was obtained using Alzet minipumps..." (p. 132).

P3311 Marks Jr SC, Larson EK, Bowman BM, Miller SC. Local induction of alveolar bone in adult dogs by infusion of prostaglandin E1. Biological Mechanisms of Tooth Movement and Craniofacial Adaptation 1992;137-143. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received ALZET pump w/vehicle; tissue perfusion (bone); comparison of pellets vs. ALZET pump; pumps replaced weekly; "...we estimated that PGE delivered by minipump produces 25 to 30% more bone than the same amount of starting material delivered by pellet." (p.139).

P1744 Weghorst CM, Henneman JR, Ward JM. Dose response of hepatic and renal DNA synthetic rates to continuous exposure of bromodeoxyuridine (BrdU) via slow-release pellets or osmotic minipumps in male B6C3F1 mice. J Histochem Cytochem 1991; 39(2):177-184. >>> Uridine, bromodeoxy-; Saline; SC; mice; 2002; 4, 7 days; dose-response (graph); good methods - labelling; toxicology; comparison of BRDU delivery by ALZET pump, pellets and injection.

P4142 Dodson SE, McLeod BJ, Lamming GE, Peters AR. Ovulatory responses to continuous administration of GnRH in nine-month-old prepubertal beef heifers. Anim Reprod Sci 1990; 22:271-280. >>> Gonadotrophin-releasing hormone; Saline, sterile; SC; cattle; 2ML2; no duration posted; comparison of pellets vs. ALZET pump; "the consistent ovulatory response recorded in heifers treated with osmotic minipumps demonstrates the importance of administering GnRH at a constant and controlled rate" (p. 271); peptides.

P1637 Gomez-Sanchez EP, Fort CM, Gomez-Sanchez CE. Intracerebroventricular infusion of RU28318 blocks aldosterone-salt hypertension. Am J Physiol 1990; 258(21):E482-E484. >>> Aldosterone; RU-28318; Propylene glycol; CSF/CNS; SC; rat; 2002; 24 days; dose-response (graph); pump replaced at 2 weeks; comparison of central vs. peripheral administration, pellets.

P1221 Down NE, Donaldson EM, Dye HM, Langley K, Souza LM. Recombinant bovine somatotropin more than doubles the growth rate of coho salmon (Oncorhynchus kisutch) acclimated to seawater and ambient winter
conditions. Aquaculture 1988; 68:141-155. >>> Growth hormone, bovine; Lactose; Mannitol; Sodium bicarbonate; Water; IP; fish; 2001; 8 weeks; comparison of ip injections vs. pellets vs. ALZET pump infusion; long-term study; peptides.

P1141 Marte CL, Sherwood NM, Harvey B. Induced spawning of maturing milkfish (chanos chanos forsskal) with gonadotropin-releasing hormone (GnRH) analogues administered in various ways. Aquaculture 1987; 60(3/4):303-310. >>> Luteinizing HRH; HCl; IP; fish; 2002; no duration posted; ALZET pump primed 12 hrs. at 4 degrees C; concomitant infusion; comparison of im inject. vs. LHRH pellet vs. ALZET pump infusion; functionality of ALZET pump verified; stress/adverse reaction (tissue necrosis); peptides; salmon & mammal LHRH used.

P0737 Davison TF, Freeman BM, Rea J. Effects of continuous treatment with synthetic ACTH(1-24) or corticosterone on immature Gallus domesticus. Gen Comp Endocrinol 1985; 59:416-423. >>> ACTH(1-24); SC; bird (chicken); 2002; 14 days; comparison of implantable corticosterone pellets vs. ALZET pump infusion of ACTH; peptides.


P1072 Huffman RD, Simmons KE, Lum JT. An intraventricular infusion model for inducing morphine dependence in rats: Quantitative assessment of precipitated withdrawal. Behav Neurosci 1985; 99(5):861-880. >>> Morphine; Naloxone; CSF/CNS; rat; 1701; 14 days; controls received ALZET pump w/Naloxone; ALZET pump connected to cannula; water infused for 6 days before being replaced w/agent filled ALZET pump; 2 pumps/animal; comparison of 3 morphine pellets vs. ALZET pump infusion; pump replaced.

P0588 Schmidt WK, Tam SW, Shotzberger GS, Smith Jr DH, Clark R, Vernier VG. Nalbuphine. Drug Alcohol Depend 1985; 14:339-362. >>> Ethylketocyclazocine; Heroin; Meperidine; Oxymorphone; Pentazocine; Propoxyphene; Bremazocine; Buprenorphine; Butorphanol; Methadone; Morphine; Nalbuphine; U-50,488H; SC; mice; 3 days; comparison of sc morphine pellets vs. ALZET pump infusion; comparison of agents effects; controls received unspecified placebo infusion.


P0642 Beckman AL, LLados-Eckman C, Stanton TL, Adler MW. Physical dependence on morphine fails to develop during the hibernating state. Science 1981; 212(4502):1527-1529. >>> Morphine sulfate; Saline; CSF/CNS; squirrel; 2001; 18-72 hours; comparison of morphine pellets vs. ALZET pump infusion; ALZET pump was either implanted sc or was immersed in saline, with tubing leading to icv cannula in both cases.