References on the Administration of Agents to Dogs Using ALZET® Osmotic Pumps


**Agents:** Wortmannin  
**Vehicle:** Not Stated  
**Route:** IV  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 2 weeks  
**ALZET Comments:** Dose (70 ug/kg/day); animal info (mongrel dogs of either sex, weighing from 11 to 17 kg); 131.71 mmHg - 117.29 mmHg; Wortmannin aka WM, PI3K antagonist; cardiovascular.


**Agents:** Aldosterone  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Dog (Beagle)  
**Pump:** 2ML4  
**Duration:** 4 weeks  
**ALZET Comments:** Dose (12 ug/kg/day); animal info (male adult purebred beagle dogs (8.0–8.5 kg)); cardiovascular.


**Agents:** Angiotensin(1–7)  
**Vehicle:** Not Stated  
**Route:** IV (jugular)  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 2 weeks  
**ALZET Comments:** Dose (6 μg/kg/h); Controls did not receive mp; animal info (Mongrel, 11-15 kg); cardiovascular; Therapeutic indication (intravenously administered Ang-(1–7) may be responsible for inhibiting atrial remodeling induced by rapid atrial pacing, which in turn decreases HSP27 gene and protein expression.);


**Agents:** Vascular Endothelial Growth Factor  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** Duration  
**ALZET Comments:** Dose (500 ng); 0.9% Saline used; animal info (Beagle); Vascular endothelial Growth Factor aka VEGF;


**Agents:** Ang (1-7)  
**Vehicle:** Not Stated  
**Route:** IV (jugular)  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 14 days  
**ALZET Comments:** animal info (mongrel, 13-17 kg); cardiovascular; peptides; A-71915 is an ANP receptor antagonist; Dose (Ang (1-7) 6 ug/kg/hr; A-71915 0.3 ug/kg/hr); “Ang-(1–7) dose was selected because 6 μg/kg/h is verified as the highest dose that wouldn’t affect blood pressure in our preliminary study” pg 2;


**Agents:** Angiotensin (1-7); A-71915  
**Vehicle:** Not Stated  
**Route:** IV (jugular)  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 14 days  
**ALZET Comments:** animal info (mongrel, 13-17 kg); cardiovascular; peptides; A-71915 is an ANP receptor antagonist; Dose (Ang (1-7) 6 ug/kg/hr; A-71915 0.3 ug/kg/hr); “Ang-(1–7) dose was selected because 6 μg/kg/h is verified as the highest dose that wouldn’t affect blood pressure in our preliminary study” pg 2;


**Agents:** Nerve growth factor, human B-  
**Vehicle:** PBS  
**Route:** CSF/CNS (inferior alveolar nerve)  
**Species:** Dog (beagle)  
**Pump:** 2ML2  
**Duration:** 6 weeks  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, beagle, 18 weeks old, 10-12 kg); good methods (picture of implant pg 413); Multiple pumps per animal (2; one pump delivered NGF other delivered PBS); used rat jugular catheter, 15 cm long; pump body placed into retromandibular area; long-term study;
Agents: Dorzolamide; timolol Vehicle: Not Stated; Route: SC (Eye); Species: Dog; Pump: 2004; Duration: 24 days;
ALZET Comments: Controls received no mp; Controls received no mp; "Osmotic pump, as one of the constant drug delivery systems, can be placed in the subcutaneous pocket with minimal surgical skills, and continuously administer the wanted drugs into the target regions" pg 241; picture of implantation pg 240; Interesting (use of pump in veterinary application);

Agents: Angiotensin (1-7) Vehicle: Not Stated; Route: IV (jugular); Species: Dog (mongrel); Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (male, female, 11-15 kg); peptides

Agents: Sucrose Vehicle: Not Stated; Route: CSF/CNS; Species: Dog; Pump: 2ML1; Duration: 7 days;
ALZET Comments: Controls received mp w/ isomolar solution; animal info (adult, 11.0-25.0 kg); Cannula placement verified via visual inspection using trypan blue dye; used 25g cannula; used two stainless steel screws and dental acrylate to fix cannula; hydrocephalus;

Agents: Pyrazole-3 Vehicle: DMSO; polyethylene glycol; Route: IV; Species: Dog; Pump: 2ML1; Duration: 7 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (mongrel, 20-36 kg, atrial fibrilation)

Agents: Nafarelin, aza-gly Vehicle: Not Stated; Route: SC; Species: Dog (beagle); Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (ovariectomized); Aza-gly Nafarelin is a GnRH agonist

Agents: Wy-40972 Vehicle: Not Stated; Route: SC; Species: Dog (beagle); Pump: 2ML1; 2ML2; 2ML4; Duration: 7, 8, 12, 14 days;
ALZET Comments: Controls received mp w/ saline; animal info (1.2-6 years old; 9-16 kg, ovario-hysterectomy); Wy-40972 is a LHRH agonist; also known as lutrelin

Agents: Carboplatin Vehicle: Not Stated; Route: CSF/CNS; Species: Monkey; Rat; dog; Pump: Not Stated; Duration: 7 days;
ALZET Comments: functionality of mp verified by residual volume; Carboplatin brain tissue distribution;

Agents: Caramiphen Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2001; 2ML1; Duration: 48 hours;
ALZET Comments: Animal info (beagle, male, 14-16 kg); Functionality of mp verified by plasma levels; toxicology; pharmacokinetics

**Agents:** Brain-derived neurotrophic factor
**Vehicle:** Not Stated; **Route:** CSF/CNS (intrathecal); **Species:** Dog; **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ saline; dose-response; peptides; post io. care (ketoprofen); animal info (female, mongrel hound, 6-12 months old, 18-22 kg., bladder denervation); mp connected to silicone cuff surrounding spinal cord root bundles (2)


**Agents:** Nicotine
**Vehicle:** Not Stated; **Route:** SC; **Species:** Dog (mongrel); **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Functionality of mp verified by nicotine plasma levels; MRI; multiple pumps per animal (2)


**Agents:** Estradiol
**Vehicle:** Saline; **Route:** SC; **Species:** Dog; **Pump:** 2ML4; **Duration:** 3 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; no stress (see pg. R1065); animal info (female, mongrel, 1 yr, hypoglycemia)


**Agents:** Dihydrotestosterone, 5 alpha-; Estradiol, 17B
**Vehicle:** Not Stated; **Route:** SC; **Species:** Dog; **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Animal info (Beagle, 3.5-7.2 yrs); testosterone induced BPH animal model


**Agents:** Quinacrine; chloroquine; amphotericin B; E-64d; pentosan polysulfate
**Vehicle:** PBS; water, distilled; DMSO; **Route:** CSF/CNS; **Species:** Rat; mice; dog (mongrel); **Pump:** Not Stated; **Duration:** 2 months; 4 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; dose-response (fig. 2); no stress (see pg. 5004); stress/adverse reaction: (see pg. 5002) PPS at highest dose (20mg/kg/day) showed hemorrhage in the SC area surrounding the mp; enzyme inhibitor (cysteine protease [E-64d]); long-term study


**Agents:** FR167653
**Vehicle:** Not Stated; **Route:** IV (jugular); **Species:** Dog; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Animal info (7.5-17 kg); controls received mp w/ physiological saline; functionality of mp verified by serum FR167653 levels; enzyme inhibitor (p38MAPKinase); cardiovascular; ischemia (cerebral)


**Agents:** FR167653
**Vehicle:** Not Stated; **Route:** IV (jugular); **Species:** Dog; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Animal info (7.5-17 kg); controls received mp w/ physiological saline; functionality of mp verified by serum FR167653 levels; enzyme inhibitor (p38MAPKinase); cardiovascular; ischemia (cerebral)


**Agents:** Octreotide; SOM230
**Vehicle:** Water, sterile; **Route:** SC; **Species:** Rat; Monkey; Dog; **Pump:** 2002; 2ML1; 2ML2; **Duration:** 7,14, 56 days;

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by IGF-I plasma levels; long-term study, pumps replaced every 2 weeks; peptides; Somatostatin analogs; 2002 pumps used in rats; 2ML2 used in monkeys; 2ML1 pumps used in dogs; octreotide also called SMS 201-995
**P7118:** D. B. Gilberto, et al. Use of three infusion pumps for postoperative administration of buprenorphine or morphine in dogs. JAVMA 2002;220(11):1655-1660

**Agents:** Buprenorphine  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Dog  
**Pump:** 2ML1  
**Duration:** 48 hours  

**ALZET Comments:** Animal info (young adult, beagle or mixed breed, 8.4-12.8 kg); Functionality of mp verified by residual volume and serum buprenorphine levels; comparison of infudisk, pegasus vs. ALZET vs. mp; multiple pumps per animal (3,4); mp primed overnight in sterile saline; paper provides list of most possible negative outcomes. Upon pump removal the incisions were closed with tissue glue; ALZET pump was the most cost effective method; wound clips used.


**Agents:** Nerve growth factor  
**Vehicle:** Saline; Albumin, bovine serum  
**Route:** CSF/CNS (stellate ganglion)  
**Species:** Dog  
**Pump:** 2ML4  
**Duration:** 5 weeks  

**ALZET Comments:** Controls received mp w/ vehicle; tissue perfusion (left and right stellate ganglion); cardiovascular; peptides; vehicle was saline with 0.1% bovine serum albumin.

**P5145:** Y. Meshulam, et al. Prophylaxis against organophosphate poisoning by sustained release of scopolamine and physostigmine. Journal of Applied Toxicology 2001;21(S75-S78

**Agents:** Scopolamine; Physostigmine  
**Vehicle:** Propylene glycol; Ethanol; Water; Acetic acid, glacial  
**Route:** SC  
**Species:** Dog  
**Pump:** 2001  
**Duration:** 24,48 hours  

**ALZET Comments:** Functionality of mp verified by plasma scopolamine & physostigmine levels; dose-response (table, p. S77); toxicology; vehicle was 10% ethanol, 20% PG, 70% water, 0.0035% AA; mentions benefits of infusion via pump (p. S77)


**Agents:** Nerve Growth Factor  
**Vehicle:** Not Stated  
**Route:** Not Stated  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 2 weeks  

**ALZET Comments:** cardiovascular;

**P5557:** H. Senzaki, et al. B-blockade prevents sustained metalloproteinase activation and diastolic stiffening induced by angiotensin II combined with evolving cardiac dysfunction. Circulation Research 2000;86(807-815

**Agents:** Angiotensin II  
**Vehicle:** Acetic acid  
**Route:** IV  
**Species:** Dog  
**Pump:** 2ML1  
**Duration:** 6,7 days  

**ALZET Comments:** Cardiovascular; peptides

**P4763:** S. Meier, et al. The induction of parturition in the bitch using sodium cloprostenol. Theriogenology 2000;54(457-465

**Agents:** Cloprostenol, sodium  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Dog (pregnant)  
**Pump:** 2001  
**Duration:** Not Stated  

**ALZET Comments:** Dose-response (graph p. 460); varying doses (0.875 - 4.5 ug/kg - day); higher doses caused polydipsia.


**Agents:** FK-633  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Dog  
**Pump:** 2ML4  
**Duration:** 3 months  

**ALZET Comments:** Controls received mp w/ vehicle; long-term study, pump replaced after 1 and 2 months; no stress (p. 344); cardiovascular

**R0210:** J. M. Meythaler. Intrathecally delivered medications for spasticity and dystonia. Spinal Drug Delivery 1999;513-529

**Agents:** Baclofen  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 28 days  

**ALZET Comments:**

**P4590:** H. Senzaki, et al. Synergistic exacerbation of diastolic stiffness from short-term tachycardia-induced cardiodepression and angiotensin II. Circulation Research 1998;82(503-512

**Agents:** Angiotensin II  
**Vehicle:** Acetic acid  
**Route:** Not Stated  
**Species:** Dog  
**Pump:** Not Stated  
**Duration:** 4,7 days  

**ALZET Comments:** Controls received mp w/angiotensin II only; functionality of mp verified by plasma levels; stability verified by HPLC; peptides, cardiovascular
**Agents:** Cloprostenol, calcium  
**Vehicle:** Water, sterile;  
**Route:** SC;  
**Species:** Dog;  
**Pump:** 2001;  
**Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/vehicle; dose-response; no stress (see pg. 1318); toxicology; "The miniosmotic pump was well tolerated..and its insertion and removal were easy." (pg. 1318)

**Agents:** Dye, toluidine blue; Saline  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (subarachnoid space, intrathecal);  
**Species:** Dog;  
**Pump:** 2ML1;  
**Duration:** 7 days;  
**ALZET Comments:** No stress (see pg. 826); controls received mp w/saline; comparison of injections vs. mp; brain tissue distribution

**Agents:** Angiotensin II  
**Vehicle:** Not Stated;  
**Route:** IV (inferior vena cava);  
**Species:** Dog;  
**Pump:** 2ML4;  
**Duration:** 28 days;  
**ALZET Comments:**

**Agents:** Proline, l-; Proline, nitric oxide-  
**Vehicle:** NaOH;  
**Route:** IA (femoral);  
**Species:** Dog;  
**Pump:** 2ML2;  
**Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ proline to contralateral vessel; stability verified by in vitro assay; half-life (pg. 27); cardiovascular; constructed local infusion device and attached to mp via catheter

**Agents:** Fibroblast growth factor; saporin  
**Vehicle:** Sodium citrate; NaCl; EDTA;  
**Route:** IA (carotid);  
**Species:** Dog;  
**Pump:** 2002;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/vehicle; stability verified for 14 days by cellular assay; peptides; Saporin- FGF2 conjugate was infused; pump placed externally; Saporin is a potent ribosome-inactivating protein.

**Agents:** Heparin  
**Vehicle:** PBS;  
**Route:** IV (femoral);  
**Species:** Dog;  
**Pump:** 2ML2;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by pump residual volume & reservoir tubing patency; infusion to a vascular graft

**Agents:** Bafilomycin A1  
**Vehicle:** DMSO; Saline;  
**Route:** Bone;  
**Species:** Dog;  
**Pump:** 2002;  
**Duration:** Not Stated;  
**ALZET Comments:** Contralateral controls received mp w/vehicle; tissue perfusion (bone crypts of mandibular fourth molar)

**Agents:** Bafilomycin A1  
**Vehicle:** DMSO; Saline;  
**Route:** Bone;  
**Species:** Dog;  
**Pump:** Not Stated;  
**Duration:** 1, 3, 4 weeks;  
**ALZET Comments:** Tissue perfusion (bone crypts of mandibular fourth molar); pumps replaced at 2 weeks

**Agents:** SB-209670  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (cisterna);  
**Species:** Dog;  
**Pump:** 2ML1;  
**Duration:** 7 days;  
**ALZET Comments:** Controls received mp with vehicle; +/- SB-209670 is a non-peptide endothelin antagonist
P2777: W. Wang. Chronic administration of aldosterone depresses baroreceptor reflex function in the dog. Hypertension 1994;24(571-575
Agents: Aldosterone Vehicle: Saline; Route: SC; Species: Dog; Pump: 2ML2; Duration: 10 days;
ALZET Comments: Controls received mp w/ saline

Agents: Bafilomycin A1 Vehicle: DMSO; Saline; Route: Bone; Species: Dog; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Controls received mp w/ vehicle or no treatment; tissue perfusion (bone crypts of mandibular fourth molar); stability verified in vitro for 2 weeks at 37 degrees C; enzyme inhibitor; dogs given prophylactic im penicillin for first postoperative week; local infusion used because systemic delivery may cause lethal side effects; bafilomycin A1 is a specific inhibitor of vacuolar H+-ATPases

Agents: A-75998; RS-26306 Vehicle: Propylene glycol; Saline; Sodium acetate buffer; Route: SC; Species: Dog; Pump: 1003D; Duration: 3 days;
ALZET Comments: Comparison of single and 5x daily injections vs. mp; infusion dose was four-fold lower than daily injection for same results

Agents: Morphine HCl Vehicle: Saline; Route: SC; Species: Dog; Pump: 2ML1; Duration: 8 days;
ALZET Comments: Functionality of mp verified by plasma levels; comparison of injections vs. mp; dependence; infusion plasma levels were 1/5 the maximal concentration of injected animals, and were far more stable

Agents: Prostaglandin E1 Vehicle: Emulphor; Ethanol; Route: Bone (mandible); Species: Dog; Pump: Not Stated; Duration: 3 weeks;
ALZET Comments: Controls received undiluted vehicle which was 1:1 mixture of Emulphor:80% ETOH; tissue perfusion (bone); comparison of pellets vs. mp; pumps replaced weekly; authors state that subperiosteal bone formation was greater for comparable doses when PGE1 was delivered by minipumps as compared to pellets

Agents: Nicotine Vehicle: Not Stated; Route: SC; Species: Dog; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Controls received mp with saline; comparison of topical nicotine vs. mp

Agents: Norepinephrine Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML4; Duration: 8 weeks;
ALZET Comments: Controls received mp with saline; long-term study, pumps replaced after 3-4 weeks

Agents: Clonidine HCl Vehicle: Saline; Route: SC; Species: Dog; Pump: 2ML4; Duration: 4 weeks;
ALZET Comments: Tolerance; antihypertensive

Agents: Norepinephrine Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML4; Duration: 28 days;
ALZET Comments: an additional pump was implanted sc on day 10 to maintain plasma levels of norepinephrine p. 332
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Agents: Fenoldopam mesylate Vehicle: Water, distilled; Citric acid; Propylene glycol; Sodium metabisulfate; Route: IV (jugular);
Species: Dog; Pump: 2ML2; Duration: Not Stated;
ALZET Comments: Controls received mp with vehicle; multiple pumps per animal (2)

Agents: Prostaglandin E1 Vehicle: Emulphor; Ethanol; Route: Bone (mandible); Species: Dog; Pump: Not Stated; Duration: 3 weeks;
ALZET Comments: Controls received mp w/vehicle; tissue perfusion (bone); comparison of pellets vs. mp; 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)

Agents: Amidephrine mesylate Vehicle: Saline; Route: SC; Species: Dog; Pump: Not Stated; Duration: 3,4 weeks;
ALZET Comments: pumps replaced weekly; multiple pumps per animal (2 or 3) to elevate AMD levels (pg.1186)

Agents: Norepinephrine Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML4; Duration: 28 days;
ALZET Comments: no comment posted

Agents: Endothelin-1 Vehicle: Water; Route: CSF/CNS (intrathecal); Species: Dog; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received sham op or mp w/ water; peptides

Agents: Nicotine sulfate Vehicle: Not Stated; Route: SC; Species: Dog; Pump: Not Stated; Duration: 28 days;
ALZET Comments: no comment posted

Agents: Prostaglandin E1 Vehicle: Emulphor; Ethanol; Route: Bone (mandible); Species: Dog; Pump: Not Stated; Duration: 5 weeks;
ALZET Comments: Control side of mandible received mp with vehicle; tissue perfusion (bone); long-term study, pumps replaced weekly; each dog served as its own control -- one mp with PGE1 to one side and one with vehicle to the other side of mandible; pump implanted in superficial neck tissues; dogs given penicillin orally (100,000 U/d) for first post-operative week

Agents: Angiotensin II Vehicle: Not Stated; Route: CSF/CNS; Species: Dog; Pump: 2ML4; Duration: 4 weeks;
ALZET Comments: Peptides

Agents: Adenosine; Adenosine, N-ethylcarboxamido-; Inosine; Norepinephrine Vehicle: Not Stated; Route: IV (saphenous);
Species: Dog; Pump: 2ML1; Duration: Not Stated;
ALZET Comments: functionality of mp verified by inspecting catheter for clots, observing collapsed pump reservoir, and measuring residual drug solution
Agents: Desipramine HCl; Norepinephrine; tempol Vehicle: EDTA; Heparin; Saline; Route: IV (saphenous); Species: Dog; Pump: 2ML1; Duration: 5 days;
ALZET Comments: Dose-response; implanted sc above the knee; functionality of mp verified by visual inspection of sectioned pump and by serum levels; tissue perfusion; animal info (m, 9-15 kg); 5000 Units of heparin

Agents: HETE, 15- Vehicle: Saline; Route: Knee (articular cavity); Species: Dog; Pump: 2ML2; 2ML4; Duration: 10 days;
ALZET Comments: Tissue perfusion (knee joint)

Agents: Prostaglandin E1 Vehicle: Emulphor; Ethanol; Route: Bone (mandible); Species: Dog; Pump: Not Stated; Duration: 3 weeks;
ALZET Comments: Controls received mp w/vehicle; tissue perfusion (bone); pumps replaced weekly; stability: 70% of original activity after 1 week at 37 degrees C; penicillin given for 1 week post-surgery

Agents: ZnDTPA Vehicle: Saline; Route: SC; Species: Dog; Pump: 2ML4; Duration: 64 days;
ALZET Comments: Comparison of iv injections vs. mp infusion; functionality of mp verified in vitro; pump replaced at day 28 and 50; ZnDTPA is a chelating agent; long-term study

Agents: Parathyroid hormone, bovine 1-34 Vehicle: Albumin; HCl; Saline; Route: SC; Species: Dog; Pump: 2001; Duration: 8 months;
ALZET Comments: controls rec’d mp w/vehicle; pumps replaced every 12 days; replacement therapy (thyroparathyroidectomy); no stress (see pg. 755); long-term study

Agents: Norepinephrine Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML4; Duration: 28 days;
ALZET Comments: Dose-response; functionality of mp verified

Agents: Growth hormone, human Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML2; Duration: 12 days;
ALZET Comments: pumps primed in sterile water overnight before implantation; functionality of mp verified upon removal

Agents: Parathyroid hormone, bovine 1-34 Vehicle: Albumin; HCl; Saline; Route: SC; Species: Dog; Pump: 2002; Duration: 8 months;
ALZET Comments: controls rec’d mp w/vehicle; pumps replaced every 12 days; mp infusion of PTH in comb. with vit. D treatment; replacement therapy (thyroparathyroidectomy); no stress or infection (see p.1299); long-term study; peptides

Agents: Morphine sulfate Vehicle: Not Stated; Route: SC; Species: Dog; Pump: 2ML1; Duration: Not Stated;
ALZET Comments: Immunology; multiple pumps per animal (2)
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Bibliography

**Agents:** Nafarelin acetate  **Vehicle:** Propylene glycol; Water;  **Route:** SC;  **Species:** Dog;  **Pump:** 2002; 2ML4;  **Duration:** 18 months;
**ALZET Comments:** Comparison of injection vs. infusion; pump replaced after 2 or 4 weeks; long-term study; dose-response data; contraception in dogs; peptides

**Agents:** L-363,586  **Vehicle:** Saline;  **Route:** SC;  **Species:** Dog;  **Pump:** 2ML1;  **Duration:** 1 week;
**ALZET Comments:** Exocrine inhibition promotes transplant acceptance; comparison of timing of drug delivery and grafting; L-363,586 is a cyclic hexapeptide somatostatin analog; transplantation; half-life in dogs is 40 min. and in human is 1 hour

**Agents:** ACTH (1-24), a-  **Vehicle:** Not Stated;  **Route:** IV (jugular);  **Species:** Dog;  **Pump:** 2ML1;  **Duration:** 2 weeks;
**ALZET Comments:** mp replaced on day 7; dose-response data; controls received empty mp; mp attached to silastic rubber catheter in jugular vein; peptides

**Agents:** Not Stated  **Vehicle:** Not Stated;  **Route:** PO;  **Species:** Dog;  **Pump:** Not Stated;  **Duration:** Not Stated;
**ALZET Comments:** ALZA-authored; pump swallowed empty: gastric transit comparison of objects varying in size, swallowed w/ or w/o a meal

**Agents:** Angiotensin II; Isoproterenol  **Vehicle:** Ascorbic acid; Water;  **Route:** IV (jugular);  **Species:** Dog;  **Pump:** 2ML4;  **Duration:** 28 days;
**ALZET Comments:** mp connected to tygon catheter in jugular vein; mp implanted sc; dose-response data (plasma levels and blood pressure); agents infused simultaneously; hypertension; peptides

**Agents:** Acetylsalicylic acid  **Vehicle:** DMSO; Saline;  **Route:** IV (superficial cervical vein);  **Species:** Dog;  **Pump:** 2ML1;  **Duration:** 3 days;
**ALZET Comments:** Pumps primed for 4 hrs. before implant; used prefilled catheter in vein; greater solubility of ASA in DMSO allowed greater concentration in smaller total volume

**Agents:** Endotoxin, E. coli  **Vehicle:** Saline;  **Route:** IV (jugular);  **Species:** Dog;  **Pump:** 2001; 2ML1;  **Duration:** 1 week;
**ALZET Comments:** Used diff. pumps in same animal to deliv. variable dosage; solubility of endotoxin in mp max. of 12-15 mg/ml; functionality of mp verified

**Agents:** Nicotine salicylate  **Vehicle:** Saline; Sodium salicylate;  **Route:** SC;  **Species:** Dog;  **Pump:** Not Stated;  **Duration:** 5, 8 weeks;
**ALZET Comments:** Comparison of acute iv infusion/ injec vs. chronic mp infusion; pump replaced every week; long-term study; no stress p. 53; pumping rate verified at 38C; infection at implant site in 1 dog

**Agents:** Aminopropionitrile fumarate, B
**Vehicle:** Not Stated; **Route:** CSF/CNS (intrathecal); **Species:** Dog; **Pump:** 2ML2; **Duration:** Not Stated;

**ALZET Comments:** Author states use of 2ML2 pump w/ delivery rate of 10ul/h - this is an error; delivery rate verified - possibly a 2ML1 mp was used; advantages of mp p. 768; spinal cord injury


**Agents:** Parathyroid hormone, human 1-34 **Vehicle:** Caproic acid, E-amino-; **Route:** SC; **Species:** Dog; **Pump:** Not Stated; **Duration:** 4 weeks;

**ALZET Comments:** Pump replaced every week; mp used to avoid infection associated with 4 wk. iv cannula; no stress (infection) see p. 463; peptides


**Agents:** Parathyroid hormone, human 1-34 **Vehicle:** Not Stated; **Route:** SC; **Species:** Dog; **Pump:** Not Stated; **Duration:** 5, 6 months;

**ALZET Comments:** Comparison of pulsatile injec. vs. mp infusion; pump replaced weekly; comparison of human clinical data vs. animal; long-term study; peptides

P0179: R. D. Podbesek, et al. Treatment with human parathyroid hormone fragment (hPTH 1-34) stimulates bone formation and intestinal calcium absorption in the greyhound: comparison with data from the osteoporosis trial. 7th Int'l. Conf. on Calcium Regulating Hormones, Estes Park, Colorado, Sept. 5-9, 1980. In 'Hormonal Control of Calcium Metabolism,' D. V. Cohn and R. V. Talmage (eds.), Excerpta Medica, Amsterdam 1981;118-123

**Agents:** Parathyroid hormone, human 1-34 **Vehicle:** Not Stated; **Route:** SC; **Species:** Dog; **Pump:** Not Stated; **Duration:** 6, 8 months;

**ALZET Comments:** Pumps replaced; long-term study; comparison of intermittent injections vs. infusion; peptides


**Agents:** Prostaglandin analog (TPT) **Vehicle:** Ethanol; Sodium phosphate; **Route:** SC; **Species:** Dog; **Pump:** Not Stated; **Duration:** 1, 2 days;

**ALZET Comments:** Comparison of injections sc vs. infusion