References on the Administration of Antidepressants Using ALZET® Osmotic Pumps

1. Acetylphenelzine

**P2832**: K. F. McKenna, *et al.* Chronic administration of the antidepressant phenelzine and its N-acetyl analogue: effects on GABAergic function. J. Neural Transm 1994;41(115-122)

*ALZET Comments*: Phenelzine sulfate; Acetylphenelzine, N2-; SC; Rat; 2ML2; 28 days; antidepressant; controls received mp with water.


*ALZET Comments*: Phenelzine; Tranylcypromine, 4-methoxy-; Acetylphenelzine, N2-; Tranylcypromine, 4-fluoro-; Tranylcypromine; Deprenyl; SC; IP; Rat; 28 days; antidepressant; controls received mp with vehicle; comparison of TCP and PLZ ip injections vs. mp.

2. Adinazolam


*ALZET Comments*: Adinazolam; Diazepam; Benzyl alcohol; Ethanol; Propylene glycol; Sodium benzoate; Water; IP; Rat; 2002; 5 and 14 days; comparison of adinazolam. iv injec vs. mp infusion; comparison of agents effects; adinazolam. used with water vehicle, Diaz. with combination vehicle.

3. Amitriptyline


*Agents*: Amitriptyline *Vehicle*: Saline; *Route*: SC; *Species*: Rat; *Pump*: Not Stated; *Duration*: 14 days;

*ALZET Comments*: Dose (12 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats weighing 175–200 g); Resultant plasma level (brain AMIT levels reached 1350 ± 210 μ g/g (corresponding to 4.87 ± 0.76 μ M), a value about 25 fold higher than that in serum: 55.3 ± 5.4 ng/ml (corresponding to 199.35 ± 19.47 nM);

**Q0004**: L. Bjartmar, *et al.* Long-term treatment with antidepressants, but not environmental stimulation, induces expression of NP2 mRNA in hippocampus and medial habenula. Brain Research 2010;1328(1); 25-33

*Agents*: Amitriptyline; moclobemide; citalopram hydrobromide; maprotiline *Vehicle*: Not Stated; *Route*: SC; *Species*: Rat; *Pump*: Not Stated; *Duration*: 3, 21 days;

*ALZET Comments*: Controls received mp w/isotonic saline; enzyme inhibitor (monoamine oxidase-A); animal info (male, Sprague-Dawley, 200-250 g); "This method of delivery was chosen to avoid daily injections and thus manipulation of the animals." (p. 30); antidepressants


*Agents*: Morphine; amitriptyline *Vehicle*: Not Stated; *Route*: CSF/CNS (intrathecal); *Species*: Rat; *Pump*: 2001; *Duration*: Not Stated;

*ALZET Comments*: Controls received mp w/ saline; animal info (male, Wistar, 350-400 g.); intrathecal catheter constructed using polyethylene (0.008 in ID, 0.014 in OD) and silastic tube; behavioral testing (antinociception assay, hot water immersion, tail flick latency)
**Agents:** Tumor necrosis Factor-a, recombinant rat; tumor necrosis factor-a, recombinant, heat-inactivated; amitriptyline  
**Vehicle:** CSF, artificial;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 8 days;  
**ALZET Comments:** Controls received mp w/vehicle, or heat-inactivated rr-TNFa; comparison of ip injections vs. mp; peptides; animal info (male, Sprague-Dawley, 300-350g); chronic constriction injury to the right sciatic nerve; neuropathic pain.

**Agents:** Amitriptyline; morphine  
**Vehicle:** Saline;  
**Route:** CSF/CNS (intrathecal); subcutaneous;  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 5 days;  
**ALZET Comments:** Tolerance; animal info (male, Wistar, 350-400 grams); behavioral study.

4. Befloxatone

**ALZET Comments:** Befloxatone; Pindolol; Water; Ethanol; SC; Rat; 2, 21 days; controls received mp w/vehicle; befloxatone is an antidepressant; agents infused separately or concomitantly; antihypertensive.

**ALZET Comments:** Befloxatone; Nisoxetine; Paroxetine; SC; Rat; 3 weeks; antidepressant; controls received mp with saline; in vitro studies were also done (p49).

**ALZET Comments:** Paroxetine; Befloxatone; Ethanol; Water; Guinea pig; 2 or 21 days; antidepressant; controls received mp w/ vehicles; Paroxetine is a selective 5-HT reuptake inhibitor (SSRI) and Befloxatone is a Type A monoamine oxidase inhibitor (MAOI).

5. Bupropion

**Agents:** Bupropion hydrochloride, naltrexone hydrochloride  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML2;  
**Duration:** 12 days;  
**ALZET Comments:** Dose (40 mg/kg/day BUP, 4 mg/kg/day NTX); Controls received sham surgery; animal info (Adult male Sprague-Dawley rats weighing 200-250 g); behavioral testing (locomotion tests); Drugs administered together or in separate pumps; Contrave® is an adjunct pharmacotherapy for obesity that contains bupropion and naltrexone.; Therapeutic indication (Obesity).

Q3871: M. El Mansari, et al. Restoration of Serotonin Neuronal Firing Following Long-Term Administration of Bupropion but Not Paroxetine in Olfactory Bullectomized Rats. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2015;18(U87-U94)  
**Agents:** Bupropion; paroxetine  
**Vehicle:** Water; ethanol;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 2 days;  
**ALZET Comments:** Dose (40 mg/kg/day BUP, 4 mg/kg/day NTX); Controls received sham surgery; animal info (Adult male Sprague-Dawley rats weighing 200-250 g); behavioral testing (locomotion tests); Drugs administered together or in separate pumps; Contrave® is an adjunct pharmacotherapy for obesity that contains bupropion and naltrexone.; Therapeutic indication (Obesity).
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 300-500g, olfactory bulbectomized); 50% ethanol used; behavioral testing (open field);

**Q1431:** C. H. K. West, et al. Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2011;14(2):201-210

**Agents:** Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;


**Agents:** Bupropion **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2, 14 days;

**ALZET Comments:** Controls received mp w/ saline; animal info (Sprague Dawley, male, 270-320 g)

**P9434:** N. E. Paterson, et al. Chronic bupropion differentially alters the reinforcing, reward-enhancing and conditioned motivational properties of nicotine in rats. NICOTINE & TOBACCO RESEARCH 2008;10(6):995-1008

**Agents:** Bupropion HCI **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

**ALZET Comments:** Dose-response (fig 4); dependence; post op. care (antibacterial lotion); animal info (male, Wistar, 300-350 g.); "minipumps were used in the present study to deliver two bupropion doses... with the aim of establishing constantly high bupropion levels that may mitigate species differences in pharmacokinetics." (p. 1006)

**6. Citalopram**


**Agents:** Citalopram hydrobromide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days; 14 days;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (Eight-week-old, young adult male mice); ischemia (intestinal);

**Q6255:** C. J. Greig, et al. Improved capacity to evaluate changes in intestinal mucosal surface area using mathematical modeling. Microsc Res Tech 2017;80(7):793-798

**Agents:** Citalopram hydrobromide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (Wild type (WT) and SERT knockout (SERTKO) mice were bred on a C57BL/6 background);

**Q6046:** Y. Ikawa, et al. Effects of citalopram on jaw-closing muscle activity during sleep and wakefulness in mice. Neurosci Res 2016;113(48-55

**Agents:** Citalopram **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 7 days;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (C57BL/6J; 18-23 grams, 7-10 weeks); Dose (Citalopram (10 or 100 mg/kg/day);


**Agents:** Citalopram hydrobromide **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Dose (10 mg/kg/d); animal info (8-10ewk old male mice); dependence;
Agents: Citalopram hydrobromide Vehicle: Not Stated; Route: SC; Species: Mice (knockout); Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (8-10 weeks old); Dose (10 mg/kg/day);

7. Clomipramine

Agents: methadone; escitalopram; venlafaxine; desipramine; clomipramine Vehicle: Not Stated; Route: SC; Species: Mice;
Pump: 2002; Duration: 14 days;
ALZET Comments: Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence

Agents: Carbamazepine, baclofen, clomipramine Vehicle: DMSO, PEG, Ethyl Alcohol, Acetone; Route: SC; Species: Rat;
Pump: 2ML1; Duration: Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (7 weeks old); dimethyl sulfoxide, propylene glycol, ethyl alcohol, and acetone at a ratio of 42:42:15:1; post op. care (morphine 5 mg/day); behavioral testing (Facial grooming); Therapeutic indication (Trigeminal neuralgia, neuropathic pain);
Dose (30 mg/day carbamazepine (the first-line drug treatment for trigeminal neuralgia), 1.06 mg/day baclofen, 4.18 mg/day clomipramine, and 5 mg/day morphine);

Agents: Clomipramine; venlafaxine Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Antidepressants

Agents: Clomipramine; Fluoxetine; Desipramine; Phenelzine; Maprotiline Vehicle: Not Stated; Route: SC; Species: Rat;
Pump: 2ML4; Duration: 21 days;
ALZET Comments: antidepressant; no comment posted

Agents: Imipramine; Clomipramine; Clorgyline Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2002; Duration: 21 days;
ALZET Comments: antidepressant; controls received mp with saline

8. Desipramine

Q6946: C. Alba-Delgado, et al. The onset of treatment with the antidepressant desipramine is critical for the emotional consequences of neuropathic pain. Pain 2018;159(12):2606-2619
Agents: Desipramine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML2; Duration: 2 weeks;
ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (45-55 day old male Sprague–Dawley rats weighing 200-250 g); Therapeutic indication (neuropathy);

**Q6771:** S. Schreiber, *et al.* Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. *World J Biol Psychiatry* 2017;18(4):300-307

**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence

**Q6094:** L. Deng, *et al.* Prophylactic treatment with the tricyclic antidepressant desipramine prevents development of paclitaxel-induced neuropathic pain through activation of endogenous analgesic systems. *Pharmacol Res* 2016;114(75-89

**Agents:** Desipramine, naloxone, AM251, AM630 **Vehicle:** Water, saline, PEG 400, DMSO; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Dose: Desipramine (10 mg/kg/d), Naloxone (12 mg/kg/d), AM251 (3 mg/kg/d), AM630 (3 mg/kg/day); Desipramine dissolved distilled water, naloxone dissolved in saline, AM251 and AM630 dissolved in 50% PEG400 and 50% DMSO; Controls received mp w/ vehicle; animal info (Sprague-Dawley rats weighing 275–350 g); Multiple pumps per animal (2 when given the treatment of 2 different agents), Desipramine, vehicle, and all antagonists were delivered in separate osmotic pumps;

**Q5315:** L. Bravo, *et al.* Effect of DSP4 and desipramine in the sensorial and affective component of neuropathic pain in rats. *Prog Neuropsychopharmacol Biol Psychiatry* 2016;70(57-67

**Agents:** Desipramine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (Adult male Harlan Sprague-Dawley rats, 200-250 g); functionality of mp verified by pain level measurements; functionality of mp verified by pain level measurements; Noradrenaline reuptake inhibitor; Chronic Constriction Injury (CCI); Therapeutic indication (Pain); Dose (10 mg/kg/d);

**Q4096:** A. Shah, *et al.* Influence of acute or chronic administration of ovarian hormones on the effects of desipramine in the forced swim test in female rats. *Psychopharmacology* 2014;231(3685-3694

**Agents:** Desipramine hydrochloride **Vehicle:** Water, distilled; **Route:** IP; **Species:** Rat; **Pump:** 2ML4; **Duration:** 18 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 250-350g, ovariectomized); functionality of mp verified by serum levels; comparison of injection vs mp; dose-response (pg 3690); post op. care (penicillin and saline injection; atipamezol 1 mg/kg); behavioral testing (forced swimming test; locomotor activity); replacement therapy (estradiol pellets); solutions filtered through 0.9 um nitrocellulose filters; pumps primed at room temperature saline; used sutures;

**9. Duloxetine**

**Q4103:** M. J. Skelly, *et al.* Chronic treatment with prazosin or duloxetine lessens concurrent anxiety-like behavior and alcohol intake: evidence of disrupted noradrenergic signaling in anxiety-related alcohol use. *BRAIN AND BEHAVIOR* 2014;4(468-483

**ALZET Comments:** Prazosin; propranolol; duloxetine; DMSO; saline, sterile; SC; Rat; 2ML4; 4 weeks; Controls received mp w/ vehicle; animal info (male, Long Evans, adult, 300g); functionality of mp verified by residual volume; 10% DMSO used; stress/adverse reaction: (see pg. 472); post op. care (ketoprofen 3 mg/kg SC); behavioral testing (ethanol intake, open field test, locomotor activity, elevated plus maze); dependence; "Drug doses were calculated based on the estimated mean weight of animals in each group halfway through the drug delivery period (taking the mean weight at baseline and adding projected weight gain across 2 weeks)" pg 470; pumps removed after 4 weeks;

**ALZET® Bibliography**

**ALZET Comments:** Desipramine; duloxetine; Saline; cyclodextrin, methyl-beta; SC; Rat; 2ML1; 1 week; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-300 g).

**ALZET Comments:** Duloxetine; desipramine; paroxetine; Ethanol; water; SC; Rat; 2ML4; 21 days; Controls received mp w/ vehicle; functionality of mp verified by serum agent concentrations; dose-response (p.211); animal info (male, Sprague-Dawley, 125-150g).

**ALZET Comments:** Citalopram; duloxetine; Saline; SC; Rat; 14 days; Controls received mp w/ vehicle; 5-HT reuptake inhibitor, noradrenaline reuptake inhibitor.

**ALZET Comments:** Duloxetine; Ethanol; Water; SC; Rat; 2,21 days; controls received mp w/vehicle; antidepressant; 50% ethanol used, which is not recommended by the manufacturer.

### 10. Escitalopram

**Q6998:** K. L. Smith, et al. Opioid system modulators buprenorphine and samidorphan alter behavior and extracellular neurotransmitter concentrations in the Wistar Kyoto rat. Neuropharmacology 2019;146(316-326
**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;
**ALZET Comments:** Dose (10 mg/kg/day); animal info (Wistar Kyoto rat); behavioral testing (Forced swim test, Marble burying test); dependence;

**Q6975:** M. Ebrahimzadeh, et al. Synergistic effect of aripiprazole and escitalopram in increasing serotonin but not norepinephrine neurotransmission in the rat hippocampus. Neuropharmacology 2019;146(12-18
**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 1003D, 2ML2; **Duration:** 2days, 14 days;
**ALZET Comments:** Dose (5 mg/kg/day); animal info (Male Sprague-Dawley rats, 280-320 gr);

**Q8152:** N. Papp, et al. Acute and chronic escitalopram alter EEG gamma oscillations differently: relevance to therapeutic effects. Eur J Pharm Sci 2018;121(347-355
**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;
**ALZET Comments:** Dose (10 mg/kg/day); animal info (Wistar, Male, 250-280 g); dependence;

**Q7732:** N. Papp, et al. Acute and chronic escitalopram alter EEG gamma oscillations differently: relevance to therapeutic effects. European Journal of Pharmaceutical Sciences 2018;121(347-355
**Agents:** Escitalopram-oxalate **Vehicle:** 0.3 N HCl; Distilled Water; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;
**ALZET Comments:** "Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (Male Wistar Rats 250–280 g); no stress (see pg. 348 "All efforts were made to minimize pain, suffering and discomfort of the animals."); Depression study; "

**Q6771:** S. Schreiber, et al. Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. World J Biol Psychiatry 2017;18(4):300-307
**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose: methadone (0.5 mg/kg); venlafaxine (2.5 mg/kg); escitalopram (20 mg/kg); desipramine (1 mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35 g); dependence

11. Fluoxetine

Agents: XAV939; Fluoxetine Vehicle: DMSO, PBS and Tween 20 buffered; Route: CSF/CNS (lateral ventricle); Species: Mice; Pump: 1004; Duration: 7 days;
ALZET Comments: Dose ((XAV939 1 mM at 0.5 μL/h), (fluoxetine 18 mg/kg/day)); 3% DMSO and 0.2% Tween 20 in PBS (pH 7.4) used; Controls received mp w/ vehicle; animal info (10-12 weeks, male, C57); behavioral testing (open field, sucrose preference, novelty-suppressed feeding, forced swim test); XAV939 is a small molecule Axin stabilizer; enzyme inhibitor (tankyrase); Therapeutic indication (increased the amplification of adult neural progenitor cells and neuron production in the hippocampus and ameliorated depression-like behaviors induced by chronic restraint stress);

Agents: Fluoxetine hydrochloride Vehicle: DMSO; Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: 50% DMSO used; Controls received mp w/ vehicle; animal info (Male mice aged 11-14 weeks);

Agents: Fluoxetine hydrochloride; escitalopram hydrochloride Vehicle: Saline; Route: SC; Species: Mice; Pump: 1007D; 1002; Duration: 2, 21, 28 days;
ALZET Comments: animal info (male, WT or 5-HT2A mutant, 10-14 weeks old, 25-35 g); behavioral testing (tail suspension test; novelty surpassed feeding); behavioral testing (tail suspension test; novelty surpassed feeding); fluoxetine dose (18 mg/kg, free base)

Agents: Fluoxetine Vehicle: DMSO; Route: SC; Species: Mice (pregnant); Pump: 2004; Duration: Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (CF-1 mice: 5-7 days of gestation); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)

12. Imipramine

Agents: Imipramine Vehicle: PBS; Route: SC; Species: Mice; Pump: Not Stated; Duration: 6 weeks, 10 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6, myocardial infarction); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)
Q2124: N. Carrier, et al. Testosterone and imipramine have antidepressant effects in socially isolated male but not female rats. Hormones and Behavior 2012;61(5):678-685

Agents: Imipramine hydrochloride Vehicle: Saline, sterile; Route: SC; Species: Rat; Pump: 2ML4; Duration: 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult, male, 250-270 g, female, 200-225 g, 2-3 mo old); replacement therapy (gonadectomy)


Agents: Imipramine hydrochloride Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 30 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, adult, 250-270 g)


Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate Vehicle: Polyethylene glycol; DMSO; water; water, distilled; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;


Agents: Flavone, 7,8-dihydroxy; imipramine Vehicle: Saline, sterile; Route: CSF/CNS; SC; Species: Rat; Pump: 2004; 2002; Duration: 14, 22 days;
ALZET Comments: Controls received mp w/ saline; animal info (male, Sprague Dawley, 324-349 g); 7,8-DHF is a TrKB receptor antagonist

13. Lithium


Agents: Lithium Chloride Vehicle: Water; Route: SC; Species: Rat; Pump: 2001D; Duration: 1 day;
ALZET Comments: Dose (750 mM/day); Controls received mp w/ vehicle; animal info (Sprague–Dawley, 150-250 g); cardiovascular;


Agents: Lithium chloride; RO25-6981; bretazenil Vehicle: Saline; Route: CSF/CNS (fourth ventricle; parabrachial nucleus); Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle or sham surgery; animal info (male, Agrp DTR/+ or WT); bilateral cannula used; dose-response (pg.14766, fig.3; pg.14769, fig.6); behavioral testing (food intake); tissue perfusion (fourth ventricle; parabrachial nucleus); Cannula placement verified; RO25-6981 is a NR2B antagonist; bilateral infusion;


Agents: Lithium Chloride Vehicle: Saline, physiological; Route: SC; Species: Mice; Pump: 2004; Duration: 28 days;
**ALZET Comments:** Controls received mp w/ vehicle; enzyme inhibitor (Glycogen synthase kinase-3); animal info (female, C57BL/6, 8-10 wks old, spinal cord injury/laminectomy); behavioral testing (BBB locomotor scale, grid walking, footprint analysis).

**P9776:** D. J. Pulford, *et al.* Chronic lithium administration down regulates transthyretin mRNA expression in rat choroid plexus. Neuropsychiatric Disease and Treatment 2006;2(4):549-555

**Agents:** Lithium chloride  
**Vehicle:** Water, sterile;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 28 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, C57BL/6, 8-10 wks old, spinal cord injury/laminectomy); behavioral testing (BBB locomotor scale, grid walking, footprint analysis).


**Agents:** MTII; Lithium chloride  
**Vehicle:** Route: IP;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ saline; comparison of IP, IV, SC injections vs. IP mp; MTII is a melanocortin agonist.

### 14. Maprotiline


**ALZET Comments:** Amitriptyline; moclobemide; citalopram hydrobromide; maprotiline; SC; Rat; 3, 21 days; Controls received mp w/isotonic saline; enzyme inhibitor (monoamine oxidase-A); animal info (male, Sprague-Dawley, 200-250 g); "This method of delivery was chosen to avoid daily injections and thus manipulation of the animals." (p. 30); antidepressants.


**ALZET Comments:** Clomipramine; Fluoxetine; Desipramine; Phenelzine; Maprotiline; SC; Rat; 2ML4; 21 days; antidepressant; no comment posted.


**ALZET Comments:** Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

### 15. Mianserin

**P2365:** P. J. Mitchell, *et al.* Chronic treatment with clomipramine and mianserin increases the hierarchial position of subdominant rats housed in triads. Behav. Pharmacology 1992;3(239-247

**ALZET Comments:** Clomipramine; Mianserin; Water; SC; Rat; 2002; 7/14 days; antidepressant; controls received mp w/ water or sham op; no stress (see pg. 241).


**ALZET Comments:** Tunicamycin; Cycloheximide; Desipramine; Fluoxetine; Mianserin; Trazodone; CSF/CNS; SC; Rat; 2001; 2ML1; 4-7 days; comparison of sc injections vs. mp; cyclo. and tunica. delivered icv for 5 days.
**ALZET Comments:** Mianserin; DMSO; SC; Rat; 2ML2; 2, 14 days; functionality of mp verified by measuring residual volume, serum drug levels; tetracyclic antidepressant, 5HT antagonists.

**ALZET Comments:** Desipramine; Mianserin; SC; Rat; 2ML2; 2-3 weeks; comparison of agents effects; DMI 2 wks, Mianserin 3 wks.

16. Milnacipran

**ALZET Comments:** Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine; Saline; SC; Rat; 2ML4; 14 days; Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/ vehicle; animal info (Male adult Wistar rats weighing 180–200 g).

**ALZET Comments:** Milnacipran; Saline; SC; Rat; 2ML2; Controls received sham operation; animal info (Sprague Dawley, 320-350 g.); behavioral testing (withdrawal response); "The pump makes it possible to precisely and continuously administer systemic drug-delivery without any repeated harmful treatment" pg. 381.

**ALZET Comments:** Milnacipran; Desipramine; PEG 300; Water; Rat; 2ML4; 27 days; antidepressant; controls received mp w/vehicle; functionality of mp verified by blood levels (p. 151); comparison of oral administration vs. mp; stress/adverse reaction: skin necrosis w/desipramine pumps; route not stated.

17. Mirtazapine

**Agents:** Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;
**ALZET Comments:** Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/vehicle; animal info (Male adult Wistar rats weighing 180–200 g);

**Agents:** Pramipexole HCL; Mirtazapine **Vehicle:** Pramipexole HCL; Mirtazapine; **Route:** SC; **Species:** Rat; **Pump:** 2002, 2ML4; **Duration:** 12 - 14 days;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (250-300 g, male Sprague-Dawley rats); For mirtazapine, saline brought to 5.5-6.0 pH with 1 N NaOH; good methods (pg. 79); neurodegenerative (Parkinson’s disease); behavioral testing (forelimb step task); PPX is a dopamine D2 receptor agonist; Mirtazapine is an atypical antidepressant; akinesia and risk-taking rat model; Dose (PPX 0.3 and 1.2 mg/kg/day; Mirtazapine 5 mg/kg/day);

Agents: acetaminophen, cephalothin sodium salt, clindamycin hydrochloride, disopyramide phosphate salt, labetalol hydrochloride, nitrofurantoin + propanolol hydrochloride, terbutaline hemisulfate salt, verapamil hydrochloride, Acyclovir, alprazolam, atenolol, anhydrous caffeine, cefotaxime sodium salt, cephalixin sodium salt, diltiazem hydrochloride, metronidazole, nitrazepam, prednisolone, 6-propyl-2-thiouracil, trazadone hydrochloride, chloramphenicol, cimetidine, theophylline, flunoxazole, metoprolol, mirtazapine, praziquantel, quetiapine fumarate, triprolidine hydrochloride, metformin, moclobemide.

Vehicle: DMSO; water; Route: IP; Species: mice; Pump: 1003D; Duration: Not Stated;

ALZET Comments: animal info: lactating mice, postnatal age of 14 days; functionality of mp verified by measurement of drug concentration in milk and plasma; mp were used to infuse study lactational drug transfer.


Agents: Mirtazapine Vehicle: HCl; Ringer’s solution; Route: SC; Species: Rat; Pump: 2ML4; Duration: 21 days;

ALZET Comments: Animal info (Sprague-Dawley, male, 5 wks old)


Agents: Desipramine; mirtazapine; chlorpheniramine; Paroxetine; scopolamine; amphetamine; escitalopram; chloridiazepoxide Vehicle: Not Stated; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14, 21 days;

ALZET Comments: Controls received mp w/ vehicle; dose-response (Fig 2-5); pumps replaced on day 14; good methods pg 629; animal info (male, Sprague Dawley, 5-7 mo old, 550-700g); "Importantly, use of minipumps also eliminates the need for repeated handling and injection of animals to administer the drug chronically." pg. 628; IP catheter used

18. Nomifensine


ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

19. Notryiptyline


ALZET Comments: Nortriptyline; Amitriptyline; Clomipramine; Alaproclate; Clonazepam; Alcohol; Saline; SC; Rat; 2ML2; 14 days; antidepressant; controls received mp w/ vehicle; functionality of mp verified by plasma levels; dose-response (Table 1; pg. 177); enzyme inhibitor; clonazepam is a benzodiazepene; the others are monoamine uptake inhibitors.

20. Paroxetine


Agents: Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 14 days;

ALZET Comments: Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/ vehicle; animal info (Male adult Wistar rats weighing 180–200 g);
Agents: Paroxetine Vehicle: Not Stated; Route: SC; Species: Mice (transgenic); Pump: 2004; Duration: Not Stated;
ALZET Comments: Controls received mp w/ saline; animal info (male, bp120 tg, adult, 8-9 weeks old); functionality of mp verified by residual volume; pumps primed overnight at 37C;

Agents: Paroxetine; fluoxetine Vehicle: DMSO; water; Route: SC; Species: Mice; Pump: 1002; Duration: 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL6, myocardial infarction); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)

Q3871: M. El Mansari, et al. Restoration of Serotonin Neuronal Firing Following Long-Term Administration of Bupropion but Not Paroxetine in Olfactory Bulbectomized Rats. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2015;18(U87-U94
Agents: Bupropion; paroxetine Vehicle: Water; ethanol; Route: SC; Species: Rat; Pump: Not Stated; Duration: 2 days; 14 days; 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 300-500g, olfactory bulbectomized); 50% ethanol used; behavioral testing (open field);

Agents: Paroxetine Vehicle: Not Stated; Route: Not Stated; Species: Rat; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (Sprague Dawley, male, 225-250 g); pumps replaced after 2 weeks

21. Phenelzine

Agents: Cyclosporine A, Phenelzine Vehicle: Saline; Cremophor; Ethanol; Route: SC; Species: Rat; Pump: 2ML1; Duration: 3 days;
ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (3 months old, Sprague Dawley); neurodegenerative (Traumatic Brain Injury); 50mg/mL in saline/650 mg Cremophor/32.9% ethanol/ mL;

Agents: Phenelzine; desipramine; paroxetine Vehicle: DMSO; PEG; water, distilled; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, adult, 5-7 mo old); Osmotic minipumps were chosen for AD delivery because they slowly release drug over 14 days, thus eliminating the stress animals would experience by daily injections of the AD" pg 83; IP catheter used; wound clips used; enzyme inhibitor (monoamine oxidase); 50% DMSO used; 25% PEG used

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride;
sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate Vehicle: Polyethylene
glycol; DMSO; water; water, distilled; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of
mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The
distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the
peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous
space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

P9373: F. Chenu, et al. Long-term administration of monoamine oxidase inhibitors alters the firing rate and pattern of
dopamine neurons in the ventral tegmental area. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY
Agents: Clorgyline; phenelzine; deprenyl Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 2, 21
days;
ALZET Comments: Controls received mp w/ saline; enzyme inhibitor (MAO, monoamine oxidase); animal info (male,
Sprague Dawley, 250-300 g.)

Agents: Amitriptyline HCl; venlafaxine HCl; clordiazepoxide HCl; imipramine HCl; phenelzine sulfate; scopolamine HBr;
desipramine HCl; bupropion HCl; chlorpheniramine maleate; fluoxetine HCl; sertraline; amphetamine sulfate, D-
Vehicle: Water, sterile distilled; PEG; Route: SC; Species: Rat; Pump: 2ML2; Duration: 6,14 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by agent blood levels; dose-response (fig.
5); animal info (male, female, susceptible, selectively bred); some animals had saline-filled catheter attached to mp to delay
drug infusion by 5 days; "The most notable advantage of minipump delivery is that it eliminates stress resulting from daily
injection of drug....minipumps also provide constant infusion of drug" (pg. 22)

22. Reboxetine

Q8019: I. L. Gutierrez, et al. Reboxetine Treatment Reduces Neuroinflammation and Neurodegeneration in the 5xFAD
Mouse Model of Alzheimer's Disease: Role of CCL2. Mol Neurobiol 2019;56(12):8628-8642
Agents: Reboxetine Mesylate Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; Duration: 28 days;
ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (CCL2KO); neurodegenerative
(Alzheimer's Disease);

Agents: Reboxetine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2004; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, adult)

Q2721: A. A. Fossa, et al. Improved preclinical cardiovascular therapeutic indices with long-term inhibition of
norepinephrine reuptake using reboxetine. TOXICOLOGY AND APPLIED PHARMACOLOGY 2012;264(3):343-350
Agents: Reboxetine Vehicle: Water, sterile; Route: SC; Species: Rat; Pump: 2ML4; Duration: 28 days;
ALZET Comments: Control animals received mp w/ vehicle; functionality of mp verified via residual volume

P9879: Z. Zhao, et al. Association of Changes in Norepinephrine and Serotonin Transporter Expression with the Long-Term
Behavioral Effects of Antidepressant Drugs. Neuropsychopharmacology 2009;34(6):1467-1481
Agents: Protriptyline; reboxetine; sertraline; venlafaxine Vehicle: DMSO; saline; ethanol; Route: SC; Species: Rat; Pump:
2ML2; 2ML4; Duration: 14, 42 days;
ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male,
Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used
Agents: Reboxetine; citalopram Vehicle: Saline; Route: SC; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Controls received mp w/vehicle; animal info (male, Sprague Dawley)

23. Ritanserin

ALZET Comments: Metergoline; Ritanserin; SC; Guinea pig; 4 day; antidepressant; controls received mp w/ NaCl; comparison of IV injections vs. mp.

24. Sertraline

Agents: Sertraline Vehicle: Ethanol; Route: SC; Species: Rat; Pump: 2001; Duration: 1 week;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 7-8 weeks old, 250-400g); 50% ethanol used; behavioral testing (open field); diabetes; Dose (7.5 mg/kg/day);

Agents: Desipramine; sertraline Vehicle: Not Stated; Route: Not Stated; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-350 g)

Agents: Sertraline; desipramine Vehicle: Ethanol; saline; Route: IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, adult, male, 250-350 g); nitrocellulose filters used; 10% ethanol used

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate Vehicle: Polyethylene glycol; DMSO; water; water, distilled; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity.” pg 4;

Agents: Protriptyline; reboxetine; sertraline; venlafaxine Vehicle: DMSO; saline; ethanol; Route: SC; Species: Rat; Pump: 2ML2; 2ML4; Duration: 14, 42 days;
ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male, Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used

25. Sulpiride


ALZET Comments: Quinpirole HCl; Sulpiride; Triazolam; Ascorbic acid; DMSO; SC; mice; 2001; 6 days; Quinpirole is a dopamine agonist; antidepressant; stability verified in vitro for 7 days.


ALZET Comments: Dopamine, 6-hydroxy-; Haloperidol; Sulpiride; CSF/CNS; Rat; 8 days; Japanese, English abstract.


ALZET Comments: Dopamine HCl; Sulpiride; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); IP; Rat; 13 days; mp model not stated; comparison of SULP ip injec vs. mp infusion; 2 mp/rat - bilateral infusion; mp primed overnight; vehicles listed used w/DOP; concomitant SULP admin. ip.

26. Tandospirone


ALZET Comments: Tandospirone; Imipramine; 1-PP; Water, deionized; SC; Rat; 2ML2; 14 days, 24 hours; antidepressant; controls received mp with saline; comparison of sc injections vs. mp; 1-PP is a tandospirone metabolite; tandospirone is an azapirone; multiple pumps per animal (2).


ALZET Comments: Tandospirone; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/saline; tandospirone is SM-3997, a 5-HT1A receptor ligand.

27. Tianeptine


ALZET Comments: Tianeptine; SC; Rat; 14 days; controls received mp w/ saline; tianeptine is a tricyclic antidepressant.


ALZET Comments: Tianeptine; SC; Rat; 14 days; antidepressant; controls received mp w/saline; comparison of IV injections vs. mp; half-life of tianeptine is 2.5 hrs, (p.117).
28. Tranylcypromine

**Q0143:** S. Argueelles, *et al.* Degeneration of dopaminergic neurons induced by thrombin injection in the substantia nigra of the rat is enhanced by dexamethasone: Role of monoamine oxidase enzyme. Neuroxicology 2010;31(1):55-66

**Agents:** Tranylcypromine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2002;  
**Duration:** 12 days;  

**ALZET Comments:** Animal info (female, albino, Wistar, 200-250 g.)


**Agents:** Reboxetine methanesulfonate; fluoxetine HCl; Venlafaxine HCl; Tranylcypromine HCl  
**Vehicle:** Saline; DMSO;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML2; 2ML4;  
**Duration:** 26 or 27 days;  

**ALZET Comments:** antidepressant; Controls received mp w/ vehicle; functionality of mp verified by drug serum levels; 2ML2 pumps replaced after 2 weeks; 2ML4 pumps used for all antidepressants except fluoxetine, which required serial 2ML2 implantation due to solubility problems; venlafaxine given for 27 days; all other drugs infused for 26 days; fluoxetine vehicle was 12% DMSO


**Agents:** Phenelzine; Tranylcypromine, 4-methoxy-; Acetylphenelzine, N2-; Tranylcypromine, 4-fluoro-; Tranylcypromine; Deprenyl  
**Vehicle:** Not Stated;  
**Route:** SC; IP;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 28 days;  

**ALZET Comments:** antidepressant; controls received mp w/ vehicle; comparison of TCP and PLZ ip injections vs. mp


**Agents:** Tranylcypromine  
**Vehicle:** Water, distilled;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML2;  
**Duration:** 4, 10 or 28 days;  

**ALZET Comments:** antidepressant; controls received mp w/ water; enzyme inhibitor


**Agents:** Tranylcypromine  
**Vehicle:** Water, distilled;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML2;  
**Duration:** 4, 10 or 28 days;  

**ALZET Comments:** antidepressant; controls received mp w/ water; enzyme inhibitor

29. Trazodone


**ALZET Comments:** Trazodone; Cyclodextrin, hydroxypropyl beta; SC; Rat; 2, 14 days; Controls received mp w/ vehicle; animal info (Wistar, male, 280-320 g); 20% cyclodextrin used; electrophysiology.


**ALZET Comments:** Trazodone; Cyclodextrin, hydroxypropyl, beta-; SC; Rat; 2, 14 days; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-350 g); 20% cyclodextrin used; dose-response.


**ALZET Comments:** Tunicamycin; Cycloheximide; Desipramine; Fluoxetine; Mianserin; Trazodone; CSF/CNS; SC; Rat; 2001; 2ML1; 4-7 days; comparison of sc injections vs. mp; cyclo. and tunica. delivered icv for 5 days.
30. Tryptophan, Hydroxy

ALZET Comments: Tryptophan, L-5-hydroxy; SC; Rat; 2001; no duration posted; pumps replaced four times during study; incorrectly states model 2001 pumps at 2ul/hr, early study showed compound stability for 1 week.

ALZET Comments: Tryptophan, L-5-hydroxy; SC; Rat; 2001; no duration posted; stability verified by HPLC after 6.5 days in pumps.

31. Tryptophan

ALZET Comments: Arginine; cystine, histidine; isoleucine; leucine; lysine; methionine; phenylalanine; threonine; tryptophan; tyrosine; valine; CSF/CNS; Rat; 2002; 6 days; Animal info (male, Sprague Dawley, 5 -7 weeks old).

ALZET Comments: Lisinopril; lisinopril-tryptophan; Saline; Mice (transgenic); 2 weeks; Controls received mp w/ vehicle; animal info (TtRhRen, 2-3 months old); cardiovascular; antihypertensive; lisinopril-tryptophan aka lisW-S; bp measured using tail cuff and radiotelemetry.

ALZET Comments: Tryptophan, L-; SC; Rat; 2001; 7 days; 24 hours; antidepressant; controls received sc injections of saline; comparison of sc injections vs. mp; stress/adverse reaction: pg. 364; connective tissue grew over mp opening.

ALZET Comments: Tryptophan, L-; Ammonium hydroxide; SC; mice; 2001; 24, 96 hours; controls received mp w/ vehicle; dose-response (graph); NH4OH was used as vehicle for TRP due to the limited solubility of TRP in water and saline; no stress.

32. Venlafaxine

Agents: methadone; escitalopram; venlafaxine; desipramine; clomipramine Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence


Agents: Venlafaxine Vehicle: NaCl; Route: SC; Species: Rat; Pump: 2001; Duration: 3 weeks;
ALZET Comments: Controls received sham surgery; animal info (male, Dark Agouti, 8 weeks old; 150g); diabetes;


Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate Vehicle: Polyethylene glycol; DMSO; water; water, distilled; Route: SC; IP; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague -Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;


Agents: Protriptyline; reboxetine; sertraline; venlafaxine Vehicle: DMSO; saline; ethanol; Route: SC; Species: Rat; Pump: 2ML2; 2ML4; Duration: 14, 42 days;
ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male, Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used


Agents: Venlafaxine Vehicle: PBS; Route: SC; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Controls received mp w/vehicle; animal info (female, SJL/J, 6-12 wks)

33. Viloxazine


ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.


ALZET Comments: Amitriptyline; Citalopram; Desipramine; Pargyline; Viloxazine; Saline; SC; Rat; 2002; 18 days; comparison of acute ip injec vs. mp infusion; comparison of agents effects; antihypertensive.
34. Zimeldine


**ALZET Comments:** Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.