



### References on the Administration of Amphetamines Using ALZET® Osmotic Pumps

**Q7057:** P. Petschner, V. Tamasi, C. Adori, E. Kirilly, R. D. Ando, L. Tothfalusi and G. Bagdy. Gene expression analysis indicates reduced memory and cognitive functions in the hippocampus and increase in synaptic reorganization in the frontal cortex 3 weeks after MDMA administration in Dark Agouti rats. *BMC Genomics* 2018;19(1):580

**ALZET Comments:** Methamphetamine, 3,4-methylenedioxy-; Saline; SC; Rat; 2001; Controls received mp w/ vehicle; animal info (8-week old Dark Agouti rats weighing 152 +/- 3.58 g); 3,4-methylenedioxymethamphetamine aka MDMA or ecstasy;.

**Q7002:** P. Petschner, V. Tamasi, C. Adori, E. Kirilly, R. D. Ando, L. Tothfalusi and G. Bagdy. Gene expression analysis indicates reduced memory and cognitive functions in the hippocampus and increase in synaptic reorganization in the frontal cortex 3 weeks after MDMA administration in Dark Agouti rats. *BMC Genomics* 2018;19(1):580

**ALZET Comments:** Methamphetamine, 3,4-methylenedioxy-; Saline; SC; Rat; 2001; Controls received mp w/ vehicle;.

**Q6700:** D. Moller, A. Banerjee, T. C. Uzuneser, M. Skultety, T. Huth, B. Plouffe, H. Hubner, C. Alzheimer, K. Friedland, C. P. Muller, M. Bouvier and P. Gmeiner. Discovery of G Protein-Biased Dopaminergics with a Pyrazolo[1,5-a]pyridine Substructure. *J Med Chem* 2017;60(7):2908-2929

**ALZET Comments:** Amphetamine; DMSO; acetic acid; water; SC; Rat; 2ML1; 7 days; Dose (1.5 mg/kg/day); 2% acetic acid, 25% DMSO used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats weighing 300–350 g); dependence.

**Q6443:** S. V. Kyosseva and W. D. Wessinger. Chronic administration of MDMA (“ECSTASY”) increases insulin-regulated glucose transporter GLUT4 in rat brain and heart. 2017;

**ALZET Comments:** Methamphetamine, 3,4-methylenedioxy; Saline; SC; Rat; 2ML2; 10 days; Dose (0.3 or 3 mg/kg/day); animal info (Sprague-Dawley rats);.

**Q6649:** E. E. Reichard, N. Nanaware-Kharade, G. A. Gonzalez, 3rd, S. Thakkar, S. M. Owens and E. C. Peterson. PEGylation of a High-Affinity Anti-(+)-Methamphetamine Single Chain Antibody Fragment Extends Functional Half-Life by Reducing Clearance. *Pharm Res* 2016;33(12):2954-2966

**ALZET Comments:** Methamphetamine; Saline; SC; Rat; 2 weeks; Dose (3.2 mg/kg/day); animal info (Adult male Sprague-Dawley rats (275-320 g)); Methamphetamine aka METH; dependence; Industry authored (InterveXion Therapeutics, LLC);.

**Q4545:** N. Nanaware-Kharade, S. Thakkar, G. I. Gonzalez, E. C. Peterson and E. C. Peterson. A Nanotechnology-Based Platform for Extending the Pharmacokinetic and Binding Properties of Anti-methamphetamine Antibody Fragments. *SCIENTIFIC REPORTS* 2015;5(U1-U10)

**ALZET Comments:** Methamphetamine; SC; Rat; 10 days; Animal info (male, Sprague Dawley, adult, 280-310g); functionality of mp verified by blood levels; dependence; cardiovascular;.

**Q4443:** A. C. Harris, M. G. LeSage, D. Shelley, J. L. Perry, P. R. Pentel, S. M. Owens and A. C. Harris. The Anti-(+)-Methamphetamine Monoclonal Antibody mAb7F9 Attenuates Acute (+)-Methamphetamine Effects on Intracranial Self-Stimulation in Rats. *PLoS One* 2015;10(U408-U420)

**ALZET Comments:** Methamphetamine hydrochloride; Saline; SC; Rat; 2ML2; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 275-300g); functionality of mp verified by elevations in ICSS; behavioral testing (ICSS); dependence; pumps removed after 7 days;.

**Q4390:** P. W. Czoty, P. Tran, L. N. Thomas, T. J. Martin, A. Grigg, B. E. Blough, T. J. R. Beveridge and P. W. Czoty. Effects of the dopamine/norepinephrine releaser phenmetrazine on cocaine self-administration and cocaine-primed reinstatement in rats. *PSYCHOPHARMACOLOGY* 2015;232(2405-2414)

**ALZET Comments:** Amphetamine, D-; phenmetrazine; Saline; SC; Rat; 2001; 14 days; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 300-350g); pumps replaced every 7 days; behavioral testing (cocaine self-administration, food self-administration); dependence;.



**Q3632:** B. A. Zimmer, K. A. Chiodo and D. C. S. Roberts. Reduction of the reinforcing effectiveness of cocaine by continuous D-amphetamine treatment in rats: importance of active self-administration during treatment period. *Psychopharmacology* 2014;231(5):949-954

**ALZET Comments:** Amphetamine, D-; Saline, sterile; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 12 week old, 350g); behavioral testing (cocaine self-administration); dependence; pumps removed on day 7; used amphetamine concentration of approx 73ug/ul.

**Q3319:** T. F. Rau, A. S. Kothiwala, A. R. Rova, D. M. Brooks, J. F. Rhoderick, A. J. Poulsen, J. Hutchinson and D. J. Poulsen. Administration of low dose methamphetamine 12 h after a severe traumatic brain injury prevents neurological dysfunction and cognitive impairment in rats. *Experimental Neurology* 2014;253(1):31-40

**ALZET Comments:** Methamphetamine; IV (femoral); Rat; 2001D; 24 hours; Controls received mp w/ vehicle; animal info (male, Wistar, 350-500g); functionality of mp verified by plasma serum levels; dose-response (pg.33); behavioral testing (foot fault assessment, morris water maze); pumps implanted in inguinal crease; catheter preloaded with 50% dextrose/50% heparin; pumps removed after 61-65hours;.

**Q3814:** I. D. Blum, L. Zhu, L. Moquin, M. V. Kokoeva, A. Gratton, B. Giros, K. F. Storch and K. F. Storch. A highly-tunable dopaminergic oscillator generates ultradian rhythms of behavioral arousal. *ELIFE* 2014;3(U146-U189)

**ALZET Comments:** Methamphetamine; Saline; SC; Mice; 1002; 2 weeks; Animal info (Bmal1 -/-, ); behavioral testing (locomotor activity running wheels); dependence; delayed delivery; catheter filled with saline for 4 day recovery; used plastics one catheter;.

**Q3416:** C. T. Bauer, M. L. Banks, S. S. Negus and S. S. Negus. The effect of chronic amphetamine treatment on cocaine-induced facilitation of intracranial self-stimulation in rats. *Psychopharmacology* 2014;231(2461-2470)

**ALZET Comments:** Amphetamine; Saline; SC; Rat; 2ML4; 14 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 311-406g); post op. care (Ketoprofen 5 mg/kg); behavioral testing (cocaine self administration); dependence; pumps removed after 14 days;.

**Q5002:** M. Iijima, H. Koike and S. Chaki. Effect of an mGlu2/3 receptor antagonist on depressive behavior induced by withdrawal from chronic treatment with methamphetamine. *Behav Brain Res* 2013;246(24-8)

**ALZET Comments:** methamphetamine (MAP); saline; SC; Rat; 2ML1; 5 days; animal info: male, Sprague-Dawley, 5 wks old; tolerance studies; dependence; behavioral testing: forced swimming test, locomotor activity; mp used to infuse methamphetamine to induce a withdrawal-like effect in rats to study the effect of LY341495 (mGlu2/3 receptor antagonist) on withdrawal-induced depressive behavior; dose: 2.5, or 5 mg/kg/day.

**Q2909:** G. L. Ding, M. Chopp, D. J. Poulsen, L. Li, C. S. Qu, Q. J. Li, S. P. Nejad-Davarani, J. S. Budaj, H. T. Wu, A. Mahmood and Q. Jiang. MRI of Neuronal Recovery after Low-Dose Methamphetamine Treatment of Traumatic Brain Injury in Rats. *PLoS One* 2013;8(4):U175-U183

**ALZET Comments:** Methamphetamine; IV; Rat; 24 hours; Controls received mp w/ saline; animal info. (male, wistar rats, 200-300 g); functionality of mp verified by MRI measurement of fractional anisotropy.

**Q2683:** T. F. Rau, A. S. Kothiwala, A. R. Rova, D. M. Brooks and D. J. Poulsen. Treatment with low-dose methamphetamine improves behavioral and cognitive function after severe traumatic brain injury. *JOURNAL OF TRAUMA AND ACUTE CARE SURGERY* 2012;73(1):S165-S172

**ALZET Comments:** Methamphetamine; IV (femoral); Rat; 2001D; 24 hours; Control animals received mp w/ saline; animal info (Wistar, male, adult, 400 g); PE50 tubing used.

**Q1237:** H. Miyata, M. Itasaka, N. Kimura and K. Nakayama. Decreases in Brain Reward Function Reflect Nicotine- and Methamphetamine-Withdrawal Aversion in Rats. *Current Neuropharmacology* 2011;9(1):63-67

**ALZET Comments:** Nicotine; methamphetamine; Saline; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 332-396 g).



**Q1707:** K. S. Bhatia, S. T. Szabo, J. C. Fowler, W. C. Wetsel and T. H. Lee. Reversal of long-term methamphetamine sensitization by combination of pergolide with ondansetron or ketanserin, but not mirtazapine. *Behavioural Brain Research* 2011;223(1):227-232

**ALZET Comments:** Methamphetamine hydrochloride; Saline; SC; Rat; 2ML1; 7 days; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 275-300 g); functionality of mp verified via residual volume.

**Q0496:** N. Kitanaka, J. Kitanaka, T. Tatsuta, K. Tanaka, K. Watabe, N. Nishiyama, Y. Morita and M. Takemura. Withdrawal from Fixed-Dose Injection of Methamphetamine Decreases Cerebral Levels of 3-Methoxy-4-hydroxyphenylglycol and Induces the Expression of Anxiety-Related Behavior in Mice. *Neurochemical Research* 2010;35(5):749-760

**ALZET Comments:** Methamphetamine; Saline, sterile; SC; Mice; 2002; 1 week; Controls received mp w/ vehicle; animal info (ICR, 38-55 g); wound clips used; behavioral testing (tail suspension).

**Q0413:** A. Der-Avakian and A. Markou. NEONATAL MATERNAL SEPARATION EXACERBATES THE REWARD-ENHANCING EFFECT OF ACUTE AMPHETAMINE ADMINISTRATION AND THE ANHEDONIC EFFECT OF REPEATED SOCIAL DEFEAT IN ADULT RATS. *Neuroscience* 2010;170(4):1189-1198

**ALZET Comments:** Amphetamine; SC; Rat; 2ML1; 7 days; Controls received mp w/saline; animal info (maternally separated, Long Evans); behavioral testing (maternal behavior).

**R0352:** A. A. Boulton. *Animal Models of Dementia*. Springer Protocols 2010;48(1-721

**ALZET Comments:** Amphetamine sulfate; Dopamine; Propylene Glycol; SC; CSF/CNS (nucleus accumbens); Rat; 2ML2; 14 days; comparison of injections and sytastic pellet vs mp; pulsed delivery; PE tubing contained drug and a dye in short sections interspersed with a substance immiscible with drug, to allow 12 hour infusions of drug and 12-hour infusions of the inert substance (perfluorodecalin) throughout a 14 day infusion period.; pumps primed in a physiological saline solution at 37°C for 4 hours.

**Q0363:** S. J. White, E. M. Laurenzana, W. B. Gentry, H. P. Hendrickson, D. K. Williams, K. W. Ward and S. M. Owens. Vulnerability to (+)-Methamphetamine Effects and the Relationship to Drug Disposition in Pregnant Rats during Chronic Infusion. *TOXICOLOGICAL SCIENCES* 2009;111(1):27-36

**ALZET Comments:** Methamphetamine; amphetamine; SC; Rat (pregnant); 2ML2; 2 weeks; Controls received mp w/ saline; animal info (female, Sprague-Dawley, 180-270 g); dose-response (fig. 1); no stress (see pg.) There were no observable adverse health changes" pg 30; stress/adverse reaction (see pg. 30) "Two rats (in the 10- and 13.2-mg/kg/day groups) developed an abscess at the pump site, which appeared to be confined to the sc minipump implantation site." pg 30; "one animal chewed her skin at the pump site, exposing the osmotic pump" pg 30. "CIS corrected for the bioavailability or fraction of the drug absorbed (CIS/F) was calculated using the equation, CIS/F = infusion rate/CSS, where CSS is the steady-state drug concentration" pg 29.

**P9610:** C. H. K. West, J. C. Ritchie, K. A. Boss-Williams and J. M. Weiss. Antidepressant drugs with differing pharmacological actions decrease activity of locus coeruleus neurons. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2009;12(5):627-641

**ALZET Comments:** Desipramine; mirtazapine; chlorpheniramine; Paroxetine; scopolamine; amphetamine; escitalopram; chlordiazepoxide; SC; IP; Rat; 2ML2; 14, 21 days; 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.

**Q0361:** E. M. Laurenzana, H. P. Hendrickson, D. Carpenter, E. C. Peterson, W. B. Gentry, M. West, Y. N. Che, F. I. Carroll and S. M. Owens. Functional and biological determinants affecting the duration of action and efficacy of anti-(+)-methamphetamine monoclonal antibodies in rats. *VACCINE* 2009;27(50):7011-7020

**ALZET Comments:** Methamphetamine; Saline, sterile; SC; Rat; 1003D; Animal info (male, Sprague-Dawley, 250-280 g); 2-week ALZET pump used.



**Q0431:** K. A. Chiodo and D. C. S. Roberts. Decreased reinforcing effects of cocaine following 2 weeks of continuous d-amphetamine treatment in rats. *Psychopharmacology* 2009;206(3):447-456

**ALZET Comments:** Amphetamine, D-; Saline, sterile; SC; Rat; 2001; 14 days; Animal info (male, Sprague-Dawley, 350 g).

**P9284:** G. S. Griesbach, D. A. Hovda, F. Gomez-Pinilla and R. L. Sutton. Voluntary exercise or amphetamine treatment, but not the combination, increases hippocampal brain-derived neurotrophic factor and synapsin I following cortical contusion injury in rats. *Neuroscience* 2008;154(2):530-540

**ALZET Comments:** Amphetamine sulfate; Saline, sterile; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; no stress (see pg. 535); post op. care (Bupivacaine, antibiotic ointment); ischemia (cerebral); animal info (male, Sprague Dawley, 285 g., CCl injury); behavioral testing (voluntary wheel exercise); "This drug administration method was chosen since our prior studies of RW exposure after TBI have left animals undisturbed for the 1 week exercise period." (p. 530).

**P9397:** K. A. Chiodo, C. M. Laeck and D. C. S. Roberts. Cocaine self-administration reinforced on a progressive ratio schedule decreases with continuous D-amphetamine treatment in rats. *Psychopharmacology* 2008;200(4):465-473

**ALZET Comments:** Amphetamine sulfate, D-; Saline; SC; Rat; 2001; 7, 14 days; Controls received mp w/ vehicle; pump replaced after 7 days; no stress (see pg. 470, 472); tolerance; animal info (male, Sprague Dawley, 350 g.) Behavioral testing (cocaine self-administration, food-reinforced responding); "the present dose delivered via mini-pump is not debilitating or overtly toxic." (p. 472).

**P8685:** C. Davidson, Q. Chen, X. Zhang, X. Y. Xiong, C. Lazarus, T. H. Lee and E. H. Ellinwood. Deprenyl treatment attenuates long-term pre- and post-synaptic changes evoked by chronic methamphetamine. *European Journal of Pharmacology* 2007;573(1-3):100-110

**ALZET Comments:** Methamphetamine; Saline; SC; Rat; 2ML1; 7 days; Controls received mp w/ vehicle; functionality of mp verified by residual volume; dose-response (fig. 1, p. 104); stress/adverse reaction: (see pg. 101) "Animals that did show self-injuries were treated with an oral antibiotic (Sulfatrim) in their drinking water and, if this was ineffective they were humanely destroyed" p. 101; good methods p. 102; half-life (p. 101) "short"; post op. care (Apo-sulfatrim); animal info (male, Sprague-Dawley, 360-400g); "The pump was removed after 7 days... no animal had greater than 0.2 ml methamphetamine (ie 10% initial volume) remaining" (p. 102).

**P7972:** X. W. Zhang, T. H. Lee, X. Y. Xiong, Q. Chen, C. Davidson, W. C. Wetsel and E. H. Ellinwood. Methamphetamine induces long-term changes in GABA<sub>A</sub> receptor alpha 2 subunit and GAD<sub>67</sub> expression. *Biochemical and Biophysical Research Communications* 2006;351(1):300-305

**ALZET Comments:** Methamphetamine; SC; Rat; 2ML1; 7 days; Controls received mp w/ saline; functionality of mp verified by residual volume; comparison of injections vs. mp; good methods (p. 301); animal info (male, Sprague-Dawley, 300-320 grams); behavioral study.

**P7795:** D. Peleg-Raibstein, E. Sydekum, H. Russig and J. Feldon. Withdrawal from continuous amphetamine administration abolishes latent inhibition but leaves prepulse inhibition intact. *Psychopharmacology* 2006;185(2):226-239

**ALZET Comments:** Amphetamine; SC; Rat; 2001; 2ML1; 7 days; Controls received mp w/ vehicle or saline; dose-response (fig. 4); comparison of escalating SC dose injections vs. mp; dependence; post op. care (PVP-iodine); animal info (male, wistar, 300-350 g).

**P7312:** R. Zhou, N. A. Gray, P. X. Yuan, X. X. Li, J. S. Chen, G. Chen, P. mschroder-Williams, J. Du, L. Zhang and H. K. Manji. The anti-apoptotic, glucocorticoid receptor cochaperone protein BAG-1 is a long-term target for the actions of mood stabilizers. *Journal of Neuroscience* 2005;25(18):4493-4502

**ALZET Comments:** Amphetamine; fluvoxamine; haloperidol; Water; ethanol; SC; Rat; 2ML4; 3 weeks; Functionality of mp verified by residual volume; 50% ethanol used [not suggested by ALZET].

**P7514:** C. H. K. West and J. M. Weiss. A selective test for antidepressant treatments using rats bred for stress-induced reduction of motor activity in the swim test. *Psychopharmacology* 2005;182(1):9-23

**ALZET Comments:** Amitriptyline HCl; venlafaxine HCl; clordiazepoxide HCl; imipramine HCl; phenelzine sulfate; scopolamine HBr; desipramine HCl; bupropion HCl; chlorpheniramine maleate; fluoxetine HCl; sertraline; amphetamine sulfate, D-;



Water, sterile distilled; PEG; SC; Rat; 2ML2; 6,14 days; 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).

**P7173:** C. Davidson, T. H. Lee and E. H. Ellinwood. Acute and chronic continuous methamphetamine have different long-term behavioral and neurochemical consequences. *NEUROCHEMISTRY INTERNATIONAL* 2005;46(3):189-203  
**ALZET Comments:** Methamphetamine; Saline, sterile; SC; Rat; 2ML1; 7 days; Controls received mp w/ vehicle; functionality of mp verified by residual volume; comparison of SC injections vs. mp; half-life (p. 189) 15-70 minutes in rodents; dependence; "MP treatment provides a better pharmacodynamic model for the human methamphetamine binger and may also better approximate the neuropathological outcome known in humans." (p. 200).

**P7090:** B. D. Armstrong and K. K. Noguchi. The neurotoxic effects of 3,4-methylenedioxymethamphetamine (MDMA) and methamphetamine on serotonin, dopamine, and GABA-ergic terminals: An in-vitro autoradiographic study in rats. *Neurotoxicology* 2004;25(6):905-914

**ALZET Comments:** Methamphetamine hcl; Methamphetamine hcl, 3,4-methylenedioxy-; Water, distilled; SC; Rat; 2ML1; 5 days; Controls received mp w/ vehicle; toxicology.

**P6686:** S. Semenova and A. Markou. Clozapine treatment attenuated somatic and affective signs of nicotine and amphetamine withdrawal in subsets of rats exhibiting hyposensitivity to the initial effects of clozapine. *Biological Psychiatry* 2003;54(11):1249-1264

**ALZET Comments:** Nicotine tartrate; amphetamine; clozapine; HCL; saline; SC; Rat; 2ML1; 7,14 days; Controls received mp w/ vehicle; pumps replaced every 7 days for the 14 day study infusing clozapine; dependence; "in this experiment involving three pump implantations each pump was placed in a different part of the rats' body (left or right side of the back of the animal or at the shoulder area)." p. 1252; behavioral study.

**R0216:** T. Kita, G. C. Wagner and T. Nakashima. Current research on methamphetamine-induced neurotoxicity: Animal model of monoamine disruption. *JOURNAL OF PHARMACOLOGICAL SCIENCES* 2003;92(3):178-195

**ALZET Comments:** Amphetamine; SC; Mice; 1 week; Toxicology; ALZET pumps mentioned on pg. 181, ref. 36; "These pumps have a continuous uniform rate assuring a constant drug concentration." (p. 181).

**P5001:** N. E. Paterson, C. Myers and A. Markou. Effects of repeated withdrawal from continuous amphetamine administration on brain reward function in rats. *Psychopharmacology* 2000;152(440-446)

**ALZET Comments:** Amphetamine sulfate; Saline; SC; Rat; 2ML1; 6 days; controls received mp w/ vehicle; dose-response (fig 1. p. 443); dependence; 2 administration periods, 1 6-day period, 12 days of withdrawal, then another 6-day period; "Even though the duration of amphetamine withdrawal was no longer, the magnitude of the effect was greater, and the use of mini-pumps eased drug administration considerably compared to repeated experimenter-administered injections". p. 445;.

**P3426:** M. Macedoni-Luksic and D. Sket. Scopolamine modulates the effects of continuous amphetamine in rats. *Acta Pharm* 1996;46(23-30)

**ALZET Comments:** Amphetamine sulfate, d-; Scopolamine hydrobromide; Saline; SC; Rat; 2ML1; 7 days; controls received mp w/ saline; functionality of mp verified by residual volume; tolerance.

**P2346:** T. H. Lee, E. H. Ellinwood Jr and H. Zhang. In vitro extracellular recording from nigral dopamine neurons following continuous d-amphetamine infusion. *Eur. J. Pharmacol* 1993;232(125-129)

**ALZET Comments:** Amphetamine sulfate; Saline; SC; Rat; 2ML1; 7 days; dependence.

**P2463:** M. T. Martin-Iverson and B. A. Lodge. Effects of chronic treatment of rats with "designer" amphetamines on brain regional monamines. *Can. J. Physiol. Pharmacol* 1991;69(1825-1832)

**ALZET Comments:** Amphetamine; Amphetamine, 4-methoxy-; Amphetamine, 4-ethoxy-; Propylene glycol; SC; Rat; 2ML2; 14 days; controls received mp w/ Propylene glycol; dose-response (graph, p. 1830); toxicology.



**P2146:** S. M. Lillrank, S. S. Oja and P. Saransaari. Animal models of amphetamine psychosis: neurotransmitter release from rat brain slices. *Int. J. Neurol* 1991;60(1-15)

**ALZET Comments:** Amphetamine sulfate; Saline; SC; Rat; 2001; 7 days; comparison of IP injections vs. mp; brain tissue distribution; tolerance; half-life (45-60 min, p.10).

**P1542:** T. H. Lee and E. H. Ellinwood. Time-dependent changes in the sensitivity of dopamine neurons to low doses of apomorphine following amphetamine infusion. *Brain Research* 1989;483(17-29)

**ALZET Comments:** Amphetamine, d-; Water; SC; Rat; 2001; 2ML1; 7 days; Controls received plastic pellets; multiple pumps per animal (2) (2001); comparison of IP injections vs. mp infusion.

**P1345:** M. Tanaka, T. Morimasa, T. Kaneyuki and T. Shohmori. Dopaminergic activity and met-enkephalin levels in the rat striatum after continuous treatment with various dopaminergic agents. *Neuroscience* 1988;14(114-116)

**ALZET Comments:** Apomorphine; Haloperidol; Methamphetamine; SC; Rat; 2 weeks; japanese with english abstract.

**P1547:** L. J. Ryan, M. E. Martone, J. C. Linder and P. M. Groves. Continuous amphetamine administration induces tyrosine hydroxylase immunoreactive patches in the adult rat neostriatum. *Brain Research* 1988;21(133-137)

**ALZET Comments:** Amphetamine sulfate, d-; Cocaine HCl; Saline; IV (jugular); SC; Rat; 2ML1; 3, 30 days; controls received silastic plug implant.

**P1158:** K.-I. Honma, S. Honma and T. Hiroshige. Activity rhythms in the circadian domain appear in suprachiasmatic nuclei lesioned rats given methamphetamine. *Physiol. Behav* 1987;40(6):767-774

**ALZET Comments:** Methamphetamine; SC; Rat; 2002; 21 days; controls received sham operation; rats received bilateral lesions in the suprachiasmatic nucleus (SCN); comparison of methamphetamine in drinking water vs. mp infusion; functionality of mp verified.

**P1080:** P. F. Gately, D. S. Segal and M. A. Geyer. Sequential changes in behavior induced by continuous infusions of amphetamine in rats. *Psychopharmacology* 1987;91(217-220)

**ALZET Comments:** Amphetamine; Saline; SC; Rat; 2ML2; 9 days; controls received mp w/saline.

**P1203:** H. A. Robertson. Cerebral decortication reverses the effect of amphetamine on striatal D2 dopamine binding site density. *Neurosci. Lett* 1986;72(3):325-329

**ALZET Comments:** Amphetamine, d-; Propylene glycol; SC; Rat; 2002; 16 days; controls received mp w/ vehicle; rats were hemidecorticated.

**P1201:** K. Kraeuchi, A. Wirz-Justice and H. Feer. Peripheral mechanisms are involved in the appearance of disturbed circadian rhythmicity and tolerance after chronic methamphetamine. *Ann. Rev. Chronopharmacol* 1986;3(21-24)

**ALZET Comments:** Methamphetamine; Saline; SC; Rat; 2002; 14 days; controls received mp w/ saline; some animals given ascorbic acid and/or MA in drinking water; comparison of MA in drinking water vs. mp infusion.

**P1200:** K. Kashihara, M. Sato, Y. Kazahaya and S. Otsuki. Behavioral hypersensitivity to apomorphine after chronic methamphetamine-intermittent vs. continuous regimen. *Jpn. J. Psychiatry Neurol* 1986;40(1):81-84

**ALZET Comments:** Methamphetamine; SC; Rat; 2ML2; 14 days; controls received cutaneous incision on the back-no mp or drugs; apomorphine challenge 7 days after mp removal; comparison of intermittent therapy vs. mp infusion.

**P0735:** W. H. Vogel, J. Miller, H. Waxman and E. Gottheil. Biochemical and behavioral changes in rats during and after chronic d-amphetamine exposure. *Drug Alcohol Depend* 1985;15(3):245-253

**ALZET Comments:** Amphetamine sulfate, d-; PEG; SC; Rat; 2002; 12 days; controls received mps w/ polyethylene glycol.

**P1170:** R. W. Fuller. Toxic effects of psychomotor stimulants. *Psychopharmacol. Bull* 1985;21(3):528-532

**ALZET Comments:** Amphetamine; mice; Rat; no duration posted; References the mp for continuous infusion of amphetamine in rats or mice.



**P0908:** P. Frey. Changes in cholecystokinin content in rat brain after subchronic treatment with neuroleptics. *Ann. N. Y. Acad. Sci* 1985;448(601-603

**ALZET Comments:** Flupenthixol, cis-; Flupenthixol, trans-; Amitriptyline; Amphetamine; Atropine; Chlorpromazine; Clozapine; Fluphenazine; Haloperidol; Morphine; Prazosin; SC; Rat; 2 weeks; mp model not stated; comparison of sc injections vs. mp infusion; antihypertensive.

**P0529:** G. A. Ricaurte, L. S. Seiden and C. R. Schuster. Further evidence that amphetamines produce long-lasting dopamine neurochemical deficits by destroying dopamine nerve fibers. *Brain Research* 1984;303(2):359-364

**ALZET Comments:** Amphetamine sulfate, d-; Methamphetamine HCl, d-; Saline; SC; Rat; 2001; .5-12 days; comparison of agents effects; control rats did not receive mp due to expense; peptides.

**P0470:** L. Kokkinidis. Effects of chronic intermittent and continuous amphetamine administration on acoustic startle. *Pharmacol. Biochem. Behav* 1984;20(3):367-371

**ALZET Comments:** Amphetamine sulfate, d-; Saline; SC; mice; 2001; 1 week; intermittent sc injec twice daily vs. mp infusion; measured amount of residual amp. in pumps at end of exp.

**P0418:** L. R. Steranka. Long-term effects of a priming dose and short-term infusion of amphetamine on striatal dopamine neurons in rats. *Eur. J. Pharmacol* 1983;96(159-163

**ALZET Comments:** Amphetamine sulfate, d-; Water; SC; Rat; 2ML1; .5-24 hours; pump primed overnight in saline at 37C; each pump used to treat several rats; control rats were implanted w/ used pump.

**P0341:** F. Orzi, D. Dow-Edwards, J. Jehle, C. Kennedy and L. Sokoloff. Comparative effects of acute and chronic administration of amphetamine on local cerebral glucose utilization in the conscious rat. *J. Cereb. Blood Flow Metab* 1983;3(2):154-160

**ALZET Comments:** Amphetamine sulfate, d-; SC; Rat; 2001; 2002; 1 or 2 weeks; comparison of routes of admin; 2 pumps (2001 or 2002)/animal.

**P0374:** E. B. Nielsen, M. Nielsen and C. Braestrup. Reduction of 3H-spiroperidol binding in rat striatum and frontal cortex by chronic amphetamine: dose response, time course and role of sustained dopamine release. *Psychopharmacology* 1983;81(81-85

**ALZET Comments:** Amphetamine, d-; PEG 300; SC; Rat; 2001; 5, 9, and 14 days; pumps replaced after 1 week; up to multiple pumps per animal (3).

**P0373:** E. H. Ellinwood Jr and T. H. Lee. Effect of continuous systemic infusion of d-amphetamine on the sensitivity of nigral dopamine cells to apomorphine inhibition of firing rates. *Brain Research* 1983;273(379-383

**ALZET Comments:** Amphetamine, d-; Saline; SC; Rat; no duration posted; 2 pumps/animal.

**P0407:** M. S. Eison, A. S. Eison and S. D. Iversen. Two routes of continuous amphetamine administration induce different behavioral and neurochemical effects in the rat. *Neurosci. Lett* 1983;39(313-319

**ALZET Comments:** Amphetamine, d-; PEG; SC; Rat; 2001; 2 and 5 days; comparison of sc silicone tube implant vs. mp infusion; comparison of behavioral & neurochem. changes caused by Amph. in different deliv. sys. w/ different release characteristics.

**P0244:** G. Jonsson and E. Nwanze. Selective (+)-amphetamine neurotoxicity on striatal dopamine nerve terminals in the mouse. *Br. J. Pharmacol* 1982;77(335-345

**ALZET Comments:** Amphetamine; Saline; SC; mice; 2-7 days; no comment posted.

**P0191:** E. Nwanze and G. Jonsson. Amphetamine neurotoxicity on dopamine nerve terminals in the caudate nucleus of mice. *Neurosci. Lett* 1981;26(163-168

**ALZET Comments:** Amphetamine sulfate, d-; Saline; SC; mice; 7 days; no comment posted.



**P0164:** E. B. Nielsen. Rapid decline of stereotyped behavior in rats during constant one week administration of amphetamine via implanted ALZET osmotic minipumps. *Pharmacol. Biochem. Behav* 1981;15(2):161-165

**ALZET Comments:** Amphetamine; PEG 300; SC; Rat; 2001; 7 days; no comment posted.

**P0144:** G. G. Dougherty Jr and E. H. Ellinwood Jr. Amphetamine behavioral toxicity: rotational behavior after chronic intrastriatal infusion. *Biol. Psychiatry* 1981;16(5):479-488

**ALZET Comments:** Trifluoperazine; Amphetamine sulfate, d-; Saline; CSF/CNS (corpus striatum); Rat; 7 days; caudate putamen.

**P0079:** L. R. Steranka and E. Sanders-Bush. Long-term effects of continuous exposure to amphetamine on brain dopamine concentration and synaptosomal uptake in mice. *Eur. J. Pharmacol* 1980;65(4):439-443

**ALZET Comments:** Amphetamine; Chloroamphetamine, p-; Water; SC; mice; 3 and 6 days; no comment posted.

**P0018:** L. R. Steranka and E. Sanders-Bush. Long-term effects of continuous exposure to p-chloroamphetamine on central serotogenic mechanisms in mice. *Biochem. Pharmacol* 1978;27(16):2033-2037

**ALZET Comments:** Chloroamphetamine, p-; Saline; SC; Mice; 1701; 3 days; Half-life (p. 2035).