



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

**Q6442:** C. Laloux, *et al.* Continuous cerebroventricular administration of dopamine: A new treatment for severe dyskinesia in Parkinson's disease? *Neurobiol Dis* 2017;103(24-31

**ALZET Comments:** Dopamine, anaerobia; Saline; CSF/CNS; Mice; 2001; 7 days; Controls received mp w/ vehicle; animal info (5 month old C57Bl/6 J mice); neurodegenerative (Parkinson's disease);.

**Q6038:** P. Dubovy, *et al.* Local chemical sympathectomy of rat bone marrow and its effect on marrow cell composition. *Auton Neurosci* 2017;206(19-27

**ALZET Comments:** Guanethidine, 6-hydroxydopamine hydrochloride; Saline, Ascorbic acid; SC; Rat; 2002; 2 weeks; Controls received mp w/ vehicle; animal info (240-250g); Good alzet diagram ;.

**Q3720:** J. Wedel, *et al.* Simultaneous subcutaneous implantation of two osmotic minipumps connected to a jugular vein catheter in the rat. *Laboratory Animals* 2014;48(338-341

**ALZET Comments:** Dopamine, N-octanoyl; Tween 80; saline; IV (jugular); Rat; 2ML4; 14 days; animal info (male, Brown Norway, 230-270 g, female, Wistar, 280-310 g); good methods; "Our data show that double pump implantation is a feasible alternative to changing pumps or the use of extracorporeal pump systems connected via a long wire to partly restrained animals." pg 338; N-octanoyl-dopamine also known as NOD; multiple pumps (2) used; two pumps connected to Y connector, in-house made Y-tube; "we showed that the simultaneous implantation of two slow-flow rate osmotic pumps connected to a jugular vein catheter is feasible and is not linked to additional signs of discomfort compared with single pump-implanted rats." pg 341.

**Q0098:** A. Leblois, *et al.* Striatal Dopamine Modulates Basal Ganglia Output and Regulates Social Context-Dependent Behavioral Variability through D<sub>1</sub> Receptors. *Journal of Neuroscience* 2010;30(16):5730-5743

**ALZET Comments:** Dopamine; SCH23390; Saline; CSF/CNS (area X); Bird (zebra finch); 1002; Controls received mp w/ vehicle; good methods (pg 5731); ALZET brain infusion kit used; animal info (adult, male); Y-connector used; pump externalized with a backpack; pump placed inside microcentrifuge tube; cannula placement verified by histological examination.

**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.

**P8735:** K. Nishikawa, *et al.* Effect of dopamine on the healing of acetic acid-induced gastric ulcers in rats. *INFLAMMOPHARMACOLOGY* 2007;15(5):209-213

**ALZET Comments:** Dopamine; Saline; SC; Rat; 7 days; Controls received mp w/ vehicle; comparison of SC injections vs. mp; animal info (male, Sprague-Dawley, 230-260g, gastic ulceration).

**P8719:** S. Hoeger, *et al.* Dopamine treatment in brain-dead rats mediates anti-inflammatory effects: the role of hemodynamic stabilization and D-receptor stimulation. *TRANSPLANT INTERNATIONAL* 2007;20(9):790-799

**ALZET Comments:** Dopamine; IV (femoral); Rat; 2ML1; 24 hours; Functionality of mp verified by blood pressure; animal info (male, Fisher, 200-250g).

**P7802:** R. Oberbeck, *et al.* Dopamine affects cellular immune functions during polymicrobial sepsis. *Intensive Care Medicine* 2006;32(5):731-739

**ALZET Comments:** Dopamine; IP; Mice; 48 hours; Controls received mp w/ saline; functionality of mp verified by dopamine plasma concentration; animal info (male, NMRI, 8-9 wk old, 30-34-g.); laparotomy or polymicrobial sepsis induced by cecal ligation and puncture.



**P8290:** P. T. Brinkkoetter, *et al.* Hypothermia-induced loss of endothelial barrier function is restored after dopamine pretreatment: Role of p42/p44 activation. *Transplantation* 2006;82(4):534-542

**ALZET Comments:** Dopamine; IV (femoral); Rat; 2ML1; 24 hours; Controls received mp w/ isotonic saline; ischemia; reperfusion injury; animal info (male, Lewis, 220-250 g).

**P7469:** U. Gottmann, *et al.* Influence of donor pretreatment with dopamine on allogeneic kidney transplantation after prolonged cold storage in rats. *Transplantation* 2005;79(10):1344-1350

**ALZET Comments:** Dopamine; Saline; IV (femoral); Rat; 2ML1; 24 hours; Controls received mp w/ vehicle; animal info (male, Lewis Fisher).

**P6552:** R. Oberbeck, *et al.* Dopexamine and cellular immune functions during systemic inflammation. *Immunobiology* 2004;208(5):429-438

**ALZET Comments:** Dopexamine; dopamine; IP; Mice; 48 hours; Controls received saline & sham operation; immunology; polymicrobial sepsis induced cecal ligation & puncture (CLP).

**P6447:** R. Ozono, *et al.* Dopamine D<sub>2</sub> receptor modulates sodium handling via local production of dopamine in the kidney. *Journal of Cardiovascular Pharmacology* 2003;42(S75-S79)

**ALZET Comments:** Dopamine; Saline; SC; Mice (knockout); 2002; 3 days; cardiovascular.

**P5642:** L. Carr, *et al.* In vivo administration of L-dopa or dopamine decreases the number of splenic IFN-gamma-producing cells. *Journal of Neuroimmunology* 2003;137(1-2):87-93

**ALZET Comments:** Dopamine; HCL; saline; Ascorbic acid; SC; Mice; 1007D; 5 days; Controls received mp w/ vehicle (without HCL); Incorrectly states the pump's release rate was 0.25 ul/hr, (correct rate is 0.5 ul/hr).

**P6218:** P. J. Blanchet. The fluctuating parkinsonian patient - Clinical and pathophysiological aspects. *Canadian Journal of Neurological Sciences* 2003;30(S19-S26)

**ALZET Comments:** Dopamine, agonists; SC; Monkey; Pump model and duration not listed; neurodegenerative (Parkinson's disease).

**P4754:** H. Maeda, *et al.* Roles of renal dopamine and Kallikrein-Kinin systems in antihypertensive mechanisms of exercise in rats. *Hypertens Res* 2000;23(511-519)

**ALZET Comments:** Dopamine;; Water, distilled; Sodium metabisulfate;; SC;; Rat;; 2ML4;; 2 weeks;; Antihypertensive; vehicle was water w/ 0.1% sodium metabisulfate;

**P4216:** Z.-J. Yang, *et al.* Bilateral hypothalamic dopamine infusion in male Zucker rat suppresses feeding due to reduced meal size. *Pharmacol. Biochem. Behav* 1997;58(3):631-635

**ALZET Comments:** Dopamine HCl; Sodium metabisulfite; CSF/CNS (hypothalamus); Rat; 2002; 13 days; controls received mp w/vehicle; stability verified by HPLC after 13 days; two pumps implanted per animal; bilateral cannula used; bilateral infusion;

**P3932:** T. Kasamatsu, *et al.* Continuous and direct infusion of drug solutions in the brain of awake animals: implementation, strengths and pitfalls. *Brain Res. Protocols* 1997;1(57-69)

**ALZET Comments:** Forskolin; Dopamine, 6-hydroxy-; Ascorbate; Saline; DMSO; CSF/CNS (visual cortex); cat; 2001; 7 days; no stress (see pg. 64); stability verified by HPLC assays; good methods (extremely detailed for all CSF/CNS aspects and protocols).

**R0223:** M. J. During, *et al.* Targets for Gene Therapy of Parkinson's Disease: Growth Factors, Signal Transduction, and Promoters. *Experimental Neurology* 1997;144(74-81)

**ALZET Comments:** Dopamine, hydroxy-6; CSF/CNS (striatum); 4 days; ALZET pumps mentioned on pg. 76; neurodegenerative (Parkinson's disease).



**P3514:** B. E. Jones, *et al.* A continuous striatal infusion of 6-hydroxydopamine produces a terminal axotomy and delayed behavioral effects. *Brain Research* 1996;709(275-284)

**ALZET Comments:** Dopamine, 6-hydroxy-; Ascorbate; Saline; CSF/CNS (striatum); Rat; 2001; 7 days; controls received vehicle infusion; dose-response (figure z); comparison of acute infusion vs. mp; stability verified by bioassay of pump effluent.

**P3277:** F. M. McCorkle, *et al.* Continuous administration of dopamine alters cellular immunity in chickens. *Comp. Biochem. Physiol* 1994;109C(3):289-293

**ALZET Comments:** Dopamine; Saline, acidified; SC; bird (chicken); 2001; 24,48,72 hours; controls received mp w/saline; immunology.

**P2562:** C. A. Altar, *et al.* Efficacy of brain-derived neurotrophic factor and neurotrophin-3 on neurochemical and behavioral deficits associated with partial nigrostriatal dopamine lesions. *J. Neurochem* 1994;63(1021-1032)

**ALZET Comments:** Brain-derived neurotrophic factor; NT-3; Dopamine, 6-hydroxy-; PBS; CSF/CNS (substantia nigra); CSF/CNS (central caudate putamen); Rat; 2002; 2 weeks; controls received mp w/ vehicle; stability verified by DRG bioassay; 77-85% biological activity of BDNF & NT-3 remained after 14 days; 6-hydroxydopamine stable for 8 days; peptides; after 6 days, concomitant infusion of BDNF, NT-3 or vehicle with 6-OHDA; recomb. human BDNF used.

**P2366:** M. Takeshi, *et al.* Effects of dopamine on renal receptors for arginine vasopressin. *Res. Commun. Chem. Pathol. Pharmacol* 1992;76(2):131-141

**ALZET Comments:** Dopamine HCl; SC; Rat; 2 weeks; controls received mp with saline.

**P2584:** N. Mataga, *et al.* 6R-tetrahydrobiopterin perfusion enhances dopamine, serotonin, and glutamate outputs in dialysate from rat striatum and frontal cortex. *Brain Research* 1991;551(64-71)

**ALZET Comments:** Dopamine, 6-hydroxy-; Saline; Ascorbate; CSF/CNS (striatum); Rat; 2001; 1 week; microdialysis probes implanted after pumps taken out.

**P1733:** J. S. Kroin, *et al.* Dopamine distribution and behavioral alterations resulting from dopamine infusion into the brain of the lesioned rat. *J. Neurosurg* 1991;74(105-111)

**ALZET Comments:** Dopamine HCl; Sodium metabisulfite; CSF/CNS; CSF/CNS (striatum); Rat; 2002; no duration posted; stability verified in vehicle for 10 days at 37 degrees celsius by HPLC.

**P1782:** E. Katayama, *et al.* Characteristics of rat kidney dopamine receptors and the effects of renal denervation and dopamine infusion on these receptors. *Nephron* 1989;53(358-363)

**ALZET Comments:** Dopamine; SC; Rat; 1, 2 weeks; controls received pumps with saline only.

**P1444:** H. Ueda. Time course study of changes in the activity of rats during intraventricular infusion of 6-hydroxydopamine, haloperidol and sulpiride: a study of the relationship between an origin of the negative symptoms in schizophrenia and catecholamines. *J. Iwate Med. Assoc* 1988;40(3):385-398

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

**P1446:** J. Garcia de Yebenes, *et al.* Intracerebroventricular infusion of dopamine and its agonists in rodents and primates. *ASAIO Transactions* 1988;34(951-957)

**ALZET Comments:** Dopamine; Lisuride; Pergolide; Hydroxynaphthoxazine, 4-propyl-9-; HCl; Water; CSF/CNS; Rat; 1, 2 weeks; PHNO is dopamine D-2 receptor agonist;

**P1313:** J. G. de Yebenes, *et al.* Continuous intracerebroventricular infusion of dopamine and dopamine agonists through a totally implanted drug delivery system in animal models of Parkinson's disease. *J. Neural Transm* 1988;27(141-160)

**ALZET Comments:** Deprenyl; Dopamine; Lisuride; Pargyline; Pergolide; HCl; Sodium metabisulfite; Water; CSF/CNS; Rat; 2001; 6, 7 days; mp connected to cannula; stability of DA verified in several vehicles, p 146; concomitant DA infusion with pargyline; DA infusion with deprenyl; replacement therapy (dopamine deficiency); stability verified in vitro; antihypertensive; neurodegenerative (Parkinson's disease).



**P1291:** C. A. Altar, *et al.* Dopamine release and metabolism after chronic delivery of selective or nonselective dopamine autoreceptor agonists. *Mol. Pharmacol* 1988;33(690-695)

**ALZET Comments:** CGS-15855A; Apomorphine; Dopamine, antagonists; Ascorbic acid; Saline; SC; Rat; 2ML2; 2, 14 days; comparison of ip injections vs. mp infusion; functionality of mp verified by serum, brain levels; stability verified at 14 days by HPLC.

**R0077:** N. Ray, *et al.* Implantable osmotically powered drug delivery systems. In 'Drug Delivery Systems: Fundamentals and Techniques,' P. Johnson and J. G. Lloyd-Jones (eds. ), Ellis Horwood Ltd. , Chichester, England and VCH Verlagsgesellschaft mbH, Weinheim, Federal Republic of Germany 1987;Ch. 7):120-138

**ALZET Comments:** Antipyrine; bleomycin; dopamine HCl; melatonin; methotrexate, sodium; nicotine; prednisolone; radio-isotopes; valproic acid; <sup>14</sup>C tracer; <sup>3</sup>H tracer; IA; IP; SC; Mice, rabbit, Rat; no duration posted; ALZA-authored; synoptic review of mp; post op. care (antibiotic); comparison of sc injections vs. mp infusion; pulsed delivery.

**P1033:** R. Hargraves, *et al.* Chronic intrastriatal dopamine infusions in rats with unilateral lesions of the substantia nigra. *Life Sci* 1987;40(959-966)

**ALZET Comments:** Dopamine; 3H tracer; Ascorbate; Saline; Sodium metabisulfite; Water; CSF/CNS (corpus striatum); Rat; 2002; 13 days; controls rec'd mp w/veh.; mp connected to cann. in corpus striatum; some groups rec'd unilat. lesions of substantia nigra; mp inf. diff. amounts of agents to diff. groups; pumps primed o'night with saline.

**P2709:** J. G. de Yebenes, *et al.* Continuous intracerebroventricular infusion of dopamine and dopamine agonists through a totally implanted drug delivery system in animal models of Parkinson's disease. *Movement Disorders* 1987;2(3):143-158

**ALZET Comments:** Dopamine; Pargyline; Deprenyl; Lisuride; Pergolide; HCl; Sodium metabisulfate; CSF/CNS; Rat; 2001; 6,7 days; controls received mp with vehicles; replacement therapy (lesion in dopamine pathway); stability verified for 1 week by measuring dopamine concentrations and its metabolites at varying time intervals with HPLC; concomitant dopamine infusion w/ pargyline and w/ deprenyl; antihypertensive; neurodegenerative (Parkinson's disease).

**P0905:** B. Costall, *et al.* Effects of the 5-HT3 receptor antagonist, GR38032F, on raised dopaminergic activity in the mesolimbic system of the rat and marmoset brain. *Br. J. Pharmacol* 1987;92(881-894)

**ALZET Comments:** Dopamine; CSF/CNS (amygdala); CSF/CNS (nucleus accumbens); monkey; Rat; 13 days; Pump model not stated; controls rec'd mp w/ unspecif. vehicle; mp conn. to cannulae in amygdala/rat; mp conn. to cath. in nucleus accumbens/monkey; mp primed overnight; concomit. haloperidol admin.; tissue perf. (amygdala, nucleus accumbens).

**P1135:** N. J. G. Barnes, *et al.* Behavioural consequences of the infusion of dopamine into the nucleus accumbens of the common marmoset (*Callithrix jacchus*). *Neuropharmacology* 1987;26(9):1327-1335

**ALZET Comments:** Dopamine; Sodium metabisulfate; CSF/CNS (nucleus accumbens); monkey; 13 days; Pump model not stated; controls received mp w/ vehicle; mp connected to cannulae in nucleus accumbens; mp primed overnight; multiple pumps per animal (2).

**P0925:** B. Ek, *et al.* Increased Beta -adrenoceptor density after 6-hydroxydopamine pretreatment in rat colon and lung. *Acta Physiol. Scand* 1986;127(455-460)

**ALZET Comments:** Dopamine, 6-hydroxy-; Ascorbic acid; Saline; SC; Rat; 2001; 3 days; comparison of iv injection vs. mp infusion.

**P0856:** A. J. Bradbury, *et al.* The neurotoxic actions of 6-hydroxydopamine infused into the rat substantia nigra. *Neuroscience* 1986;67(208-212)

**ALZET Comments:** Dopamine, 6-hydroxy-; CSF/CNS (substantia nigra); Rat; 2002; 4 or 10 days; controls rec'd mp w/vehicle; mp connected to steel guide cannula in SN; multiple pumps per animal (2); mps primed overnight.

**P0959:** J. C. Barnes, *et al.* Modulation of dopamine function by glycine in the nucleus accumbens of the brain of the rat. *Neuropharmacology* 1986;25(12):1347-1351



**ALZET Comments:** Dopamine; Glycine; Strychnine; Water; CSF/CNS (nucleus accumbens); Rat; 2001; 13 days; controls received mp w/vehicle; mp connected to cannula in nucleus accumbens; mps primed overnight at 37C; agents infused sep. & simult.; stability.

**P0857:** J. C. Barnes, *et al.* Lithium and bupropion antagonise the phasic changes in locomotor activity caused by dopamine infused into the rat nucleus accumbens. *Psychopharmacology* 1986;89(311-316)

**ALZET Comments:** Dopamine HCl; Lithium; Sodium metabisulfite; CSF/CNS (nucleus accumbens); IP; Rat; 2002; 13 days; controls rec'd mps w/vehicle; mp connected to cannula in NC; mps & injection units primed overnight; lithium admin. ip; agents admin. simult. in 1 group; comparison of ip inject. vs mp infusion.

**P0740:** I. Stromberg, *et al.* Chronic implants of chromaffin tissue into the dopamine-denervated striatum. Effects of NGF on graft survival, fiber growth and rotational behavior. *Exp. Brain Research* 1985;60(2):335-349

**ALZET Comments:** Dopamine; L-DOPA; Nerve growth factor; Saline; CSF/CNS (corpus striatum); Rat; 2002; 28 days; comparison of injections vs. mp infusion; mp replaced after 14 days; mp connected to cannula in striatum mounted w/dialysis fiber; l-dopa & dopamine used only to test fiber; 6-OHDA lesions.

**P0592:** S. L. Sendelbeck, *et al.* Spatial distribution of dopamine, methotrexate and antipyrine during continuous intracerebral microperfusion. *Brain Research* 1985;328(251-258)

**ALZET Comments:** Antipyrine; Dopamine HCl; Methotrexate, sodium; Radio-isotopes; 14C tracer; 3H tracer; CSF, artificial; Sodium fluorescein; CSF/CNS (diencephalon); rabbit; 2001; 6 days; comparison of agents effects; mp primed in saline 16 hr. prior to implant; stability of labelled & unlabelled Dop. & MTX tested by paper chromat. after 7 days at 37C; brain tissue distribution;

**P0630:** B. Costall, *et al.* The continuity of dopamine receptor antagonism can dictate the long-term behavioural consequences of a mesolimbic infusion of dopamine. *Neuropharmacology* 1985;2(3):193-197

**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.

**P0753:** A. J. Bradbury, *et al.* Laterality of dopamine function and neuroleptic action in the amygdala in the rat. *Neuropharmacology* 1985;24(12):1163-1170

**ALZET Comments:** Dopamine HCl; Sodium metabisulfite; CSF/CNS (amygdala); Rat; 2002; 9 days; mp connected to steel cannula in amygdala; no stress (see pg. 1164).

**P0554:** K. Nakai, *et al.* Accelerated regeneration of central catecholamine fibers in cat occipital cortex: effects of substance P. *Brain Research* 1984;323(374-379)

**ALZET Comments:** Dopamine HBr, 6-hydroxy-; Substance P; CSF/CNS (occipital cortex); cat (kitten); 1 week; comparison of agents effects; ALZET not mentioned but author cites previous mp papers as methods reference; cannot be positive substance P deliv. by mp; peptides.

**P0606:** H. Kojima, *et al.* GM1 ganglioside enhances regrowth of noradrenaline nerve terminals in rat cerebral cortex lesioned by the neurotoxin 6-hydroxydopamine. *Neuroscience* 1984;13(4):1011-1022

**ALZET Comments:** Dopamine HCl, 6-hydroxy-; Ascorbic acid; Saline; CSF/CNS (cortex); Rat; 2001; 3 or 7 days; cited previous mp paper for 6-OHDA stability.

**P0495:** D. A. Haycock, *et al.* The stability of 6-hydroxydopamine under minipump conditions. *Exp. Brain Research* 1984;56(183-186)

**ALZET Comments:** Dopamine HBr, 6-hydroxy-; Ascorbic acid; Saline; pump not used; Stability of 6-OHDA in 0.4% ascorbic acid at room temp, 20-38C for at least 1 week verified by HPLC-ECD & biologic activity; minipump itself not used in exp.

**P0444:** B. Costall, *et al.* Long-term consequences of antagonism by neuroleptics of behavioural events occurring during mesolimbic dopamine infusion. *Neuropharmacology* 1984;23(3):287-293



**ALZET Comments:** Dopamine HCl; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); Rat; 2002; 13 days; no stress p. 288; pumps primed overnight, bilateral pump implantation; bilateral infusion;

**P0439:** B. Costall, *et al.* Locomotor hyperactivity caused by dopamine infusion into the nucleus accumbens of rat brain: specificity of action. *Psychopharmacology* 1984;82(174-180

**ALZET Comments:** Acetylcholine HCl; Aminobutyric acid, Y-; Serotonin bimaleinate; Dopamine HCl; Norepinephrine bitartrate; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); Rat; 2002; 13 days; Cholinergic agent; comparison of agents effects; no stress p. 175; stability of substances remaining in pump after 13 days was verified.

**P0391:** G. Aguilera, *et al.* Dopaminergic modulation of aldosterone secretion in the rat. *Endocrinology* 1984;114(1):176-181

**ALZET Comments:** Angiotensin II; Dopamine; Metoclopramide; IP; IV; Rat; 2 days; simultaneous administration of MCP (iv) w/ All (ip), and MCP (iv) w/ DOP (iv); MCP and All also infused alone, all by mp; peptides.

**P1255:** M. A. Paradiso, *et al.* Effects of intracortical infusion of 6-Hydroxydopamine on the response of kitten visual cortex to monocular deprivation. *Exp. Brain Research* 1983;51(3):413-422

**ALZET Comments:** Dopamine HBr, 6-hydroxy-; Ascorbate; Saline; CSF/CNS (visual cortex); cat (kitten); 2001; 1 week; Multiple pumps per animal (2); 1st pump contained agent and infused into one hemisphere, 2nd pump contained the vehicle only and infused the other hemisphere.

**P0321:** N. W. Daw, *et al.* Effects of 6-hydroxydopamine on visual deprivation in the kitten striate cortex. *J. Neurosci* 1983;3(5):907-914

**ALZET Comments:** Dopamine, 6-hydroxy-; Ascorbate; Saline; CSF/CNS (occipital cortex); cat (kitten); 2001; 1 week; no comment posted.

**P0378:** B. Costall, *et al.* A comparison of the behavioural consequences of chronic stimulation of dopamine receptors in the nucleus accumbens of rat brain effected by a continuous infusion or by single daily injections. *Naunyn-Schmiedeberg's Arch. Pharmacol* 1983;324(27-33

**ALZET Comments:** Dopamine HCl; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); Rat; 13 days; mp model not stated; comparison of injection vs. mp infusion; no stress - p. 28; multiple pumps per animal (2); pumps primed overnight before implantation.

**P0305:** M. F. Bear, *et al.* Two methods of catecholamine depletion in kitten visual cortex yield different effects on plasticity. *Nature* 1983;302(245-247

**ALZET Comments:** Dopamine, 6-hydroxy-; Ascorbate; Saline; CSF/CNS (visual cortex); cat (kitten); 1 week; comparison of injection vs. infusion; multiple pumps per animal (2).

**P0440:** B. Costall, *et al.* Behavioral and biochemical consequences of persistent overstimulation of mesolimbic dopamine systems in the rat. *Neuropharmacology* 1982;21(327-335

**ALZET Comments:** Dopamine HCl; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); Rat; 2002; 13 days; no stress p. 328, 333; 2 pumps implanted simultaneously, bilaterally; pumps primed overnight; post-infusion N-propylnorapomorphine challenge; bilateral infusion;

**P0156:** T. Kasamatsu, *et al.* Cortical recovery from effects of monocular deprivation: acceleration with norepinephrine and suppression with 6-hydroxydopamine. *J. Neurophysiol* 1981;45(2):254-266

**ALZET Comments:** Dopamine HBr, 6-hydroxy-; Norepinephrine HCl, I-; Saline; CSF/CNS (visual cortex); cat (kitten); no duration posted; no comment posted.

**P0138:** T. Kasamatsu, *et al.* Intracortical spread of exogenous catecholamines: effective concentration for modifying cortical plasticity. *J. Pharmacol. Exp. Ther* 1981;217(3):841-850

**ALZET Comments:** Dopamine HBr, 6-hydroxy-; Norepinephrine HCl; Radio-isotopes; 3H tracer; Ascorbate; Saline; CSF/CNS (visual cortex); cat; cat (kitten); 1701; 1, 3, & 7 days; no comment posted.



**P0033:** T. Kasamatsu, *et al.* Restoration of visual cortical plasticity by local microperfusion of norepinephrine. *J. Comp. Neurol* 1979;185(1):163-181

**ALZET Comments:** Dopamine, 6-hydroxy-; Norepinephrine; Radio-isotopes; 3H tracer; Ascorbate; Saline; CSF/CNS (visual cortex); cat (kitten); no duration posted; pumps replaced after 1 week.

**P0007:** J. D. Pettigrew, *et al.* Local perfusion of noradrenaline maintains visual cortical plasticity. *Nature* 1978;271(5647):761-763

**ALZET Comments:** Norepinephrine; dopamine, 6-hydroxy-; saline; ascorbate; CSF/CNS (visual cortex); cat (kitten); 1701; 7 days; controls received mp with vehicle in other visual cortex; multiple pumps per animal (2); pump/cannula schematic P. 762, Fig. 1.