References on the Administration of Gamma-Aminobutyric Acid Using ALZET® Osmotic Pumps

Q9351: K. C. Ling, *et al.* Effects of sustained GABA releasing implants on pancreatic islets in mice. Drug Delivery and Translational Research 2021;11(5):2198-2208
Agents: Aminobutyric acid, gamma **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Dose (10 mg/kg/day); animal info (CD-1 IGS mice, 67 to 81 days old); Gamma-aminobutyric acid aka GABA; diabetes;

Q0603: J. M. Gallego, *et al.* Continuous bilateral infusion of GABA in the dorsomedian nucleus of the thalamus elevates the generalized seizure threshold in amygdala-kindled rats. SEIZURE-EUROPEAN JOURNAL OF EPILEPSY 2009;18(7):537-540
Agents: Aminobutyric acid, gamma **Vehicle:** Saline; **Route:** CSF/CNS (dorsomedian nuclei of the thalamus); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult, male, Wistar); functionality of mp verified by residual volume; multiple pumps per animal (2); bilateral infusion

P8692: V. Navarro, *et al.* Loss of phase synchrony in an animal model of partial status epilepticus. Neuroscience 2007;148(1):304-313
Agents: Aminobutyric acid, gamma **Vehicle:** Kreb's solution; **Route:** CSF/CNS (left somatomotor cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 170-190g); epilepsy

P7735: C. Silva-Barrat, *et al.* Exaggeration of epileptic-like patterns by nicotine receptor activation during the GABA withdrawal syndrome. Brain Research 2005;1042(2):133-143
Agents: Aminobutyric acid, gamma **Vehicle:** Not Stated; **Route:** CSF/CNS (somatomotor cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;
ALZET Comments: Controls received mp w/ saline or no treatment; dependence; animal info (male, wistar)

P6975: R. Ding, *et al.* Cleft palate by picrotoxin or 3-MP and palatal shelf elevation in GABA-deficient mice. NEUROTOXICOLOGY AND TERATOLOGY 2004;26(4):587-592
Agents: Picrotoxin; aminobutyric acid, Y; mercaptopropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (pregnant); **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ saline; comparison of SC injections vs. mp; no stress (see pg. 589); teratology; SC injections induced seizures, during mp infusion mice behaved normally

P6456: J. A. Barcia, *et al.* Continuous intra-amygdalar infusion of GABA in the amygdala kindling model of epilepsy in rat. Epilepsy Research 2004;58(1):19-26
Agents: Aminobutyric acid, Y-; mannitol **Vehicle:** Saline; **Route:** CSF/CNS (amygdala); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/mannitol; functionality of mp verified by cutting open & visual inspection; dose-response (table 1); no stress (see pg. 25)

P4853: L. Yang, *et al.* Audiogenic seizure susceptibility is induced by termination of continuous infusion of gamma-aminobutyric acid or an N-methyl-D-aspartic acid antagonist into the inferior colliculus. Experimental Neurology 2001;171(147-152
Agents: Aminobutyric acid, Y-; AP7 **Vehicle:** Saline; **Route:** CSF/CNS (inferior collicus); **Species:** Rat; **Pump:** 1002; **Duration:** 7 days;
ALZET Comments: controls received mp w/ vehicle; AP7 is an NMDA receptor antagonist; seizures; bilateral cannula used; 1 week recovery period from surgery; cannula placement verified at end of experiment by histology; bilateral infusion;

P3309: A. Shuaib, *et al.* Gamma-vinyl GABA prevents hippocampal and substantia nigra reticulata damage in repetitive transient forebrain ischemia. Brain Research 1992;590(13-17
Agents: GABA, gamma-vinyl-; Aminobutyric acid, Y- **Vehicle:** Not Stated; **Route:** CSF/CNS (third ventricle); **Species:** gerbil; **Pump:** Not Stated; **Duration:** 5 days;
ALZET Comments: Ischemia (cerebral)

P2959: G. Ballough, *et al.* Cytophotometric analysis of magnocellular azure B-RNA and Feulgen-DNA following chronic GABA infusion into the nucleus basalis of rats. Life Sci 1992;50(18):1299-1310
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (nucleus basalis magnocellularis); **Species:** Rat; **Pump:** 2001; **Duration:** 24 hours;
ALZET Comments: controls received mp with saline and/or were sham operated; protective cranial cap placed over cannula provided mechanical support and protection; animals allowed 1 week recovery before pump implantation; non-infused hemisphere of each animal served as control for the infused hemisphere

P2152: S. Brailowsky, *et al.* Effects of a Ginkgo biloba extract on two models of cortical hemiplegia in rats. Restor. Neurol. Neurosci 1991;3(267-274
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (motor cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: GABA withdrawal syndrome induced by infusion interruption achieved by disconnecting catheter leading to brain cannula after 24 hours

P1465: S. Brailowsky, *et al.* Effects of localized, chronic GABA infusions into different cortical areas of the photosensitive baboon, Papio papio. Clinical Neurophysiology 1989;72(147-156
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Monkey (baboon); **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: functionality of mp verified by removing and opening; pumps replaced once w/ saline-filled mp

P1297: B. E. Will, *et al.* Unilateral infusion of GABA and saline into the nucleus basalis of rats: 1. effects on motor function and brain morphology. Behavioural Brain Research 1988;27(123-129
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (nucleus basalis); **Species:** Rat; **Pump:** 2001; **Duration:** 4, 10 days;
ALZET Comments: pumps exchanged with control pumps containing saline; comparison of icv injections vs. mp infusion; pump replaced at 4 days

P1397: G. La Salle, *et al.* Local asymptomatic status epilepticus induced by withdrawal of GABA infusion into limbic structures. Experimental Neurology 1988;101(411-417
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (amygdala); **Species:** Rat; **Pump:** 2001; **Duration:** 6 days;
ALZET Comments: mp connected to cannula; mp malfunction (pump disconnected after 6 days)

P1314: S. Brailowsky, *et al.* The GABA-withdrawal syndrome: a new model of focal epileptogenesis. Brain Research 1988;442(175-179
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 3, 5, 7, 14 days and 3, 6, 12, 24 hours;
ALZET Comments: pump replaced once at 7 days; long-term study

R0083: S. Brailowsky. Therapeutic approaches in subjects with brain lesions. In 'Pharmacological Approaches to the Treatment of Brain and Spinal Cord Injury,' D. G. Stein and B. A. Sabel (eds.), Plenum Press, New York and London 1988;Ch. 1):1-21
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (motor cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: m.p. infusion is a model for hemiplegia

P1152: H. Fukuda, *et al.* Anticonvulsant effect of intracortical, chronic infusion of GABA in kindled rats: focal seizures upon withdrawal. Experimental Neurology 1987;98(120-129
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (amygdala); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: controls received mp w/ saline; mp connected to bilateral cannulae; functionality of mp verified

P1023: S. Brailowsky, *et al.* Epileptogenic y-aminobutyric acid-withdrawal syndrome after chronic, intracortical infusion in baboons. Neurosci. Lett 1987;74(75-80
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (frontal cortex); **Species:** Monkey (baboon); **Pump:** 2ML1; **Duration:** no duration posted;
ALZET Comments: controls received mp w/vehicle; mp connected to intracerebral cannula; agent filled mp replaced after 7 days with saline filled mp; tissue perfusion (frontal cortex)

P1220: S. Brailowsky, *et al.* Recovery from GABA-mediated hemiplegia in young and aged rats: effects of Catecholaminergic manipulations. Neurobiol. Aging 1987;8(441-447
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: controls received mp w/ saline; mp connected to cannula in cortex

P0886: W. Loscher. Development of tolerance to the anticonvulsant effect of GABAmimetic drugs in genetically epilepsy-prone gerbils. Pharmacol. Biochem. Behav 1986;24(1007-1013
Agents: Aminobutyric acid, Y-acetylenic Y-; Aminooxyacetic acid; Diazepam; THIP; Valproic acid **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;
ALZET Comments: controls received mp w/saline; diazepam too unstable to be used in mp; epilepsy; functionality of mp verified after 14 day exper. period - all 50 mps worked accurately; stability of VPA, THIP, GAG and AOAA

P0877: S. Brailowsky, *et al.* Phenytoin increases the severity of cortical hemiplegia in rats. Brain Research 1986;376(71-77
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (somatomotor region); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: controls rec'd mp w/saline; mp connected to cannula in somatomotor region; mps may have become detached from cannula during study (see p.73)

P0787: S. Brailowsky, *et al.* g-Aminobutyric acid-induced potentiation of cortical hemiplegia. Brain Research 1986;362(2):322-330
Agents: Aminobutyric acid, Y- **Vehicle:** Saline; **Route:** CSF/CNS (somatomotor region); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: controls received mp w/saline; mp connected to cannula in somatomotor area; functionality of mp verified by completeness of delivery

P0666: P. M. Beart, *et al.* Subchronic administration of GABAergic agonists elevates (3H)GABA binding and produces tolerance in striatal dopamine catabolism. Brain Research 1985;335(1):169-173
Agents: Aminobutyric acid, Y-acetylenic Y-; Aminobutyric acid, Y-vinyl Y-; Kojic amine; Aminooxyacetic acid; Baclofen; THIP **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 2001; 2002; **Duration:** 7-14 days;
ALZET Comments: comparison of injec vs. mp infusion; comparison of agents effects; THIP is 4,5,6,7-tetrahydroisoxazolol (5,4-c) pyridin-3-ol; Kojic amine is 2-amino-methyl-5-hydroxy-4H-pyran-4-one

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

P0289: R. M. Mangano, *et al.* Chronic infusion of endogenous excitatory amino acids into rat striatum and hippocampus. Brain Research Bulletin 1983;10(47-51
Agents: Aminobutyric acid, Y-; Aspartic acid, dl-threo-B-hydroxy; Aspartic acid, l-; Cysteine sulfinic acid; Glutamic acid, l-; Radio-isotopes **Vehicle:** 3H tracer; Acetate; Saline; **Route:** CSF/CNS (corpus striatum); CSF/CNS (hippocampus); **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: comparison of injec. vs. mp infusion; amino acids infused separately & simultaneously