References on the Administration of Antiviral Agents Using ALZET® Osmotic Pumps

1. Acyclovir

ALZET Comments: Acyclovir; cimetidine; clindamycin; metformin; terbutaline; verapamil; IP; Mice; 1003D; 72 hours; Animal info (female, lactating, Bcrp KO or WT FVB); functionality of mp verified by plasma and milk concentrations; no stress "All mice survived the surgical procedure and appeared to be lactating normally, and all pups thrived throughout the course of the experiment." (see pg. 3343);

ALZET Comments: acetaminophen, cephalothin sodium salt, clindamycin hydrochloride, disopyramide phosphate salt, labetalol hydrochloride, nitrofurantoin + propranolol hydrochloride, terbutaline hemisulfate salt, verapamil hydrochloride, Acyclovir, alprazolam, atenolol, anhydrous caffeine, cefotaxime sodium salt, cephalirin sodium salt, diltiazem hydrochloride, metronidazole, nitrazepam, prednisolone, 6-propyl-2-thiouracil, trazadone hydrochloride, chloramphenicol, cimetidine, theophylline, fluconazole, metoprolol, mirtazapine, quetiapine fumarate, triprolidine hydrochloride, metformin, moclobemide; DMSO; water; IP; mice; 1003D; 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.

ALZET Comments: Acyclovir, sodium; Saline; SC; Guinea pig; 2ML2; 1 week; comparison of ip inject vs. mp infusion; article states incorrectly that 2ML2 is spent after 7 days.

2. Amantadine

ALZET Comments: Amantadine; Sodium acetate; SC; Rat; 2ML2; Dose (22.5, 45, or 83 mg/kg per day); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats);

ALZET Comments: Amantadine; Saline; SC; Rat; 2006; 8 weeks; Control animals received mp w/ vehicle; animal info (male, Sprague Dawley, 200-250 g, 6 wks old); long-term study.

ALZET Comments: Memantine; Amantadine; Water; SC; Rat; 2ML2; no duration posted; dose-response; serum levels.

P4321: M. B. Hesselink, et al. Adaptations of NMDA and dopamine D2 receptors, but not of muscarinic receptors following 14 days administration of competitive NMDA receptor antagonists. Journal of Neural Transmission 1999;106(409-421
ALZET Comments: MK-801; Memantine; Amantadine; Water; SC; Rat; 2ML2; 3-14 days; controls received sham surgeries; comparison of S.C. injections vs. mp; half-life (p. 411); "In the clinical situation, depending on dosing schedule, only minor fluctuations in the steady-state plasma levels of the amino adamantanes is observed. The only way to mimic this in animals is by continuous infusion of the drug using ALZET osmotic minipumps." (p. 411):
3. Azidothymidine


ALZET Comments: Azidothymidine; Sodium hydroxide; SC; monkey (pregnant); 2ML4; 28 days; controls received mp w/vehicle; functionality of mp verified by plasma levels of AZT; teratology; AZT is azidothymidine, also known as zidovudine; multiple pumps per animal (3-4); circulating levels of AZT remained constant during the course of treatment and were achieved by the first (24 hr.) sample (p. 11); antiretroviral drug.


ALZET Comments: Azidothymidine; Propylene glycol; Water; SC; mice; 2001; 5 days; functionality of mp verified by plasma AZT levels; comparison of b.i.d. s.c. injections vs. mp; good methods; also called zidovudine; pk; half-life (p.577); continuous infusion significantly more effective than bolus injection; antiretroviral drug.


ALZET Comments: Azidothymidine; mice (pregnant); 2001; 21 days; Pumps replaced after each week to achieve 3 weeks duration; immunology; teratology; oral delivery of AZT resulted in highly variable plasma levels; antiretroviral drug.


ALZET Comments: Azidothymidine; IA (carotid); Rat; 2001; 3-7 days; Dose-response; blood levels; comparison of IV injections vs. mp; good methods; antiviral; alkaline pH of 11 increased solubility and stability of AZT; antiretroviral drug.

4. Ganciclovir


Agents: ganciclovir Vehicle: water, double distilled; Route: SC; Species: Mice; Pump: 2002; Duration: 4 weeks;

ALZET Comments: Dose (100 mg/kg/d); Controls were WT and received mp w/agent; animal info (6-8 weeks, female, C57BL/6 and NestinTK); pumps replaced every 2 weeks; neurodegenerative (multiple sclerosis);


Agents: Ganciclovir Vehicle: Not Stated; Route: CSF/CNS (lateral ventricle); Species: Mice (transgenic); Pump: 2002; Duration: 4 weeks;

ALZET Comments: animal info (150- to 200-dayold adult male hemizygous CD11b-HSVTK (TK) mice (4) or their transgene-negative littermates); ALZET brain infusion kit used;
**Agents:** Ganciclovir  
**Vehicle:** Saline, physiological;  
**Route:** CSF/CNS (lateral ventricle);  
**Species:** Mice;  
**Pump:** 1002; 1007D;  
**Duration:** 7, 11, 14 days;  
**ALZET Comments:**

**Agents:** Ganciclovir  
**Vehicle:** Water;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 2002;  
**Duration:** 28 days;  
**ALZET Comments:** Dose (100 mg/kg/day); animal info (NestinTK); pumps replaced every 2 weeks; neurodegenerative (Spinal Cord);

**Agents:** Ganciclovir  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (lateral ventricle);  
**Species:** Mice;  
**Pump:** 1007D;  
**Duration:** 5 days;  
**ALZET Comments:** animal info (GFAP-TK); spinal cord injury; Brain Coordinates (0.2 mm AP from bregma, 0.7 mm ML, and 2.5 mm DV below the dura);

5. PMEA

**ALZET Comments:** PMEA; Mice; no duration posted; comparison of ip injections vs. mp; teratology; antiviral agent.

6. R-95288

**ALZET Comments:** R-95288; Saline; IP; SC; mice (SCID); 2002; no duration posted; controls received mp w/ saline; antisense; mice were transplanted w/ human peripheral blood leukocytes; R-95288 protects human chimeric mice against HIV-1 infection; AIDS.

7. Ribavirin

**ALZET Comments:** Ribavirin; 6-aza-uridine; SC; Hamster; 2ML2; 14 days; Controls received mp w/ PBS; toxicology; animal info (2 months old, golden); Ribavirin is an antiviral agent; 6-aza-uridine is a triazmenucleoside.

**ALZET Comments:** Ribavirin; SC; Mice (SCID); 2002; 14 days; Ribavirin is an antiviral; antiretroviral.

8. SID791

ALZET Comments: SID 791; Saline, sterile; SC; Mice (SCID); mice; 2002; no duration posted; functionality of mp verified by plasma levels; dose-response; comparison of sc injections vs. mp; immunology; SID 791 is a bicyclam which inhibits HIV replication in vivo; human fetal liver & thymus transplanted into SCID mice.