References on the Administration of Barbiturates
Using ALZET® Osmotic Pumps

1. Barbital

Agents: Barbital, sodium Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 192 hours;
ALZET Comments: Barbital plasma levels taken; pumps replaced every 96 hours; tolerance; dependence; multiple pumps per animal (2); "This convenient implantation procedure may be a useful model for quantitative study of barbituate tolerance and dependence as well as various chronic effects of other drugs." p. 545

2. Pentobarbital

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; tolerance; dependence; one week recovery period after cannula placement

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: Controls received mp w/ vehicle; tolerance; dependence; animals allowed one week recovery after cannula placement

Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 7 days;
ALZET Comments: guide cannula implanted; rats were allowed 1 week recovery before implantation of pump; tolerance; dependence

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: controls received mp w/saline; tolerance

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 7 days;
ALZET Comments: controls received mp w/saline; tolerance

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: controls received vehicle infusion; tolerance; dependence; recipe for equithesin anesthesia provided on p. 170

P3422: T. Ito, et al. Chronic pentobarbital administration alters g-aminobutyric acid(A) receptor a(6)-subunit mRNA levels and diazepam-insensitive [3H]Ro15-4513 binding. Synapse 1996;22(106-113
Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: tolerance; dependence
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Bibliography

Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: controls received mp w/saline; tolerance; dependence; animals allowed 1 week recovery after cannula placement

Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: tolerance

Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: Not Stated; Duration: no duration posted;
ALZET Comments: tolerance

Agents: Pentobarbital Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: Not Stated; Duration: no duration posted;
ALZET Comments: tolerance

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6,7 days;
ALZET Comments: controls received mp with saline; tolerance; dependence; animals allowed 1 week recovery after cannula placement; brain and serum samples taken at 0, 2, 4, 7 days during infusion & 6, 24, 48 hrs. after withdrawal

Agents: Pentobarbital Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: tolerance; dependence

Agents: Pentobarbital, sodium Vehicle: Saline, normal; Route: CSF/CNS; Species: Rat; Pump: 2ML1; Duration: 6 days;
ALZET Comments: controls received mp w/ filtered, normal saline; tolerance; dependence; good illustration of pump placement (p. 1301)
3. Phenobarbital

**R0242:** W. Loescher. The pharmacokinetics of antiepileptic drugs in rats: Consequences for maintaining effective drug levels during prolonged drug administration in rat models of epilepsy. Epilepsia 2007;48(7):1245-1258

**Agents:** Levetiracetam; phenobarbital; phenytoin; valproic acid; vigabatrin  
**Vehicle:** Water, distilled; PEG 300; glycerol; PEG 400; propylene glycol;  
**Route:** SC; IP;  
**Species:** Rat; mice; gerbils;  
**Pump:** 2ML1; 2ML2;  
**Duration:** 1-4.2 weeks; 7 days;

**ALZET Comments:** Comparison of IV, IP injections vs. food or water delivery vs mp; pumps replaced (every week in one set of experiments); stress/adverse reaction: (see pg. 1255); peritoneal irritation, peritonitis in some of the IP experiments); half-life (p. 1247) table 1 (18 compounds); animal info (epileptic, Sprague-Dawley, Wistar); review; see p. 1254-1255; see table 4 for advantages + disadvantages of different application routes


**Agents:** Phenobarbital  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2002;  
**Duration:** 8 days;

**ALZET Comments:** Comparison of phenobarb. consumed po in drinking water vs. mp infusion; author states advantages of mp use

**P0447:** T. P. Davis, *et al.* Centrally acting drugs alter in vitro B-endorphin processing in the rat. European Journal of Pharmacology 1984;100(249-251

**Agents:** Chlorpromazine; haloperidol; phenobarbital; promethazine  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 8 days;

**ALZET Comments:** Comparison of agents effects


**Agents:** Phenobarbital, sodium; Valproate, sodium  
**Vehicle:** Water;  
**Route:** SC;  
**Species:** mice (pregnant);  
**Pump:** 2001; 2002;  
**Duration:** 1 and 2 weeks;

**ALZET Comments:** no stress see p. 1580, 1582; 1-2 pumps/animal; VPA and PB used singly and in combination in mp

**P0311:** I. M. Kapetanovic, *et al.* Phenobarbital pharmacokinetics in rat as a function of age. Drug Metabolism and Disposition 1982;10(6):586-589

**Agents:** Phenobarbital  
**Vehicle:** Water;  
**Route:** IP;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 5 days;

**ALZET Comments:** bolus injec. vs. mp infusion


**Agents:** Phenobarbital, sodium  
**Vehicle:** Propylene glycol; Water;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 3 days;

**ALZET Comments:** some groups given 6-OHDA or vehicle of ascorbic acid in Artificial CSF prior to infusion