References on the Administration of Epinephrine
Using ALZET® Osmotic Pumps

Agents: Epinephrine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2004; Duration: Not Stated;
ALZET Comments: Dose: Epinephrine (5.4 mg/0.25 mL/h); Controls received mp w/ vehicle; animal info: adults, male and female Sprague-Dawley rats 8 weeks old; neurodegenerative (Peripheral neuropathy);

Agents: Adrenaline Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: Not Stated;
ALZET Comments: Dose (1 ug/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (MC4R deficient, C57BL/6J);

Agents: Epinephrine Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 10 days;
ALZET Comments: Dose: Epinephrine (5 mg/kg/24 h); Controls received mp w/ vehicle; animal info (6- to 8-week-old C57BL/6); Blood pressure measured via tail-cuff method; Obstructive sleep apnea (OSA)

Agents: Epinephrine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2004; Duration: 2 weeks;
ALZET Comments: Dose (5.4 mg/0.25 mL/h); Controls received mp w/ vehicle; animal info (adult male Sprague-Dawley rats, weighing 250 to 400 g (approximatel 8-12 weeks old)); antisense (intrathecal b2-adrenergic receptor antisense);

Agents: epinephrine, macrophage-activating lipopeptide-2; Route: SC; Species: mice; Pump: 1002; Duration: 7,11 days
ALZET Comments: animal info (Jax Mice, male, 8-10 weeks of age); peptides; macrophage-activating lipopeptide-2 aka MALP-2; Dose (7mg/kg body weight/day EPI; .7 mg/kg body weight/day ICI);

Agents: Epinephrine; antagonist, beta adrenergic receptor Vehicle: Saline; Route: SC; Species: Mice (transgenic); Pump: 1002; Duration: 8 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, EGFP-lys); functionality of mp verified by plasma levels; dose-response (pg. 810); immunology;

Agents: Epinephrine; macrophage-activating lipopeptide-2; ICI-118,551 Vehicle: Not Stated; Route: SC; Species: mice; Pump: 1002; Duration: 7 days; 11 days;
ALZET Comments: animal info (Jax Mice, male, 8-10 weeks of age); peptides; macrophage-activating lipopeptide-2 aka MALP-2; Dose (7mg/kg body weight/day EPI; .7 mg/kg body weight/day ICI);

Agents: Epinephrine Vehicle: Saline, buffered; Route: SC; Species: Mice; Pump: 2001; Duration: 4 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (BALB/c);

Agents: Epinephrine Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2004; Duration: 14 days;
ALZET Comments: Animal info (adrenal medullectomy, adult, male, Sprague Dawley, 300-400 g); functionality of mp verified by plasma drug levels


Agents: Epinephrine Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 5 days;
ALZET Comments: Half-life (p. G1227) "very short"; animal info (male, C57BL/6, 4-6 wks old); "Owing to the very short half-life of epinephrine, the hormone was infused instead of injected to maintain a low-grade elevated plasma level over a prolonged period which better mimics the effect of ethanol." pg. G1227


Agents: Epinephrine Vehicle: Saline; Ascorbic acid; Route: SC; Species: Rat; Pump: 2004; Duration: 3 weeks;
ALZET Comments: Replacement therapy (adrenal medullectomy); animal info (male, Sprague Dawley, 250-450g.)


Agents: Epinephrine Vehicle: Saline; Ascorbic acid; Route: Not Stated; Species: Rat; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (male, Sprague Dawley, 270-450 g.)


Agents: Epinephrine bitartrate Vehicle: Saline; Ascorbic acid; Route: SC; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received no treatment; animal info (male, Sprague-Dawley 250-380 g); pain


Agents: Epinephrine Vehicle: Saline; Ascorbic acid; Route: SC; Species: Rat; Pump: 1007D; 2002; Duration: 7, 14 days;
ALZET Comments: Functionality of mp verified by plasma epinephrine levels; replacement therapy (adrenal medullectomy, adrenal gland denervation); dose-response (Fig 3)


Agents: Adrenaline Vehicle: Water, sterile; Ascorbic acid; Route: SC; Species: Rat; Pump: 2002; Duration: 1, 12 days;
ALZET Comments: Controls received mp w/ vehicle


Agents: Epinephrine Vehicle: Saline; Ascorbic acid; Route: SC; Species: Sheep (fetus); Pump: 2ML1; Duration: 4 days;
ALZET Comments: Teratology


Agents: ICI-118,551; epinephrine Vehicle: Saline; Ascorbic acid; ethanol; Route: SC; Species: Rat; Pump: 1007D; 2004; Duration: 3, 7, 14 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response (p. 911); ICI-118, 55 dissolved in ethanol and saline and infused for 7 days via 1007D pumps; epinephrine dissolved in saline and ascorbic acid and delivered for 3, 7, or 14 days via 2004 pumps.
**Agents:** Epinephrine; Angiotensin II  **Vehicle:** Not Stated;  **Route:** SC;  **Species:** Rat;  **Pump:** Not Stated;  **Duration:** 6 days;  **ALZET Comments:** Controls received mp w/ saline; plasma levels reported; cardiovascular; pump rate 0.5 ul hr (p.15)

**Agents:** Epinephrine; Angiotensin II  **Vehicle:** Saline;  **Route:** SC;  **Species:** Rat;  **Pump:** 1007D;  **Duration:** 6 days;  **ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by epinephrine plasma levels; cardiovascular; peptides; various methods of inducing hypertension explored

**Agents:** Epinephrine  **Vehicle:** Saline;  **Route:** SC;  **Species:** Chinchilla;  **Pump:** Not Stated;  **Duration:** 1,2,3, or 4 weeks;  **ALZET Comments:** controls received mp w/ vehicle;

**Agents:** Epinephrine; Corticosterone  **Vehicle:** Ethanol; NaCl;  **Route:** SC;  **Species:** Rat;  **Pump:** 2ML1;  **Duration:** 6 days;  **ALZET Comments:** controls received mp w/ vehicle; replacement therapy (adrenalectomy)

**Agents:** Epinephrine; Angiotensin II  **Vehicle:** Ascorbic acid;  **Route:** SC; IA (carotid);  **Species:** Rat;  **Pump:** 2ML4; 1007D;  **Duration:** 6 days;  **ALZET Comments:** controls received saline infusion; functionality of mp verified by plasma levels; stability verified by analyzing residual solution

**Agents:** Epinephrine  **Vehicle:** Water, distilled;  **Route:** IP;  **Species:** Rat;  **Pump:** Not Stated;  **Duration:** 6 days;  **ALZET Comments:** comparison of short-term iv infusion vs. mp

**Agents:** Epinephrine bitartrate  **Vehicle:** Saline; Ascorbic acid;  **Route:** SC;  **Species:** Rat;  **Pump:** 2ML;  **Duration:** 2 weeks;  **ALZET Comments:** long-term study, pumps replaced every 2 weeks; mp implanted in flank region

**Agents:** Nicotine free base; Epinephrine acid tartrate  **Vehicle:** Saline; Ascorbic acid; Water, distilled;  **Route:** SC;  **Species:** Rat (pregnant);  **Pump:** 2ML1;  **Duration:** no duration posted;  **ALZET Comments:** controls received mp w/ saline; toxicology; teratology

**Agents:** Epinephrine bitartrate; Clentiazem  **Vehicle:** Saline; Ethanol; DMSO;  **Route:** SC;  **Species:** Rat;  **Pump:** 2ML2;  **Duration:** 2 weeks;  **ALZET Comments:** no comment posted

**Agents**: Epinephrine **Vehicle**: Saline; Ascorbic acid; **Route**: SC; **Species**: Rat; **Pump**: Not Stated; **Duration**: 6 days; **ALZET Comments**: no comment posted


**Agents**: Epinephrine **Vehicle**: Ascorbic acid; **Route**: Not Stated; **Species**: Rat; **Pump**: 2001; **Duration**: 7 days; **ALZET Comments**: English with German summary


**Agents**: Epinephrine **Vehicle**: Ascorbic acid; Saline; Water; **Route**: IV (jugal); **Species**: Rat; **Pump**: 2001; **Duration**: 7 days; **ALZET Comments**: dose-response; functionality of mp verified by plasma levels; no stress

**P1584**: W. Terres, *et al.* Effects of chronic treatment with adrenaline or propranolol on platelet function and c-AMP levels in the rat. Cardiovascular Research 1989;23(112-116

**Agents**: Epinephrine **Vehicle**: Ascorbic acid; Saline; **Route**: SC; **Species**: Rat; **Pump**: 2002; **Duration**: 8 weeks; **ALZET Comments**: long-term study, pump replaced every 14 days


**Agents**: Epinephrine **Vehicle**: Ascorbic acid; Saline; **Route**: SC; **Species**: Rat; **Pump**: 2001; **Duration**: 6 days; **ALZET Comments**: controls received mp w/ vehicle; propranolol used to examine influence of beta adrenoceptors and phentolamine for alpha adrenoceptors


**Agents**: Epinephrine **Vehicle**: Ascorbic acid; Water; **Route**: IV (femoral); **Species**: rabbit; **Pump**: 2002; **Duration**: 10 days; **ALZET Comments**: dose-response; functionality of mp verified by plasma levels


**Agents**: Nicotine base; Epinephrine bitartrate **Vehicle**: Ascorbic acid; Saline; Water; **Route**: SC; **Species**: Guinea pig; Rat; **Pump**: 2002; **Duration**: 2, 8 weeks; **ALZET Comments**: dose-response; functionality of mp verified by plasma levels; long-term study; pump replaced every 2 weeks


**Agents**: Epinephrine bitartrate **Vehicle**: Ascorbic acid; Saline; **Route**: SC; **Species**: Rat; **Pump**: 2001; **Duration**: 6 days; **ALZET Comments**: controls received mp w/ vehicle; hypertension

**P0713**: M. E. Upsher, *et al.* Beta-adrenergic receptors in rat myocardium during the development and reversal of hypertrophy and following chronic infusions of angiotensin 11 and epinephrine. Archives Internationales de Pharmacodynamie 1985;274(65-79

**Agents**: Angiotensin II; Epinephrine **Vehicle**: Water; **Route**: SC; **Species**: Rat; **Pump**: 2001; **Duration**: 6 and 12 days; **ALZET Comments**: mp primed in distilled water 24 hours prior to implant; peptides


**Agents**: Epinephrine HCl; I- **Vehicle**: HCl; Saline; **Route**: SC; **Species**: Rat; **Pump**: 2001; **Duration**: 1 week; **ALZET Comments**: states in error that mp will deliver up to 10 days; mp primed 3 hr prior to implant; bioavailability of EPI determined by plasma level increase

**Agents:** Epinephrine bitartrate  
**Vehicle:** Ascorbic acid; Saline  
**Route:** CSF/CNS  
**Species:** Rat  
**Pump:** 2001  
**Duration:** 5 days  

**ALZET Comments:** 2 day delay of mp Epi achieved by filling connecting tubing with vehicle; some tubing externalized to allow immediate cutoff of infusion; dose-response data; delayed delivery.


**Agents:** Angiotensin II; Epinephrine, l-  
**Vehicle:** Ascorbic acid; HCl; Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2001; 2002  
**Duration:** 6 or 13 days, or 4 weeks  

**ALZET Comments:** comparison of agents effects; 2002 mp replaced after 2 weeks; saline used as vehicle w/ Angll, HCl & ascorbic acid w/Epi; controls received vehicle; mp primed in saline before use; peptides