References on the Administration of Oxytocin Using ALZET® Osmotic Pumps


 Agents: Oxytocin Vehicle: Saline; Route: SC; Species: Rat; Pump: 2002; Duration: 14 days;
 ALZET Comments: Dose (380 µg/day); Controls received mp w/ vehicle; animal info (Female Wistar rats); replacement therapy (effects of the chronic administration of oxytocin);


 Agents: Oxytocin Vehicle: Buffered Saline; Route: SC; Species: Mice; Pump: 1003D; Duration: Not stated;
 ALZET Comments: Dose (0.6, 6, 18 or 240 µg/day); Controls received mp w/ vehicle; animal info (Wild-type C57BL6/J mice and DBA/2 mice); replacement therapy (associations between oxytocin induced labor and mental disorders in offspring);


 Agents: Oxytocin; atosiban Vehicle: Not Stated; Route: CSF/CNS (lateral ventricle); Species: Mice; Rats; Pump: Not Stated; Duration: 15 days; 14 days;
 ALZET Comments: Dose (Oxytocin 1, 10 ng/h), (atosiban 600µg/kg/day)); animal info (adult, male); behavioral testing (elevated plus maze, light-dark box, chronic subordinate colony stress); Atosiban is an inhibitor of the hormones oxytocin and vasopressin; literature review: author lists studies where oxytocin was administered to mice and atosiban was administered to rats;


 Agents: Oxytocin antagonist Vehicle: PBS; Route: SC; Species: Mice; Pump: Not stated; Duration: 5 weeks;
 ALZET Comments: Dose (1µg/kg/hr); Controls did not receive mp; animal info (female, C57BL/6J and Col3a1(G209S/+)); des Gly-NH2,d(CH2)5[D-Tyr2,Thr4]OVT is a selective oxytocin antagonist; cardiovascular; mp model not stated. infusion pump implanted at the end of the 3rd week of gestation and continued through the 4 weeks of lactation;


 Agents: Oxytocin; leptin Vehicle: Saline; Route: SC; Species: Mice; Pump: Not stated; Duration: 2 weeks;
 ALZET Comments: Dose (oxytocin (50 µg/day); leptin (20 or 40 µg/day)); Controls received mp w/ vehicle; animal info (Eight-week-old C57BL/6Jr male mice); “Osmotic pump content was verified postmortem in order to ensure complete drug delivery.”


 Agents: Oxytocin Vehicle: Saline; Route: CSF/CNS (Third and forth ventricle); Species: Rats, Mice; Pump: 2004; Duration: 28 days;
 ALZET Comments: Dose (16 nmol/day); Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley (CD IGS) rats, Long-Evans rats, C57BL/6J mice); post op. care (Mice were treated with analgesic ketoprofen and antibiotic Baytril; Rats treated with analgesic buprenorphine sustained release and the antibiotic enrofloxacin after cannulations); delayed delivery (implanted cannula and vinyl catheter were filled with sterile saline then A stainless steel 22-gauge pin plug was inserted at the end of the tubing during a 2-wk postoperative recovery period); Obesity and diabetes;


 Agents: Oxytocin Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 10 days;
 ALZET Comments: Dose (800 and 1600 µg/kg/day); animal info (HFD-fed male and female mice); Resultant plasma level (p.9);

**Agents:** Oxytocin  
**Vehicle:** Saline  
**Route:** CSF/CNS (lateral ventricle)  
**Species:** Mandarin vole  
**Pump:** 1002  
**Duration:** 12 days  

**ALZET Comments:** Dose (1 or 10 ng/h); Controls received mp w/ vehicle; animal info (4 month old male mandarin voles weighing 30–34 g); behavioral testing (light-dark box testing, response to novel pups, novel social stimulus test); Brain coordinates (posterior 0.3 mm, lateral 0.8 mm, depth 0.25 mm);

Q4789: Oliver J. Bosch, et al. Oxytocin in the nucleus accumbens shell reverses CRFR2-evoked passive stress-coping after partner loss in monogamous male prairie voles. Psychoneuroendocrinology 2016;64:

**Agents:** Astressin-2B; stresscopin; oxytocin, synthetic; receptor antagonist, oxytocin  
**Vehicle:** Ringer’s solution; DMSO  
**Route:** CSF/CNS (nucleus accumbens)  
**Species:** prairie vole  
**Pump:** 1007D  
**Duration:** 5 days  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (adult, 70-100 days old); ALZET brain infusion kit 2 used; 4% DMSO used; behavioral testing (forced swim test); cyanoacrylate adhesive; delayed delivery; Astressin-2B is a CRFR2 antagonist; stresscopin is a CRFR2 agonist; bilateral infusion; Dose (Astressin-2B 1 ng/h; stresscopin 0.1 ng/h; oxytocin, synthetic 0.5 ng/hr; OT receptor antagonist 5 ng/hr); brain coordinates;


**Agents:** Oxytocin  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2002  
**Duration:** 2 weeks  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (10 weeks old; lean rats weighed approx. 230 grams; obese rats weighed approx. 350 grams); Delivery of oxytocin by osmotic minipumps resulted in more than 6-fold increase in plasma oxytocin concentrations." pg 539; Rats separated 2 per cage post-op; storage, housing; Therapeutic indication (Metabolism, insulin resistance); Dose (3.6 ug/100g body weight/day);


**Agents:** Oxytocin  
**Vehicle:** SC  
**Species:** Rat  
**Pump:** Not Stated  
**Duration:** 7 days; 14 days  

**ALZET Comments:** Dose (0.2 mg/kg/day); Controls received mp w/ vehicle; animal info (3-4 month old male Sprague–Dawley rats);


**Agents:** Oxytocin  
**Vehicle:** Not Stated  
**Species:** Mice (pregnant)  
**Pump:** 1003D  
**Duration:** 3 days  

**ALZET Comments:** animal info (C57BL/6J WT mice, 10 weeks old); functionality of mp verified by measurements of changes in uterine pressure; Uterine contraction initiation; DSI PhysioTel Receiver used to measure uterine contractions; Dose (3 U/day);

Q4566: E. Plante, et al. Oxytocin Treatment Prevents the Cardiomyopathy Observed in Obese Diabetic Male db/db Mice. Endocrinology 2015;156(1416-1428

**Agents:** Oxytocin  
**Vehicle:** NaCl; BSA; sodium citrate  
**Route:** SC  
**Species:** Mice  
**Pump:** 2006  
**Duration:** 12 weeks  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL/Ks-1-Leptdb-Leptdb); functionality of mp verified by plasma levels; pumps replaced every 6 weeks; long-term study; diabetes; “After 6 weeks, the osmotic pumps were replaced to adjust the OT concentration for body weight gain.” pg 1417;


**Agents:** Angiotensin II; oxytocin  
**Vehicle:** PBS  
**Route:** SC  
**Species:** Rat  
**Pump:** 2004  
**Duration:** 28 days  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 8-9 weeks old, 240-350g); post op. care (swabbed with 7.5% w/v iodine); cardiovascular; peptides; Dose (Ang II 40 ug/kg/h; OT 20 or 100 ng/kg/h);

Agents: Oxytocin Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2002; Duration: 12 days;
ALZET Comments: Controls received mp w/ saline; animal info (male, db/db, 11 weeks old); diabetes; obesity;


Agents: Oxytocin Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 225-250g); ALZET brain infusion kit 2 used; post op. care (SC injection of antibiotics); behavioral testing (open field test, object recognition test, elevated plus maze); used dental cement;


Agents: Oxytocin Vehicle: Ringer's solution; Route: CSF/CNS; Species: Mice; Pump: 1004; Duration: 5 days; 15 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL6, 19-22g, 30-35g); functionality of mp verified by serum oxytocin levels; post op. care (betaisodona; Baytril); behavioral testing (elevated plus maze; locomotor activity); Cannula placement verified via nissl-staining and histologic analysis; used dental cement and stainless steel screws; delayed delivery; catheter filled with vehicle for 1 week recovery;


Agents: Oxytocin Vehicle: Not Stated; Route: Not Stated; Species: Sheep; Pump: Not Stated; Duration: 90 days;
ALZET Comments: Pumps replaced every 30 days; long-term study;


Agents: Oxytocin, synthetic; antagonist, peptidergic oxytocin Vehicle: Saline, sterile, pyrogen-free; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Groningen, adult); ALZET brain infusion kit 2 used; behavioral testing (resident intruder test); stability verified by (pilot study; 44% destruction of OVT over 10 day period in vivo); peptides; Cannula placement verified via dye injection after sacrifice; Plastics One guide cannula; dental acrylic cement and two stainless steel screws; pumps and catheters incubated in room temperature saline overnight;


Agents: Oxytocin; carbetocin; TGOT Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL/6J or ob/ob); diabetes;


Agents: Oxytocin Vehicle: Not Stated; Route: SC; Species: Rabbit; Pump: 2ML4; Duration: 4 months;
ALZET Comments: Controls received mp w/ 50mM sodium citrate, pH 4; animal info (Watanabe Heritable Hyperlipidemic rabbit, 3 month old, 2.9-3.5 kg); functionality of mp verified by measuring plasma OT levels throughout study; pumps replaced every 4 weeks over 4 months; half-life OT<10 min; long-term study;


Agents: Oxytocin Vehicle: Saline, sterile; Route: SC; Species: Mice; Pump: 2002; Duration: 13 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (HFD induced, obese, 35 g, C57BL/6J, male, 6 wks old)

**Agents:** Vasopressin, arginine; oxytocin receptor antagonist; AVP receptor antagonist

**Vehicle:** CSF, artificial

**Route:** CSF/CNS

**Species:** Rat

**Pump:** 2002

**Duration:** 10 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 6-20 wks old); peptides; ALZET brain infusion kit 2 used


**Agents:** Oxytocin; oxytocin receptor antagonist

**Vehicle:** CSF, artificial

**Route:** CSF/CNS

**Species:** Mice

**Pump:** 1002

**Duration:** 8, 10 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL/6, adult, male, 23-30g, MCAO); Plastics One cannula used; cannula placement verified through cresyl violet staining; ischemia


**Agents:** Oxytocin

**Vehicle:** Saline, isotonic

**Route:** SC

**Species:** Rat

**Pump:** 2002

**Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (adult, male, Wistar, 350-480 g)


**Agents:** Oxytocin

**Vehicle:** Not Stated

**Route:** CSF/CNS, SC

**Species:** Rat

**Pump:** 2001

**Duration:** 3, 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 300-325 g)


**Agents:** Secretin; oxytocin

**Vehicle:** Saline

**Route:** IV (femoral); CSF/CNS

**Species:** Rat

**Pump:** 2004

**Duration:** 21 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 250-350 g)


**Agents:** Oxytocin; oxytocin receptor antagonist

**Vehicle:** Ringer's solution

**Route:** CSF/CNS

**Species:** Rat

**Pump:** 1007D

**Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, female, HAB, LAB, Wistar, 250-350 g); behavioral testing (light-dark box, elevated plus-maze, forced swim test); cannula placement verified post mortem by injecting blue dye into the cannula


**Agents:** Oxytocin

**Vehicle:** Sodium citrate

**Route:** SC

**Species:** Mice

**Pump:** Not Stated

**Duration:** 12 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; long-term study; pumps replaced after 6 weeks; animal info (male ApoE-/-, 11-12 wks old, 22-24 g)


**Agents:** Oxytocin

**Vehicle:** Not Stated

**Route:** SC

**Species:** Rat

**Pump:** Not Stated

**Duration:** 3, 7 days;

**ALZET Comments:** Controls received mp w/ vehicle, or sham operation; animal info (male, Sprague Dawley, 280-370 g); myocardial infarction


**Agents:** Oxytocin antagonist; oxytocin

**Vehicle:** Saline

**Route:** CSF/CNS

**Species:** Prairie vole

**Pump:** 1007D

**Duration:** Not Stated;
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**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, 75-80 days old); plastics one cannula used; behavioral testing (same sex partner preference)


*Agents:* Oxytocin  
*Vehicle:* Saline;  
*Route:* SC;  
*Species:* Pig;  
*Pump:* 2ML4;  
*Duration:* 21 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, 75-80 days old); plastics one cannula used; behavioral testing (same sex partner preference)


*Agents:* Vasopressin, 1-desamino-8-D-arginine; oxytocin  
*Vehicle:* Not Stated;  
*Route:* SC;  
*Species:* Rat;  
*Pump:* 2002;  
*Duration:* 4 days;  

**ALZET Comments:** Controls received mp w/ saline; animal info (male, Sprague Dawley, 60 days old, 250-300 g.)

**P9648:** R. Tamma, et al. Oxytocin is an anabolic bone hormone. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2009;106(17):7149-7154

*Agents:*  
*Vehicle:* Not Stated;  
*Route:* CSF/CNS;  
*Species:* Mice;  
*Pump:* Not Stated;  
*Duration:* 5 days;  

**ALZET Comments:** Animal info (male female, OT-/-, Otr-/-)


*Agents:* Oxytocin antagonist  
*Vehicle:* Saline;  
*Route:* IV (jugular);  
*Species:* Rat;  
*Pump:* 2001D;  
*Duration:* Not Stated;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 60 days old, 250-300 g.)

**P9642:** M. Ishii, et al. Oxytocin hypersensitivity in pregnant P-LAP deficient mice. LIFE SCIENCES 2009;84(19-20):668-672

*Agents:* Oxytocin  
*Vehicle:* PBS;  
*Route:* SC;  
*Species:* Mice (pregnant);  
*Pump:* 1007D;  
*Duration:* Not Stated;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (P-lap KO, wt)


*Agents:* Oxytocin  
*Vehicle:* Saline, sterile;  
*Route:* CSF/CNS;  
*Species:* Rat;  
*Pump:* 2001D;  
*Duration:* 7 days;  

**ALZET Comments:** Controls received mp w/ vehicle; replacement therapy (ovariectomy); ALZET brain infusion kit used; animal info (female, Sprague-Dawley, 250-300g.)


*Agents:* Oxytocin antagonist  
*Vehicle:* Saline, sterile;  
*Route:* IV (jugular);  
*Species:* Rat;  
*Pump:* 2001D;  
*Duration:* 24 hours;
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Bibliography

ALZET Comments: Controls received mp w/ vehicle; replacement therapy (ovariectomy); animal info (female, Sprague Dawley, 200-250g); endocrinology

Agents: Oxytocin antagonist; oxytocin antagonist, desGly- Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 5 days;
ALZET Comments: Controls received mp w/ saline; replacement therapy (ovariectomy); ALZET brain infusion kit used; peptides; animal info (female, Sprague-Dawley, 225-250g.); mp primed overnight in isotonic saline

Agents: Secretin; oxytocin Vehicle: Saline; Route: IV (femoral); Species: Rat; Pump: 2002; Duration: 20 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by plasma oxytocin levels; animal info (male, Brattleboro, Long-Evans, 9-10 wk old); vasopressin agonist

Agents: Oxytocin Vehicle: Saline; Route: IP; Species: Rat; Pump: 2002; Duration: 8 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by plasma oxytocin levels; animal info (male, Brattleboro, Long-Evans, 9-10 wk old); vasopressin agonist

Agents: Oxytocin; vasopressin Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; comparison of intrathecal injections vs. mp

Agents: Oxytocin Vehicle: Not Stated; Route: IP; Species: Mice (nude); Pump: 2002; Duration: 2 weeks;
ALZET Comments: Controls received w/ physiological saline; no stress (see pg.530); cancer (ovarian carcinoma)

Agents: Etioclopride; oxytocin; oxytocin receptor antagonist Vehicle: CSF, artificial; Route: CSF/CNS; Species: Prairie vole; Pump: 1007D; Duration: 7 days;
ALZET Comments: Plastics One cannula; eticlopride is a D1 and D2 receptor antagonist

Agents: Oxytocin antagonist Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: Not Stated; Duration: 5 days;
ALZET Comments: Pumps mentioned on p.224; review of studies in oxytocin knockout mice

Agents: Oxytocin receptor antagonist Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: no duration posted;
ALZET Comments: controls received mp w/saline
Agents: F314; Oxytocin Vehicle: Not Stated; Route: Not Stated; Species: Rat; mice; Pump: Not Stated; Duration: 14 days; ALZET Comments: controls received mp w/saline; F314 is an oxytocin-analog; oxytocin pellets used in some animals; cancer; immunology

Agents: Oxytocin; Oxytocin receptor antagonist Vehicle: CSF, artificial.; Route: SC; CSF/CNS; Species: Prairie vole; Pump: 1007D; Duration: no duration posted; ALZET Comments: controls received mp with aCSF; peptides; antagonist was OTA (d(CH2)5-[Tyr(me)2,Thr4,Try-NH2,9]; oxytocin given singly or concomitantly with antagonist

Agents: Vasopressin, arginine; oxytocin Vehicle: Not Stated; Route: CSF/CNS; Species: Prairie vole; Pump: 2ML1; Duration: no duration posted; ALZET Comments: Controls received mp w/ vehicle; cannula secured w/ dental cement

Agents: Oxytocin, [Pen1,Phe(me)2,Thyr4,Orn8]- Vehicle: Acetic acid; Route: Not Stated; Species: Rat; Pump: 1003D; Duration: 3 days; ALZET Comments: controls received saline via injections and/or mp; [Pen1,Phe(me)2,Thyr4,Orn8]-oxytocin is a selective oxytocin and V1a-receptor antagonist

Agents: Oxytocin Vehicle: Sodium chloride; Acetic acid; Route: SC; intrauterine; Species: sheep; Pump: 2ML1; Duration: no duration posted; ALZET Comments: controls received mp w/ vehicle; tissue perfusion (uterus); functionality of mp verified by in vitro analysis and RIA of plasma levels; peptides; intrauterine infusion less effective than systemic infusion in reduction of endometrial oxytocin receptor concentration

Agents: Oxytocin Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2002; Duration: no duration posted; ALZET Comments: controls received mp w/ aCSF; stability verified by RDA; 44% destruction after 10 days in vivo; peptides

Agents: Oxytocin Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2002; Duration: 10 days; ALZET Comments: comparison of b.i.d. injections vs. mp; stability information given for 10 days of infusion in vivo; controls received mp w/vehicle; hypophysectomy - excision or destruction of hypophysis cerbri; replacement therapy (lesion in paraventricular nucleus of hypothalamus); comparison of icv injections vs pumps; peptides; stability: "assay of pump contents revealed about 44% destruction of oxytocin over a 10 day period in vivo" p. 2603; "due to the short half-life of oxytocin... the injection study... provided insufficient stimulus to down-regulate oxytocin receptors." p. 2604; replacement therapy (lesion in PVN of hypothalamus); comparison of ICV injections vs. mp; peptides

Agents: Oxytocin Vehicle: Saline; Acetic acid; Route: SC; Species: sheep; Pump: 2001; 2ML2; Duration: 12 days; ALZET Comments: controls received mp with saline or no treatment; functionality of mp verified by plasma levels; peptides

Agents: Oxytocin antagonist; Oxytocin; Vasopressin antagonist
Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2001; Duration: no duration posted;
ALZET Comments: 4 doses of oxytocin infused, some animals received 2 pumps


Agents: Oxytocin
Vehicle: Saline; Route: SC; Species: cattle; Pump: 2ML2; Duration: no duration posted;
ALZET Comments: controls received mp w/ saline; functionality of mp verified by RIA analysis of plasma levels; comparison of jugular infusion by computer-controlled pump; peptides


Agents: Antibody, anti-oxytocin; Antibody, anti-vasopressin, arginine; Oxytocin, 2-phenylalanine, 8-ornithine; Serum, rabbit; Oxytocin; Vasopressin, 1-desamino-8-D arginine; Vasopressin, arginine
Vehicle: CSF, artificial; Route: CSF/CNS; Species: Rat;
Pump: 2002; Duration: 9, 10 days;
ALZET Comments: dose-response; functionality of mp verified by plasma levels; peptides


Agents: Oxytocin, desamino-; Oxytocin; Prostaglandin F2a
Vehicle: Saline; Route: IP; Species: Rat; Pump: 2001; Duration: 5 days;
ALZET Comments: peptides


Agents: Oxytocin; Vasopressin antagonist; Vasopressin, arginine
Vehicle: Saline; Route: IP; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls received mp w/vehicle; peptides; concomitant infusion of AVP w/antagonist and oxytocin w/antagonist; functionality of mp verified


Agents: Oxytocin
Vehicle: Chlorobutanol; Saline; Route: intraovarian (corpus luteum); Species: monkey; Pump: 2001; Duration: 1 week;
ALZET Comments: tissue perfusion (ovarian - corpus luteum); methods/surgery p. 402; value of mp p. 403; pumps were left in place up to 10 days; peptides


Agents: Oxytocin; Vasopressin, arginine
Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 10 days;
ALZET Comments: peptides