References on the Administration of Neuropeptide Y Using ALZET® Osmotic Pumps

Q4685: R. Zhang, et al. Long-Term Administration of Neuropeptide Y in the Subcutaneous Infusion Results in Cardiac Dysfunction and Hypertrophy in Rats. Experimental Neurology 2015;37(94-104

**Agents:** Neuropeptide Y  
**Vehicle:** PBS;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2004;  
**Duration:** 30 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 250-300 g); functionality of mp verified by plasma levels; cardiovascular; peptides; pumps primed in 37°C saline for 40 hours;


**Agents:** Neuropeptide Y  
**Vehicle:** PBS;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2004;  
**Duration:** 4 months;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 230-270 g, 3-4 mo old); long-term study; pumps replaced monthly


**Agents:** Neuropeptide Y  
**Vehicle:** PBS;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2004;  
**Duration:** 3 months;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (Wistar, male, adult, 230-250 g); long-term study; pumps replaced monthly


**Agents:** Neuropeptide Y Y5 agonist  
**Vehicle:** Saline;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 2002;  
**Duration:** 12, 14 days;  

**ALZET Comments:** Control animals received mp w/ saline; animal info (Sprague Dawley, Wistar, male, 150-170 g, olfactory bulbectomized); neuropeptide Y Y5 agonist also known as [cPP1-7,NPY19-23,Ala31,Aib32,Gln34]hPP


**Agents:** Neuropeptide Y; HS014  
**Vehicle:** NaCl;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 6 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 25-280 g); peptides; HS014 is a melanocortin 4 receptor antagonist


**Agents:** Neuropeptide Y; HS014  
**Vehicle:** NaCl;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 6 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 180-250 g); peptides; HS014 is a melanocortin 4 receptor antagonist


**Agents:** Neuropeptide Y (3-36)  
**Vehicle:** Heparin; BSA;  
**Route:** Intramyocardial;  
**Species:** Pig (miniswine);  
**Pump:** Not Stated;  
**Duration:** 4 weeks;  

**ALZET Comments:** Controls received mp w/ placebo; animal info (Intact, adult, male, Yorkshire, miniswine); 2ML sized pump used; tissue perfusion (myocardium)


**Agents:** Neuropeptide Y, neuropeptide y antagonist  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 2004;  
**Duration:** 28 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 180-250 g); functionality of mp verified by residual volume; peptides
AgentS: Neuropeptide Y, c-terminal fragments amidated; Neuropeptide Y, c-terminal fragments non-amidated Vehicle: DMSO; NaCl; Route: CSF/CNS; Species: Mice (transgenic); Pump: 2004; Duration: 28 days;
ALZET Comments: Controls received mp w/vehicle; animal info (NEP, APP, doubt tg. 6mo); 10% DMSO used; peptides

P9847: R. Moriya, et al. Comparison of independent and combined chronic anti-obese effects of NPY Y2 receptor agonist, PYY(3-36), and NPY Y5 receptor antagonist in diet-induced obese mice. Peptides 2009;30(7):1318-1322
AgentS: Neuropeptide Y, D-Trp34; peptide YY (3-36) Vehicle: Saline; BSA; Route: CSF/CNS; Species: Mice; Pump: 2001; 2002; Duration: 7, 14 days;
ALZET Comments: Controls received mp w/ vehicle; pumps replaced after 2 weeks; peptides; animal info (C57BL/6, 12-18 wks old); PBS/BSA in 2002 pump was replaced with NPP in 2001 after 2 week recovery period; obesity

AgentS: Antibody, rabbit, anti-neuropeptide Y Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 2002; Duration: 13 days;
ALZET Comments: Controls received mp w/ vehicle; comparison of ICV injections vs. mp; ALZET brain infusion kit 3 used; animal info (male, ddy, 7 weeks old, 35-40 g); peptides

AgentS: Neuropeptide Y Vehicle: CSF, artificial; Route: CSF/CNS; Species: Rat; Pump: 1003D; Duration: 3 days;
ALZET Comments: Controls received mp w/ vehicle; peptides; post op. care (bacitracin ointment over skull); animal info (Sprague-Dawley, male, 280-320g); 22-gauge stainless steel guide cannula, Plastics One

AgentS: Isoproterenol; Neuropeptide Y; [Leu31, Pro34]--; Neuropeptide Y1 receptor antagonist Vehicle: Not Stated; Route: IV (jugular); Species: Rat; Pump: 1003D; Duration: 16 hours;
ALZET Comments: Controls received mp w/ vehicle; half-life (p.115) "short" for isoproterenol; peptides; animal info (male, Sprague-Dawley, 250-320g.)

AgentS: Neuropeptide Y, synthetic rat; BIBP3226 Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2002; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; cardiovascular; antihypertensive; peptides; cannula placement confirmed by methylene blue staining; "This approach (mp) allowed us to assess the role of endogenous NPY in long-term control of BP under experimental conditions that excluded complications associated with anesthesia, restraint, and short-term drug administration.” (p. 782); neuropeptide Y, Y1 receptor antagonist

AgentS: Neuropeptide Y; Y1 agonist; Y5 agonist Vehicle: Saline; water; Ascorbic acid; Route: CSF/CNS; Species: Mice; Pump: 2001; Duration: 6 days;
ALZET Comments: Controls received mp w/ vehicle; peptides; mice received a two week recovery period; guide cannula used and secured with tissue adhesive; animal info (6 week old, C57BL/6, 25-30 grams)
P6495: P. D. Raposinho, et al. Chronic neuropeptide Y infusion into the lateral ventricle induces sustained feeding and obesity in mice lacking either Npy1r or Npy5r expression. Endocrinology 2004;145(1):304-310
Agents: Neuropeptide Y, porcine Vehicle: Phosphate buffer; sodium chloride; Ascorbic acid; BSA; Route: CSF/CNS; Species: Mice; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; stress/adverse reaction: (see pg.305) initial weight loss from surgery/anesthesia; ALZET brain infusion kit 2 used; peptides; cyanoacrylate adhesive (Loctite 454)

Agents: Neuropeptide Y; monocyte chemoattractant protein-1; PBS Vehicle: BSA; Route: CSF/CNS; Species: Mice; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; mcp-1 plasma levels taken; ALZET brain infusion kit used; peptides; obesity; 7-14 day recovery period after surgery; pumps filled with PBS during recovery; monocyte chemoattractant protein-1 is also known as MCP-1

Agents: Neuropeptide Y, rat; melanin-concentrating hormone-1, receptor agonist; melanin-concentrating hormone-1, receptor antagonist Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 2002; Duration: 14 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response (fig. 5); peptides; post op. care (antisedan); pump model incorrectly given as 2001 (p. 39); based on flow rate (.5 ul/hr) and duration (14 days) is actually model 2002 (p. 39)

Agents: Melanotan-II; Neuropeptide Y Vehicle: PBS; Ascorbic acid; BSA; Route: CSF/CNS; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Peptides; Melanotan II or MTII (a melanocortin receptor agonist) & neuropeptide were dissolved in PBS, 0.01% ascorbic acid, 0.1% bovine serum albumin adjusted to ph 7.4; pump model not listed

Agents: Neuropeptide Y, D-Trp34 Vehicle: PBS; Ascorbic acid; BSA; Route: CSF/CNS; Species: Mice; Pump: 2001; 2002; Duration: 13,21 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response (fig. 1); pumps replaced after 7-14 days; ALZET Brain Infusion kit used; peptides; post op. care (cefamedin); animal info (C57BL/6J, 9-12 weeks old, male); cannula placement confirmed by Evans blue dye injection

Agents: Neuropeptide Y; 1229U91; Neuropeptide Y, receptor agonist Vehicle: Ascorbic acid; Phosphate buffer; NaCl; BSA; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; peptides; cannula placement verified manually by locating the tip postmortem; 1229U91 is a mixed Y1 antagonist/Y4 agonist

P5583: C. Fekete, et al. Agouti-related protein (AGRP) has a central inhibitory action on the hypothalamic-pituitary-thyroid (HPT) axis; Comparisons between the effect of AGRP and neuropeptide Y on energy homeostasis and the HPT axis. Endocrinology 2002;143(10):3846-3853
Agents: Neuropeptide Y; Agouti-related protein Vehicle: CSF, artificial; Route: CSF/CNS; Species: Rat; Pump: 1003D; Duration: 3 days;
ALZET Comments: peptides; cannula was implanted then occluded with a dummy cannula for one week prior to infusion to allow for recovery; AGRP is an appetite stimulant
   **Agents:** Neuropeptide Y; neuropeptide Y, receptor agonist **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 3 days;
   **ALZET Comments:** Controls received mp w/ vehicle; peptides; endocrinology

   **Agents:** Neuropeptide Y **Vehicle:** Saline; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2004; **Duration:** 2 weeks;
   **ALZET Comments:** Controls received mp w/ vehicle; Peptides: cannula placement verified by methylene blue staining; one-week recovery period

Q7724: P. D. Raposinho, et al. Chronic administration of neuropeptide Y into the lateral ventricle of C57BL/6J male mice produces an obesity syndrome including hyperphagia, hyperleptinemia, insulin resistance, and hypogonadism. Mol Cell Endocrinol 2001;185(1-2):195-204
   **Agents:** Neuropeptide Y; Peptide YY 3-36 **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
   **ALZET Comments:** animal info (Male, Sprague Dawley, C57BL/6J); Neuropeptide Y aka pNPY, Peptide YY 3-26 aka PPY 3-36; ALZET brain infusion kit 2 used; Brain coordinates (0.5 mm posterior and 1.0 lateral to bregma and 2.2 mm below brain surface); cyanoacrylate adhesive;

   **Agents:** Transforming growth factor-a; Brain-derived neurotrophic factor; Vasoactive intestinal polypeptide; Peptide, histidine-isoleucine; Gastrin releasing peptide; Substance P; Neuramedin-C; Neurokinin A; Neuropeptide Y; Somatostatin; Antrin; Cholecystokinin; Thyrotropin-releasing hormone; Neurotensin; Neuramedin N; **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Hamster; **Pump:** 2002; **Duration:** 18,22 days;
   **ALZET Comments:** Peptides

   **Agents:** Neuropeptide Y **Vehicle:** CSF, artificial; **Route:** CSF/CNS (left lateral ventricle); **Species:** Rat; **Pump:** 2001; **Duration:** 3 days;
   **ALZET Comments:** Dose (10 g/24 hours); Controls received mp w/ vehicle; animal info (adult male Sprague Dawley rats, weighing 230–260 g); Brain coordinates (AP 20.8; Lat 1.2; d-Vent3.2); cyanoacrylate adhesive;

   **Agents:** Neuropeptide Y **Vehicle:** Saline; Ascorbic acid; BSA; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;
   **ALZET Comments:** Controls received no treatment; peptides; vehicle was filter sterilized

   **Agents:** Neuropeptide Y, human **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;
   **ALZET Comments:** Controls received mp w/vehicle; cannula placement verified one week after placement by icv injection of angiotensin II; pumps implanted 3 weeks after cannula placement; peptides

P3830: D. White. Intrathecal neuropeptide Y exacerbates nerve injury-induced mechanical hyperalgesia. Brain Research 1997;750(141-146
   **Agents:** Neuropeptide Y; Trinositol, a- **Vehicle:** Saline; Heparin; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
   **ALZET Comments:** peptides
P4124: A. Al-Arabi, et al. Synergistic action by neuropeptide y (NPY) and norepinephrine (NE) on food intake, metabolic rate, and brown adipose tissue (bat) causes remarkable weight loss in the obese (fa/fa) Zucker rat. Biomedical Sciences Instrumentation 1997;33(216-225
Agents: Neuropeptide Y; Norepinephrine Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2002; Duration: 14 days;
ALZET Comments: controls received mp w/vehicle; agents infused alone or in combination; peptides

Agents: Vasoactive intestinal peptide; Neuropeptide Y; VIP antagonist; Trinositol, a- Vehicle: Heparin; Saline; Route: CSF/CNS (intrathecal); Species: Rat; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Peptides; 10 U/ml of heparin

Agents: Neuropeptide Y, synthetic porcine; Neuropeptide Y-(13-36) Vehicle: Not Stated; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls received sham surgery; dose-response (6, 18, 36 ug/d); peptides

Agents: Neuropeptide Y Vehicle: Sodium chloride; Route: IV (jugular); Species: Rat; Pump: Not Stated; Duration: 1 week;
ALZET Comments: controls received mp w/ vehicle; peptides

P2710: M. G. Dube, et al. Evidence that neuropeptide Y is a physiological signal for normal food intake. Brain Research 1994;646(341-344
Agents: Antibody, neuropeptide Y; Immunoglobulin, anti-neuropeptide Y Vehicle: Serum, normal rabbit; CSF, artificial; Saline; Immunoglobulin, normal rabbit serum; Route: CSF/CNS (third ventricle); Species: Rat; Pump: 2001D; Duration: 24 hours;
ALZET Comments: controls received mp w/ rabbit serum; peptides

Agents: Neuropeptide Y, porcine Vehicle: PBS; Albumin, bovine serum; Ascorbic acid; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls received mp with vehicle; peptides; stylet maintained cannula patency for 1 week after placement

Agents: Antibody, neuropeptide Y Vehicle: Serum, normal rabbit; CSF, artificial; Route: CSF/CNS (third ventricle); Species: Rat; Pump: 2001D; Duration: Not Stated;
ALZET Comments: Controls received mp with vehicle; peptides

Agents: Neuropeptide Y, synthetic porcine Vehicle: Sodium chloride; Ascorbic acid; Albumin, bovine serum; PBS; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls were food-restricted and received mp w/ vehicle or were fed ad libitum; peptides

Agents: Neuropeptide Y, porcine Vehicle: Ascorbic acid; Albumin, bovine serum; PBS; Route: CSF/CNS; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls received mp with vehicle; dose-response (graph p. 227); peptides

**Agents:** Neuropeptide Y  
**Vehicle:** CSF, artificial  
**Route:** CSF/CNS  
**Species:** Rat  
**Pump:** 2002  
**Duration:** Not Stated

**ALZET Comments:** Functionality of mp verified by measurement of residual volume; stress/adverse reaction: small weight loss in animals with vehicle-containing pumps p298; stability verified in vitro at 37 C for 14 days; peptides


**Agents:** Neuropeptide Y  
**Vehicle:** Saline  
**Route:** IV (jugular)  
**Species:** Rat  
**Pump:** 1702  
**Duration:** 8, 9 days

**ALZET Comments:** Peptides


**Agents:** Neuropeptide Y  
**Vehicle:** CSF, artificial  
**Route:** Not Stated  
**Species:** Rat  
**Pump:** 2002  
**Duration:** 2 weeks

**ALZET Comments:** peptides