References on the Administration of Atrial Natriuretic Factor or Atrial Natriuretic Peptide Using ALZET® Osmotic Pumps


Agents: Melatonin
Vehicle: Ethanol; NaCl
Route: IP
Species: Mice
Pump: 2002
Duration: 55 days

ALZET Comments: Dose: (4 mg/kg/day); 10% ethanol; 0.9% NaCl vehicle used; Controls received mp w/ vehicle; animal info: C57BL/6 mice(21-25 g, male); behavioral testing: grip strength test; Brain coordinates (IMCA territory (2 mm posterior/6 mm lateral from bregma); Cyanoacrylate adhesive used: An intraluminal filament technique using an 8-0 nylon coated with silicon resin was applied after the ligation of the left common and external carotid arteries to obtain focal ischemia; ischemia (brain);


Agents: Atrial Natriuretic Peptide, Brain Natriuretic Peptide, or Antidiuretic Hormone
Vehicle: Not stated
Route: SC
Species: Mice
Pump: Not stated
Duration: 3 days

ALZET Comments: Dose (2 ng/kg/h); animal info (C57BL/6, 10-12 weeks old); Antidiuretic Hormone aka fibroblast growth factor 23, cardiovascular;


Agents: Atrial natriuretic peptide
Vehicle: Not Stated
Route: SC
Species: Mice
Pump: 2004
Duration: 21 days

ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6 N male mice, 7 weeks old, 21–23 g;

Q6194: Nojiri T, et al. Transcriptome analysis reveals a role for the endothelial ANP-GC-A signaling in interfering with pre-metastatic niche formation by solid cancers. ONCOTARGET 2017;8(39):65534-65547

Agents: Atrial natriuretic peptide
Vehicle: Saline
Route: SC
Species: Mice
Pump: 1002; 2004
Duration: Not Stated

ALZET Comments: Controls received mp w/ vehicle; cancer (lung); cardiovascular; immunology; Dose (0.5 μg/kg/min);


Agents: Atrial natriuretic peptide
Vehicle: Saline
Route: SC
Species: Mice
Pump: 1003D
Duration: Not Stated

ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6, 7 weeks old); toxicology; immunology; Dose (1.5 ug/kg/min);


Agents: Atrial natriuretic peptide
Vehicle: Not Stated
Route: SC
Species: Rat
Pump: 1002
Duration: 14 days

ALZET Comments: Controls received mp w/ SALINE; animal info (Spontaneously hypertensive rats, 10 weeks old); cardiovascular; peptides; bp measured using tail cuff;


Agents: Atrial natriuretic peptide
Vehicle: Saline
Route: IV (jugular)
Species: Mice (nu/nu)
Pump: 1002
Duration: 4 days

ALZET Comments: Controls received mp w/ vehicle; animal info (BALB/c nu/nu, 6 weeks old); cancer (lung); cardiovascular; immunology; used mouse jugular catheter (#7702); bp measured using tail cuff;


Agents: Atrial natriuretic peptide
Vehicle: Glucose
Route: SC
Species: Mice
Pump: 1003D
Duration: 72 hours

ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6, 7 weeks old); 5% glucose used; cardiovascular; peptides;

**Agents:** Atrial natriuretic peptide

**Vehicle:** Glucose;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 1003D;  
**Duration:** 2 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL6, 6 weeks old); functionality of mp verified by blood levels; 5% glucose used; cardiovascular; immunology; peptides;

Q2932: M. Romero, et al. Sex Differences in the Beneficial Cardiac Effects of Chronic Treatment with Atrial Natriuretic Peptide In Spontaneously Hypertensive Rats. PloS One 2013;8(8):U1723-U1730

**Agents:** Atrial natriuretic factor, ANP  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 1002;  
**Duration:** 14 days;  

**ALZET Comments:** Cardiovascular; antihypertensive; animal info (SHR, 10 weeks old); functionality of mp verified by systolic blood pressure measurement;


**Agents:** Atrial natriuretic factor  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 2004;  
**Duration:** 1 month;  

**ALZET Comments:** Animal info (8 mo old, Ren, AS-Ren); peptides;


**Agents:** Vessel dilator; kaliuretic peptide; atrial natriuretic factor; long-acting natriuretic peptide  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice (nu);  
**Pump:** 1007D;  
**Duration:** 28 days;  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, athymic, nu/nu, 20 g); peptides; pumps replaced weekly; cancer (lung);


**Agents:** Atrial natriuretic factor, mouse  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 1002;  
**Duration:** 12 days;  

**ALZET Comments:** Controls received no treatment; cardiovascular; peptides; animal info (male, C57BL/6, wt, ANP -/-, 6-24 wks old, MI); ischemia (cardiac);


**Agents:** Atrial natriuretic factor  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice (nu);  
**Pump:** 1007D;  
**Duration:** 4 weeks;  

**ALZET Comments:** Controls received mp w/ vehicle; cancer (small cell lung); peptides; animal info (nu/nu, athymic); urodilatin is a kidney hormone; atrial natriuretic peptid, vessel dilator peptide, kaliuretic peptide, urodilatation;


**Agents:** Atrial natriuretic factor; vessel dilator peptide; kaliuretic peptide; natriuretic peptide, long-acting  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Mice (nu);  
**Pump:** 2004;  
**Duration:** 4 weeks;  

**ALZET Comments:** Cancer (panceatic adenocarcinoma); peptides; animal info (athymic);


**Agents:** Atrial natriuretic peptide  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice (transgenic); mice;  
**Pump:** Not Stated;  
**Duration:** 24 hours;  

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by ANP plasma levels; half-life (p. 2727) “a few minutes;” cardiovascular; peptides; animal info (FVBN/J); “the short half-life of ANP...prompted use of an osmotic pump for prolonged release.” (p. 2727)

Agents: Atrial natriuretic peptide; natriuretic peptide, C-type
Vehicle: Saline; sterile; Route: IA (carotid); perivascular (arterial collar); Species: Rabbit; Pump: 2001; Duration: 7 days;
ALZET Comments: Cardiovascular; animal info (New Zealand white, 3-4 kg); peptides


Agents: Atrial natriuretic peptide
Vehicle: Saline; Route: SC; Species: Mice; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; comparison of IP injections vs. SC mp; peptides


Agents: Atrial natriuretic peptide; 8-Bromo-cGMP
Vehicle: Saline; Route: IP; Species: Rat; Pump: 2001D; Duration: 24 hours;
ALZET Comments: Controls received mp w/ vehicle; peptides; 8-Bromo-cGMP is a cyclic GMP analog


Agents: Brain natriuretic peptide; Atrial natriuretic peptide
Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: 2ML2; Duration: 2 weeks;
ALZET Comments: controls received mp with vehicle; peptides; cardiovascular; heparinized catheter used;


Agents: Atrial natriuretic factor
Vehicle: Not Stated; Route: IP; Species: Rat; Pump: Not Stated; Duration: 20 hrs;
ALZET Comments: peptides


Agents: Atrial natriuretic factor; Candoxatrilat
Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: Not Stated; Duration: 7,14 days;
ALZET Comments: enzyme inhibitor; candoxatrilat also called UK 73,967 and neutral endopeptidase 24.11 inhibitor; peptides


Agents: Atrial natriuretic factor
Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 25 days;
ALZET Comments: peptides


Agents: Atrial natriuretic factor
Vehicle: Not Stated; Route: IV (jugular); Species: Rat; Pump: 2ML2; Duration: 12 days;
ALZET Comments: peptides; atriopeptin III


Agents: Atrial natriuretic factor
Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: functionality of mp verified by measurement of residual volume; peptides

Agents: Atrial natriuretic factor
Vehicle: Acetic acid; Saline
Route: IV (jugular)
Species: Rat
Pump: 2002
Duration: 3 weeks, 1, 3, 7, 10, 14 days;
ALZET Comments: functionality of mp verified by blood levels and residual volume; pump replaced at 2 weeks; stability (p. 173 - approx 50% at 1-2 wks); peptides


Agents: Atrial natriuretic factor; cholecystokinin; Granulocyte-colony stimulating factor.; glucagon; insulin; interleukin-2; interleukin-3; melatonin; nerve growth factor; neurotensin; prolactin; theophylline
Vehicle: Not Stated
Route: CSF/CNS; IA (femoral); intrasplenic; IP; SC
Species: Not Stated
Pump: Not Stated
Duration: no duration posted;
ALZET Comments: peptides; ALZA-authored, review of peptide delivery issues and applications; tissue perfusion (spleen)


Agents: Atrial natriuretic factor; Isoproterenol, l-
Vehicle: Not Stated
Route: SC
Species: Rat
Pump: 2001
Duration: 7 days;
ALZET Comments: peptides


Agents: Atrial natriuretic factor, synthetic
Vehicle: Saline
Route: IV (jugular)
Species: Rat
Pump: 2002
Duration: 14 days;
ALZET Comments: stability of ANF verified by measuring activity of recovered peptide; peptides


Agents: Atrial natriuretic factor
Vehicle: Saline
Route: IV (jugular)
Species: Rat
Pump: 2002
Duration: 2 weeks;
ALZET Comments: stability verified by measuring activity of residual ANF; peptides


Agents: Atrial natriuretic factor
Vehicle: Gelatin; Saline
Route: IV (jugular)
Species: Rat
Pump: 2ML2
Duration: 6 days;
ALZET Comments: addition of gelatin to vehicle improved agent stability; stability verified in vitro for 14 days; peptides


Agents: Atrial natriuretic factor
Vehicle: Not Stated
Route: Not Stated
Species: Rat
Pump: Not Stated
Duration: no duration posted;
ALZET Comments: human and rat ANF used; peptides


Agents: Atrial natriuretic factor
Vehicle: Saline
Route: IV (jugular)
Species: Rat
Pump: Not Stated
Duration: 7 days;
ALZET Comments: controls received sham-infusion; mp connected to catheter in jug. vein; peptides


Agents: Atrial natriuretic factor
Vehicle: Acetic acid; Saline
Route: IV (jugular)
Species: Rat
Pump: 2001
Duration: 7 days;
ALZET Comments: controls received mp sized tubing; mp connected to catheter in jugular vein; agent infused in SHR and WKY rats; peptides


Agents: Atrial natriuretic factor
Vehicle: Not Stated
Route: Not Stated
Species: Not Stated
Pump: Not Stated
Duration: no duration posted;
ALZET Comments: Brief mention of mp being used for ANF infusion; peptides
Agents: Atrial natriuretic factor; Vasopressin, arginine Vehicle: Acetic acid; Saline; Route: IP; IV (jugular); Species: Rat; Pump: Not Stated; Duration: 6/3 days;
ALZET Comments: controls received mp w/vehicle; mp connected to catheter in jugular; 2 pumps/animal; agents inf. simult. for 3 days; ANF pump removed after 3 days; ANF infused iv; vp infused ip; stability of ANF verified

Agents: Angiotensin II; Atrial natriuretic factor Vehicle: Acetic acid; Saline; Route: IP; IV (jugular); Species: Rat; Pump: 2001; Duration: 3-6 days;
ALZET Comments: controls received mp w/ appropriate vehicle; mp conn. to catheter in jug. vein; ANG-II infused ip; agents infused sep. and simul.; stability of ANF confirmed; peptides

Agents: Atrial natriuretic factor Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: controls received mp size piece of silastic tubing; mp connected to catheter in jugular vein; hypertension; stability of ANF verified upon removal of pump; peptides

Agents: Atrial natriuretic factor Vehicle: Saline; Route: IV (jugular); Species: Rat; Pump: 2002; Duration: 13 days;
ALZET Comments: controls received mp size piece of silastic tubing; mp connected to catheter in jugular vein; hypertension; stability of ANF verified upon removal of pump; peptides

Agents: Atrial natriuretic factor Vehicle: Acetic acid; Saline; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: 6 days;
ALZET Comments: controls received mp size silastic tubing; mp connected to catheter in jugular vein; hypertension; peptides

Agents: Atrial natriuretic factor Vehicle: Not Stated; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: mp connected to catheter in jugular vein via PE-60 tubing; hypertension; peptides

Agents: Atrial natriuretic factor Vehicle: Not Stated; Route: IV (jugular); Species: Rat; Pump: 2001; Duration: 48 hours;
ALZET Comments: comparison of injections vs. mp infusion; mp connected to catheter in jugular vein; peptides

Agents: Atrial natriuretic factor; Norepinephrine bitartrate Vehicle: Saline; Route: IP; IV (jugular); Species: Rat; Pump: 2001; Duration: 3 days;
ALZET Comments: Multiple pumps per animal (2); ANF administered iv via catheter from mp to jugular; mp implanted sc in interscapular region; NE administered orally or via ip mp to induce hypertension; peptides
**Agents:** Atrial natriuretic factor  
**Vehicle:** Not Stated;  
**Route:** IV (jugular);  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 1 week;  
**ALZET Comments:** controls received a sham pump; synthetic ANF 101-126 was used; peptides

**Agents:** Atrial natriuretic factor  
**Vehicle:** Not Stated;  
**Route:** IV (jugular);  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 1 week;  
**ALZET Comments:** comparison of previous injection study vs. current mp infusion; sham pump used as control; peptides

**Agents:** Atrial natriuretic factor  
**Vehicle:** Saline;  
**Route:** IV (jugular);  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 1 week;  
**ALZET Comments:** synthetic ANF used; hypertension; controls were normotensive rats treated with ANF; peptides