References on the Administration of Growth Hormones Using ALZET® Osmotic Pumps

1. Bovine

ALZET Comments: Growth hormone, bovine recomb.; Phosphate buffer; glycerol; sodium azide; SC; Rat; 2004; 6 days; Animal info (female, Sprague Dawley, hx, normal); replacement therapy (hypophysectomized).

ALZET Comments: Insulin-like growth factor I; growth hormone, bovine; insulin-like growth factor-1, binding protein; SC; Mice; 1007D; 7 days; Controls received mp w/ saline; peptides; animal info (ORX, 10 weeks old, male); drugs delivered alone or in combination.

P8552: C. Gaelman, et al. Age-induced hypercholesterolemia in the rat relates to reduced elimination but not increased intestinal absorption of cholesterol. AMERICAN JOURNAL OF PHYSIOLOGY-ENDOCRINOLOGY AND METABOLISM 2007;293(3):E737-E742
ALZET Comments: Growth hormone, bovine; SC; Rat; 2ML1; 1 week; Controls received no treatment; peptides; animal info (male, Wistar-Hannover, 6, 18 months old); endocrinology.

ALZET Comments: Growth hormone, bovine; SC; Rat; 2001; 6 days; Peptides; animal info (Sprague-Dawley, 7 wks old, male).

ALZET Comments: Growth hormone, human; growth hormone, bovine; Saline; SC; Rat; 2001; 7 days; Replacement therapy (hypophysectomy); dose-response (p. E115).

P6852: P. Kotokorpi, et al. Activation of the glucocorticoid receptor or liver X receptors interferes with growth hormone-induced akr1b7 gene expression in rat hepatocytes. Endocrinology 2004;145(12):5704-5713
ALZET Comments: Growth hormone, bovine; Rat; 2001; 6 days; Replacement therapy (hypophysectomy); peptides.

ALZET Comments: Growth hormone, bovine; testosterone; estradiol, 17B-; Phosphate buffer; glycerol; sodium azide; propylene glycol; SC; Rat; 2001; 7 days; Replacement therapy (gonadectomy); comparison of daily injections vs. chronic mp; peptides; GH was recomb bovine & diluted in 0.05 m phosphate buffer, ph 8.6, with 1.6% glycerol & 0.02% sodium azide; testosterone & estradiol were diluted in propylene glycol.

ALZET Comments: Growth hormone, human; prolactin, ovine; growth hormone, bovine; Saline; SC; Rat; 2ML1; 7 days; Controls received mp w/ PBS vehicle; peptides; agents infused separately or concomitantly.

ALZET Comments: Growth hormone, bovine; Na2PO4; Glycerol; NaN2; Rat; 2001; 7 days; Comparison of twice-daily injections vs. mp.

Q6832: C. GARDMO, et al. Cloning of a Novel Growth Hormone-Regulated Rat Complementary Deoxyribonucleic Acid with Homology to the Human a1B-Glycoprotein, Characterizing a New Protein Family. Endocrinology 2001;142(2695–2701
ALZET Comments: Growth hormone, bovine; SC; Rat; 7 days; Dose (0.7 mg/kg/day); Controls received mp w/ vehicle; animal info (Normal and hypophysectomized Sprague Dawley rat); comparison of twice daily SC injections vs mp.;
P3959: V. Chandrashekar, et al. The role of growth hormone in the control of gonadotropin secretion in adult male rats. Endocrinology 1998;139(3):1067-1074
ALZET Comments: Growth hormone, bovine; saline, alkaline; SC; Rat; 2ML2; 2 weeks; controls received mp w/vehicle; replacement therapy (orchiectomy).
ALZET Comments: Growth hormone, bovine; Insulin-like growth factor I; PBS; Glycerol; Sodium azide; SC; Rat; 2001; 6-7 days; replacement therapy (hypophysectomy); dose-response; comparison of sc injections vs. mp; peptides.
ALZET Comments: Growth hormone, bovine; Growth hormone, human; Prolactin, ovine; SC; bone (mandible); Rat; 2, 3, 4 weeks; controls received mp w/saline; pumps replaced after 2 weeks; recomb. human and bovine GH used.
P2633: W. R. Baumbach, et al. One class of growth hormone (GH) receptor and binding protein messenger ribonucleic acid in rat liver, GHR1, is sexually dimorphic and regulated by GH. Endocrinology 1995;136(2):749-760
ALZET Comments: Growth hormone, bovine; PBS; Glycerol; Sodium azide; SC; Rat; 6 days; replacement therapy (hypophysectomy); comparison of sc injections vs. mp; peptides.
ALZET Comments: Growth hormone, bovine; Phosphate buffer; Glycerol; Sodium azide; SC; Rat; 2001; 1 week; replacement therapy (hypophysectomy); comparison of sc injections vs. mp.
ALZET Comments: Insulin-like growth factor I; Growth hormone, bovine; PBS; Glycerol; Sodium azide; SC; Rat; 2001; 7 days; replacement therapy (hypophysectomy); comparison of sc injections of growth hormone vs. mp; peptides; recomb. human IGF-1 used.
ALZET Comments: Growth hormone, human; Growth hormone, bovine; Growth hormone, rat; IV (jugular); IV (portal); Rat; 2001; 7 Days; controls received mp with solvent or sham operation; replacement therapy (hypophysectomy); pulsed delivery; catheter contained heparin.
ALZET Comments: Growth hormone, bovine; PBS; Glycerol; Sodium azide; SC; Rat; 6 days; replacement therapy (hypophysectomy); comparison of iv or sc injections vs. mp; peptides.
ALZET Comments: Growth hormone, bovine; Growth hormone, porcine; SC; sheep; 6 weeks; controls received no treatment; functionality of mp verified by in vitro testing; long-term study, pumps replaced every 2 weeks; peptides.


ALZET Comments: Growth hormone, bovine; Sodium hydroxide; Saline; SC; mice (pregnant); 3 days; replacement therapy (hypophysectomy); peptides.


ALZET Comments: Growth hormone, bovine; Insulin-like growth factor I; Acetic acid; SC; Rat; no duration posted; no comment posted.


ALZET Comments: Growth hormone, bovine; SC; Rat; 1 week; cancer.


ALZET Comments: Growth hormone, bovine; Glycerol; PBS; Sodium azide; SC; Rat; 2002; 21 days; hypophysectomized controls received sc injections of thyroxine or cortisone; replacement therapy (hypophysectomy); pumps replaced after 14 days; peptides.

2. Chicken


ALZET Comments: Growth hormone, chicken; Insulin-like growth factor I; Saline; Albumin, bovine serum; SC; bird (chicken); 2ML2; 10 days; controls received mp w/vehicle; functionality of mp verified by plasma levels; peptides; recomb. chicken growth hormone used.


ALZET Comments: Growth hormone, chicken; Albumin, bovine serum; Saline; SC; bird (chicken); 2ML4; 3 weeks; pumps were siliconized (probably using Prosil) to decrease protein binding in pumps.

3. Human


ALZET Comments: Growth hormone, human recombl; SC; Mice; 7 days; Controls received mp w/ PBS; animal info (male, Albumin-Cre); Therapeutic indication (Hepatic apoptosis); Dose (5 ug/h).


ALZET Comments: Insulin-like Growth Factor 1, recombl; Growth Hormone, human; Saline; SC; Rat; Mice; 2004; 4 weeks; 6 weeks; Dose (10 mg/mL); Controls received mp w/ vehicle; animal info (Eight-week-old male ICR mice, Sprague-Dawley (SD) rats; db/db mice with a C57BL/6 background); Insulin-like Growth Factor aka IGF-I;
ALZET Comments: Growth hormone, human; SC; Mice (transgenic/SCID); 2 weeks; Animal info (uPA/SCID, 20-30 days old, chimeric).

ALZET Comments: Growth hormone, human; SC; Rat; 1007D; Animal info (CD-1, 42 days old); replacement therapy (hypophysectomy and oophorectomy).

ALZET Comments: Growth hormone, human; Saline; BSA; SC; Mice; 2001; 5 days; Controls received sham surgery; animal info (dw/dw, 4-5 wks old).

ALZET Comments: Growth hormone, human; growth hormone, bovine; SC; Rat; 2001; 7 days; Replacement therapy (hypophysectomy); peptides; animal info (C57B1/6J, LDL R knockout, male).

ALZET Comments: Growth hormone, human; growth hormone, bovine; SC; Rat; 2001; 7 days; Replacement therapy (hypophysectomy); dose-response (p. E115).

ALZET Comments: Growth hormone, human; SC; Rat; 4 weeks; Controls received no treatment; replacement therapy (GH deficiency); pumps replaced on day 13; peptides.

ALZET Comments: Growth hormone, human; prolactin, ovine; growth hormone, bovine; Saline; SC; Rat; 2ML1; 7 days; Controls received mp w/ PBS vehicle; peptides; agents infused separately or concomitantly.

ALZET Comments: Growth hormone, human; IP; Rat; 1007D; 7 days; Peptides.

ALZET Comments: Insulin-like growth factor I; growth hormone, human; octreotide; Sodium acetate; benzylalcohol; water; SC; Rat; 2001; 6 days; Controls received mp w/ vehicle; functionality of mp verified by IGF-I plasma levels; peptides; recomb. human IGF-I and recomb. human GF used; some animals received 2 pumps: one with octreotide and one with GH.

**ALZET Comments:** Estradiol, 17β; Estradiol sulfamate; Dexamethasone; Growth hormone, human; Propylene glycol; SC; Rat; 2001; 7 days; controls received mp w/ vehicle; replacement therapy (ovariectomy, hypophysectomy, p. 458); comparison of oral administration vs. mp; steroid administered in PG, human GH pre-formulated.

**P5083:** P. J. D. Delhanty, *et al.* Growth hormone rapidly induces resistin gene expression in white adipose tissue of spontaneous dwarf (SDR) rats. Endocrinology 2002;143(6):2445-2448

**ALZET Comments:** Growth hormone, human; Growth hormone, porcine; SC; Rat; 24-48 hours; comparison of IP injections vs. mp; peptides; porcine or recomb. human GH used.

**P5757:** M. Rudling, *et al.* Growth hormone reduces plasma cholesterol in LDL receptor-deficient mice. FASEB J 2001;15(8):1350-1356

**ALZET Comments:** Growth hormone, human; SC; Mice; 2001; 6 days; Peptides.

**P4778:** N. A. Pampori, *et al.* Infusion of gender-dependent plasma growth hormone profiles into intact rats: Effects of subcutaneous, intraperitoneal, and intravenous routes of rat and human growth hormone on endogenous circulating growth hormone profiles and expression of sexually dimorphic hepatic CYP isoforms. Drug Metabolism and Disposition 2001;29(1):8-16

**ALZET Comments:** Growth hormone, recomb.; Growth hormone, human; SC; IP; Rat; 7 days; Controls received mp w/ vehicle; dose-response (p. 13 graphs); peptides; plasma GH differences by gender; both SC and IP routes used;


**ALZET Comments:** Growth hormone, human; Rat; 2004; 3 weeks; controls received mp w/ vehicle; replacement therapy (hypophysectomy p. 911); peptides; recomb. human GH used;


**ALZET Comments:** Insulin; Insulin-like growth factor I; Growth hormone, human; SC; Rat; 13-14 days; recomb. human IGF-1 and GH used; peptides.

**P3564:** D. LeRoith, *et al.* The effects of growth hormone and insulin-like growth factor I on the immune system of aged female monkeys. Endocrinology 1996;137(3):1071-1079

**ALZET Comments:** Insulin-like growth factor I; Growth hormone, human; Saline; Sodium acetate buffer; Benzyl alcohol; Tween 20; Sodium citrate; Phenol; SC; monkey; 2ML4; 7 weeks; controls received mp w/ vehicle; functionality of mp verified by serum levels; pumps replaced after 28 days; immunology; peptides; recomb. human IGF-1 and GH used; agents given singly and concomitantly.


**ALZET Comments:** Growth hormone, bovine; Growth hormone, human; Prolactin, ovine; SC; bone (mandible); Rat; 2, 3, 4 weeks; controls received mp w/saline; pumps replaced after 2 weeks; recomb. human and bovine GH used.

**P3226:** S. C. Low, *et al.* Sexual dimorphism of hepatic 11B-hydroxysteroid dehydrogenase in the rat: the role of growth hormone patterns. J. Endocrinol 1994;143(541-548

**ALZET Comments:** Growth hormone, human; SC; no duration posted; replacement therapy (GH-deficient dwarf rats used + hypophysectomized normal rats); comparison of pulsed IV injections vs. mp; peptides.

**P3008:** B. Freyschuss, *et al.* The hormonal regulation of the oestrogen receptor in rat liver: an interplay involving growth hormone, thyroid hormones and glucocorticoids. J. Endocrinol 1994;142(285-298

**ALZET Comments:** Growth hormone, human; Triiodothyronine, L-; Prolactin, ovine; Dexamethasone; SC; Rat; 7 days; controls received hypophysectomy only w/ no mp; functionality of mp verified by checking pumps after usage; replacement therapy (hypophysectomy); comparison of single SC injections of GH & T3 vs. mp; agents given alone or in combination;
growth hormone via mp partly restores liver estrogen receptor concentration while same dose in 2 single injections daily has no effect.

ALZET Comments: Growth hormone, human; Growth hormone, bovine; Growth hormone, rat; IV (jugular); IV (portal); Rat; 2001; 7 Days; controls received mp with solvent or sham operation; replacement therapy (hypophysectomy); pulsed delivery; catheter contained heparin.

ALZET Comments: Growth hormone, human; Rat; 4 days; cancer; peptides.

ALZET Comments: Growth hormone, human; Dexamethasone; Thyroxine, l-; SC; Rat; 2001; 5 days; replacement therapy (hypophysectomy); peptides; GH given solely, or GH/Dex, GH/Dex/T4, or Dex/T4.

ALZET Comments: Growth hormone, human; Saline; SC; mice; 2001; 2, 4, 8 days; replacement therapy (genetic GH deficiency); peptides.

ALZET Comments: Growth hormone, human; SC; Rat; 2001; 6 days; tissue perfusion (graphs, p. 1916-7); replacement therapy (hypophysectomy).

4. Ovine

ALZET Comments: Growth hormone, ovine; insulin-like growth factor I, recomb. ovine; Ringer’s solution; Fish (atlantic salmon); 1003D; 4-14 days;

ALZET Comments: Growth hormone, ovine; Rat; 2002; 4 days; replacement therapy (hypophysectomy); peptides; infusion proved superior to injection; comparison of injections vs. mp.

ALZET Comments: Antibody, anti-fibroblast growth factor; Antibody, anti-IGF I; Insulin; Growth hormone, ovine; Fibroblast growth factor; Epidermal growth factor; Insulin-like growth factor II; Antibody, anti-epidermal growth factor; IV (suprarenal); no duration posted; peptides.
**ALZET Comments:** Growth hormone, ovine; Prolactin, ovine; Rat; 2001; 5 days; functionality of mp verified by serum levels; replacement therapy (ovariectomy) in some of the prolactin-treated animals.

**ALZET Comments:** Growth hormone, ovine; Saline; SC; Rat; 2001; no duration posted; streptozotocin induced diabetes; comparison of sc injections vs. mp infusion; peptides.

**ALZET Comments:** Growth hormone, bovine; Growth hormone, human; Growth hormone, ovine; Growth hormone, rat; Saline; Sodium bicarbonate; SC; Rat; 2001; 7 days; GH, in some cases dissolved in sodium bicarbonate; agents infused separately; peptides.

P0639: C. C. W. Mick, et al. Prolactin directly stimulates the liver in vivo to secrete a factor (synlactin) which acts synergistically with the hormone. Endocrinology 1985;116(5):2049-2053
**ALZET Comments:** Growth hormone, ovine; Prolactin, ovine; Citric acid; Glycerol; IV (hepatic portal); IV (jugular); bird (pigeon); 2001; 1 week; comparison of agents effects; citric acid added to solvent for bacteriostatic effects; pulsed delivery of hormone or solvent (intermittent w/ air); peptides; tissue perfusion.

**ALZET Comments:** Growth hormone, human; Growth hormone, ovine; Prolactin, ovine; mice; 49-56 days; comparison of daily sc injec. vs. mp infusion; comparison of agents effects; cancer; peptides.

**ALZET Comments:** Growth hormone, ovine; Growth hormone, rat; Prolactin, ovine; Prolactin, rat; Sodium hydroxide; Saline; SC; Rat; 1 week; comparison of agents effects; peptides.

**ALZET Comments:** Follicle stimulating hormone; Growth hormone, ovine; Luteinizing hormone; Prolactin, ovine; Thyroid-stimulating hormone; Borate; Peanut oil; SC; Rat; 5 days; replacement therapy (hypophysectomy); simultaneous infusion of testosterone & estradiol implants w/ mp infusion of polypeptides; pulsed delivery of agents (intermittent w/ vehicle); peptides; ovine LH used.

5. Porcine

**ALZET Comments:** Growth hormone, porcine; SC; Rat; 2002; 14 days; Animal info (Sprague Dawley, 6 weeks old).

**ALZET Comments:** Growth hormone, porcine; SC; Mice; 1007D; 5 days; Controls received mp w/ saline; animal info (Swiss-Webster, 3-4 months old, 26-30g); functionality of mp verified by plasma levels; comparison of SC injection BID vs mp; toxicology; "The results indicate that sustained delivery systems that allow continuous GH plasma patterns would be
Beneficial in terms of treatment safety with regard to the actions of GH on EGFR signaling and its promitogenic activity." pg 309.

ALZET Comments: Growth hormone, human; Growth hormone, porcine;; SC; Rat; 24-48 hours; comparison of IP injections vs. mp; peptides; porcine or recomb. human GH used.

ALZET Comments: Growth hormone, porcine; Insulin-like growth factor I analog; Disodium hydrogen orthophosphate; Acetic acid; SC; Guinea pig; 2001; 7 days; controls received mp w/ vehicle; functionality of mp verified by serum drug levels; dose response (text, graph p. 334-5); peptides; LR3IGF-1 is an IGF-I analog; multiple pumps per animal (2), one containing each solution; pGH was dissolved in 0.1M disodium hydrogen orthophosphate; L3IGF-1 was dissolved in 0.1 M acetic acid.

ALZET Comments: Growth hormone, recomb. bovine; Growth hormone, porcine; Sodium bicarbonate; SC; Rat; 2ML2; 2ML4; 2,4 weeks; controls received mp w/buffer; functionality of mp verified in vitro using spectrophotometry; dose-response (sc injection vs continuous infusion); pumps replaced at 2 weeks; good methods; peptides; weight gain same between 28-day pump-implanted rats and rats receiving 2 14-day pumps (graph p. 388).

ALZET Comments: Growth hormone, bovine; Growth hormone, porcine; SC; sheep; 6 weeks; controls received no treatment; functionality of mp verified by in vitro testing; long-term study, pumps replaced every 2 weeks; peptides.

6. Rat

ALZET Comments: Growth hormone, rat, recomb.; Mice; 1007D; 7 days; Animal info (male, female, CD-1, 7-8 wks old).

ALZET Comments: Ghrelin, recomb. rat; growth hormone, recomb. rat; Saline; sodium bicarbonate; albumin, rat; SC; Mice; 1002; 2004; 10, 11 days; Controls received mp w/ vehicle; peptides; animal info (male, wt, Goat-/-, 8 weeks old).

ALZET Comments: Growth hormone, rat; NaCl; tween 20; NaHCO3; Na2CO3; CSF/CNS; Rat; 2002; 6 weeks; Controls received mp w/ vehicleanimal info (adult, male, Sprague-Dawley, 280-350 g); pumps replaced every 2 weeks; stability verified by for 2 weeks in vitro.

Q0698: R. D. Meyer, et al. Male-Specific Hepatic Bcl6: Growth Hormone-Induced Block of Transcription Elongation in Females and Binding to Target Genes Inversely Coordinated with STAT5. MOLECULAR ENDOCRINOLOGY 2009;23(11):1914-1926
ALZET Comments: Growth hormone, recomb. rat, human; Rat; 7 days; Controls were untreated; animal info (male, Fischer 344, 9-13 wks old); replacement therapy (hypophysectomy).
ALZET Comments: Growth hormone, recomb. rat; Saline; CSF/CNS; Mice; 1007D; 7 days; Controls received mp w/ vehicle; cyanoacrylate adhesive; animal info (C57BL/6J 6-8 wks old, female).

ALZET Comments: Growth hormone, recomb. rat; Saline; albumin, rat; sodium bicarbonate; SC; Mice; 1003D; 1007D; 1002; 1,2,4,7,14 days; 10 hours; Controls received mp w/ vehicle; peptides; animal info (male, female, ICR, 8-10 wk. old).

ALZET Comments: Growth hormone, rat; insulin-like growth factor-1, recomb. human; Saline; SC; Rat; 1003D; 72 hours; Controls received mp w/ vehicle; peptides.

ALZET Comments: Growth hormone, rat; 7 days; Controls received no treatment; peptides; pump model not listed.

ALZET Comments: Growth hormone, mouse; growth hormone, rat; Saline; SC; Mice; 1002; 14 days; Functionality of mp verified by IGF-1 plasma levels; peptides.

ALZET Comments: Growth hormone, rat; Insulin-like growth factor I;; Saline;; SC;; Rat;; 1003D;; 72 hours;; controls received mp w/vehicle; functionality of mp verified by serum levels; recomb. human IGF1 used;.

ALZET Comments: Growth hormone, rat; Thyroxine; SC; IP; Rat; 6 days; functionality of mp verified by residual volume; replacement therapy (hypophysectomy); peptides; multiple pumps per animal (2) (1 with each agent).

ALZET Comments: Growth hormone, rat; Saline; SC; Rat; 2001; 7 days; replacement therapy (hypophysectomy); comparison of injections vs. mp; peptides.

ALZET Comments: Growth hormone, rat; Saline; BSA; SC; Rat; 2001; no duration posted; controls received mp with saline; cancer; toxicology; peptides.

ALZET Comments: Growth hormone, human; Growth hormone, bovine; Growth hormone, rat; IV (jugular); IV (portal); Rat; 2001; 7 Days; controls received mp with solvent or sham operation; replacement therapy (hypophysectomy); pulsed delivery; catheter contained heparin.

**ALZET Comments:** Luteinizing hormone; ACTH, human; Thyroid-stimulating hormone, rat; Follicle stimulating hormone, rat; Growth hormone, rat; Prolactin, ovine; SC; mice; 2001; 7 days; controls received mp w/ vehicles; replacement therapy (hypophysectomy); peptides.

7. Rel Fact


**ALZET Comments:** Ghrelin; growth hormone-releasing peptide 6, [D-Lys-3]; Saline; CSF/CNS (ventral tegmental area); Rat; 2002; 14 days; Controls received mp w/ vehicle; animal info (male, Long evans, 216-375g); post op. care (SC injection of meloxicam; feed of mashed food); behavioral testing (food operant responses); used Plastics One cannula; obesity;.

Q3886: C. Garcia-Caceres, et al. The Opposing Effects of Ghrelin on Hypothalamic and Systemic Inflammatory Processes Are Modulated by Its Acylation Status and Food Intake in Male Rats. Endocrinology 2014;155(2868-2880

**ALZET Comments:** Ghrelin, acylated; ghrelin, non-acylated; ghrelin mimetic growth hormone-releasing peptide-6; Saline; CSF/CNS; Rat; 14 days; Controls received mp w/ vehicle; animal info (male, Wistar, 250g); immunology;.


**ALZET Comments:** Growth hormone-releasing peptide-2; SC; Rat; 2001D; 1 day; Controls received mp w/ saline; animal info (male, Sprague Dawley, 50-70 g); peptides.

P8904: M. L. Fiorotto, et al. Transplacental transfer of a growth hormone-releasing hormone peptide from mother to fetus in the rat. DNA and Cell Biology 2006;25(8):429-437

**ALZET Comments:** Growth hormone-releasing hormone; radio-isotopes 125I tracer; BSA; SC; Rat (pregnant); 1003D; 52-58 hours; Controls received sham operation; functionality of mp verified by residual volume, total activity; no stress (see pg. 433); half-life (p. 432) 8 hours; teratology; peptides; animal info (female, Sprague Dawley, gd18).


**ALZET Comments:** Growth hormone-releasing peptide-6; Saline; IV (jugular); Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (male, wistar 200-250 g); ghrelin receptor agonist; peptides.


**ALZET Comments:** Growth hormone-rel. peptide-6; IV (external jugular); Rat; 2ML1; 7 days; Controls received mp w/ saline; peptides; GHRP-6 is a synthetic ligand for the ghrelin receptor.


**ALZET Comments:** Growth hormone; Growth hormone-rel. peptide; IV (jugular); Rat; 2001; 7 days; controls received mp with saline; peptides.


**ALZET Comments:** Growth hormone-rel. factor-2; DMSO; PEG 400; Tween 80; Saline; SC; cattle; 2ML2; 14 days; controls received mp w/ vehicle; peptides; agent also called KP102; multiple pumps per animal (3 or 4); comparison between injections vs. mp.

**ALZET Comments:** Growth hormone-rel. factor; Acetate buffer; IV; Rat; 2001; 2ML2; 1 week; controls received mp w/vehicle.


**ALZET Comments:** Growth hormone-rel. factor (1-44) -NH2, human; IV (femoral); Rat; 2002; 14 days; comparison of acute infusion vs. mp; peptides; pumps placed near abdomen.


**ALZET Comments:** Growth hormone-rel. factor analog; DMSO; Water; SC; sheep; 28 days; functionality of mp verified by measurement of residual volume; pumps replaced weekly; stability in vehicle verified at 37 degrees celsius for 7 days.


**ALZET Comments:** 4SG-29; RO-23-7863; Growth hormone-rel. factor; DMSO; Water; SC; cattle; sheep; 2002; 2ML1; 7 days; functionality of mp verified by plasma levels; peptides.