## References on the Administration of Prostaglandins Using ALZET® Osmotic Pumps


**Agents**: Prostaglandin F2-alpha  
**Vehicle**: Not Stated;  
**Route**: IP;  
**Species**: Fish (Carp);  
**Pump**: 2ML1;  
**Duration**: 8 days;  
**ALZET Comments**: Dose (1ug/g body weight for 8 days); animal info (9 juvenile Silver, Bighead, and Common Carp (all approximately 50 g +/- 10 g));

**Q6722**: H. Li, *et al.* Cyclooxygenase-2 inhibits T helper cell type 9 differentiation during allergic lung inflammation via down-regulation of IL-17RB. Am J Respir Crit Care Med 2013;187(8):812-22

**ALZET Comments**: Prostaglandin D2 ; ProstaglandinE2; Saline, sterile; SC; Mice (knockout); 1004; 7 days; Controls received mp w/ vehicle; animal info (6- to 10-week-old male COX-12/2, COX-22/2, and WT littermate control mice);

**Q1919**: H. Lim, *et al.* Common Carp Implanted with Prostaglandin F 2-alpha Release a Sex Pheromone Complex that Attracts Conspecific Males in Both the Laboratory and Field. JOURNAL OF CHEMICAL ECOLOGY 2012;38(2):127-134

**ALZET Comments**: Prostaglandin F2-alpha; Water, deionized, sterile; IP; Fish (carp); 2ML1; 2 weeks; Animal info (juvenile, male, female, carp); "We suggest that the implant technique may be useful in future studies of how PGF pheromones function and could be further developed to attract invasive fish for use in control." pg 127.


**ALZET Comments**: Prostaglandin E2; prostaglandin F2, alpha; iloprost; Ethanol; saline, sterile; Mice; Controls received mp w/ vehicle; animal info (6-10 wks old, COX-1 -/-, COX-2 -/-, wt); 15% ethanol used.


**ALZET Comments**: Prostaglandin E2; prostaglandin E2, dimethyl-; PBS; SC; Mice; 2002; 4, 7, 21 days; Controls received mp w/ vehicle or no treatment; no stress (see pg. 51); animal info (male, CD, 25 -35 g., bleomycin-induced lung injury); "This route of administration was preferred because of constant drug delivery... and in our pilot study was found to be both innocuous and efficacious." (p. 51).


**ALZET Comments**: Prostaglandin E1; cyclodextrin; Saline, isotonic; SC; Mice; 4 days; Controls received mp w/ vehicle; animal info (C57/BL6, female, 6-8 weeks old).


**ALZET Comments**: Hydrogen Peroxide; Prostaglandin F2 alpha, 8-iso-; CGS12970; U-46619; Urotensin II; CSF, artificial; CSF/CNS; Rat; 1 week; Controls received mp w/ vehicle; enzyme inhibitor (thromboxane A2 synthase); cardiovascular; peptides; U46619 is a thromboxane A2 synthase inhibitor; ischemia (cerebral).


**ALZET Comments**: Prostaglandin E2; DI-004; AE1-259; AE-248; AE1-329; Ethanol; propylene glycol; bone (femur); mice; 1002; 6 weeks;; Controls received mp w/ vehicle; pumps replaced every 2 weeks; vehicle was 40% ethanol, 60% propylene glycol.  DI-004, AE1-259, AE-248, and AE1-329 are agonists for Prostaglandin E receptor subtypes: EP1, EP2, EP3, and EP4, respectively.
**ALZET Comments:** Prostaglandin E2; IV (femoral); Rat; Rat (pregnant); 24 hours; Controls received mp w/ saline; catheter was filled with enough saline to provide a 3 hour recovery prior to onset of PGE2 delivery.

**ALZET Comments:** Prostaglandin E2; IP; Mice; 1007D; 7 days; Dose (1872 µg/100 µl or 321 µg/ µl); Controls received mp w/ vehicle; animal info (Adult, female age-matched C57BL/6 mice (22–27 g)).

P3029: D. K. Vanderwall, et al. Corpus luteal function in nonpregnant mares following intrauterine administration of prostaglandin E2 or estradiol-17B. Theriogenology 1994;42(1069-1083
**ALZET Comments:** Prostaglandin E2; Estradiol, 17B-; Ethanol; PBS; intrauterine; horse; 2001; 7 days; controls received no treatment or mp with vehicle; tissue perfusion (uterine horn lumen); no stress (see pg. 1078); benzathine penicillin-G given prophylactically.

**ALZET Comments:** Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received undiluted vehicle which was 1:1 mixture of Emulphor:80% ETOH; tissue perfusion (bone); comparison of pellets vs. mp; pumps replaced weekly; authors state that subperiosteal bone formation was greater for comparable doses when PGE1 was delivered by minipumps as compared to pellets.

**ALZET Comments:** Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received mp w/vehicle; tissue perfusion (bone); comparison of pellets vs. mp; pumps replaced weekly; "...we estimated that PGE delivered by minipump produces 25 to 30% more bone than the same amount of starting material delivered by pellet." (p.139).

**ALZET Comments:** Prostaglandin E2 analogue; Ethanol; Saline; IA (innominate); IP; IV (lumbar); Rat; 2ML1; 2ML2; 1, 2 weeks; tissue perfusion (cardiac allograft); immunology; pumps implanted IP.

**ALZET Comments:** Prostaglandin E1; Uridine, fluorodeoxy-; IV (jugular); Rat; 2ML1; 7 days; stability confirmed for both agents in pumps for 7 days at ph 7.4.

**ALZET Comments:** Prostaglandin A2; Prostaglandin E2; Prostaglandin D2; Prostaglandin I1, 6b-; Prostaglandin F2a THAM salt; Albumin, bovine serum; Ethanol; Water, distilled; Intraovarian (corpus luteum); monkey; 2ML1; 7 days; controls received mp with saline +/- BSA; tissue perfusion (corpus luteum); functionality of mp verified by residual volume; pumps replaced until onset of menses; stability verified by in vitro testing -- see pp. 509-510; good methods; ALZAIID test kit used; agents infused singly and with PGF2a; degradation of PGE2 & PGD2 occurred.

**ALZET Comments:** Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 5 weeks; control side of mandible received mp with vehicle; tissue perfusion (bone); long-term study, pumps replaced weekly; each dog served as its own control -- one mp with PGE1 to one side and one with vehicle to the other side of mandible; pump implanted in superficial neck tissues; dogs given penicillin orally (100,000 U/d) for first post-operative week.


**ALZET Comments:** FPL-55712; Guaiaretic acid, nordihydro-; Leukotriene, C4; Prostaglandin E2; Ethanol; Propylene glycol; Saline; Water; Intrauterine; Rat; 2001; 1,4 days; Tissue perfusion (uterus); FPL-55712 is a leukotriene antagonist.


**ALZET Comments:** Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received mp with vehicle; tissue perfusion (bone); pumps replaced weekly; stability: 70% of original activity after 1 week at 37 degrees C; penicillin given for 1 week post-surgery.


**ALZET Comments:** Tumor necrosis factor, human; Prostaglandin E1; Albumin, rat serum; Saline; Triacetin; IP; Rat; 2ML1; 5 days; Multiple pumps per animal (2); PGE1 and TNF concomitantly infused; cancer/immunology; toxicology/teratology; peptides.

**P1358:** T. Engstrom, et al. Oxytocin receptors and contractile response of the myometrium after long term infusion of prostaglandin F2a, indomethacin, oxytocin and an oxytocin antagonist in rats. Regul. Pept 1988;20(65-72)

**ALZET Comments:** Oxytocin, desamino-; Oxytocin; Prostaglandin F2a; Saline; IP; Rat; 2001; 5 days; peptides.


**ALZET Comments:** Uridine, fluorodeoxy-; Prostaglandin E1; Saline; IV (hepatic portal); Rat; 2ML1; 7 days; controls received mp w/ saline; mp connected to catheter in portal vein; concomitant and simultaneous infusion of agents; cancer; toxicology.


**ALZET Comments:** Prostaglandin E1; Ethanol; Saline; Water; no duration posted; mp not used, different vehicles were tested w/PGE1 to ascertain which was the best for use in mp; stability of PGE1 in various vehicles at 37 degrees C; peptides.


**ALZET Comments:** Indomethacin; Prostaglandin F2a; HCl; Sodium hydroxide; Saline; intrauterine; rabbit; 2002; 11 days; controls received mp w/ vehicle; separate and simultaneous infusion of agents; comparison of agents effects; NaOH, HCl and saline were used in combination as the vehicle for indomethacin; many different exp.; tissue perfusion (cornua of uterus).


**ALZET Comments:** Prostaglandin E1 a-cyclodextrin; Ethanol; Saline; SC; Rat; 2ML1; 3 weeks; pumps replaced every week; controls received mp w/vehicle; immunology.

**P0773:** M. D. Lifschitz. Prostaglandins may mediate chloride concentration gradient across domes formed by MDCK1 cells. Am. J. Physiol 1986;250(F525-F531)
ALZET Comments: Prostaglandin E2; Glycine; in vitro (cell culture); 2002; 5 hours; mp infusion in culture dish to continually add PGE2 to MDCK cell culture.

ALZET Comments: Indomethacin; Prostaglandin E2; Prostaglandin F2a; Ethanol; Gelatin; PBS; intrauterine; Rat; 2001; 5 days; replacement therapy (ovariectomy); controls received mp w/ vehicle; estradiol and progesterone injected sc w/ mp PG infusion; vehicle contained indomethacin to reduce PG synthesis; tissue perfusion (uterus).

ALZET Comments: Indomethacin; Prostaglandin E1; Prostaglandin E2; Ethanol; Gelatin; PBS; intrauterine; Rat; 2001; 5 days; mp w/ vehicle; dose-response; indomethacin infused with prostaglandin E1 in one group and with prostaglandin E2 in another group; tissue perfusion (uterus).

ALZET Comments: Prostaglandin E1; Prostaglandin E2; Triacetin; bone (tibia); rabbit; 4 weeks; mp model not stated; no stress p. 134 - no morbidity or mortality; tissue perfusion.

P0739: T. G. Kennedy. Evidence for the involvement of prostaglandins throughout the decidual cell reaction in the rat. Biol. Reprod 1985;33(140-146
ALZET Comments: Indomethacin; Prostaglandin E2; Prostaglandin F2a; Ethanol; Gelatin; PBS; intrauterine; Rat; 2001; 5 days; replacement therapy (ovariectomy); pumps primed overnight in saline; sc adminis. of agents in comb. w/mp infusion; separate and simultaneous infusion of agents; tissue perfusion (uterus).

ALZET Comments: Uridine, fluorodeoxy-; Prostaglandin E1; IV (hepatic portal); Rat; 2ML1; 1 week; controls received mp w/ buffer; cancer; toxicology.

ALZET Comments: Prostaglandin E1 a-cyclodextrin; Saline; SC; Rat; 2ML1; 10 days; comparison of 2x daily sc injec vs. mp infusion.


ALZET Comments: Prostaglandin F2a; intraovarian (corpus luteum); monkey; no duration posted; paper cites mp used in preliminary study; tissue perfusion.

ALZET Comments: Prostaglandin F2a; Saline; Tromethamine (THAM); intraovarian (corpus luteum); intraovarian (stroma); SC; monkey; 1701; 17 days; pumps replaced after 7 days; tissue perfusion (corpus luteum & ovarian stroma).
**ALZET Comments:** Carbachol chloride; Echothiophate iodide; Histamine dihydrochloride; Prostaglandin E2; Thyrotropin-rel. factor; Saline; CSF/CNS; Rat; 1701; 2001; no duration posted; 2001 w/carbachol & echothiophate, 1701 w/histamine, PGE2, & TRH, 7 days; comparison of agents effects.

**ALZET Comments:** Prostaglandin F2a tromethamine salt; SC; hamster; 1701; 1 day; comparison of injec. vs. mp infusion.

**ALZET Comments:** Prostaglandin E2; Prostaglandin F2a; Ethanol; Gelatin; PBS; intrauterine; Rat; 2001; 4 days; comparison of agents effects; pumps filled eve prior to use, stored at 4 deg. C in saline; PGE2 and PGF2a used alone and in combination; tissue perfusion (uterus).

**ALZET Comments:** Prostaglandin analog (TPT); Ethanol; Sodium phosphate; SC; dog; 1-2 days; comparison of injections sc vs. infusion.

P0076: S. Christensen. Failure of infusion of prostaglandin A2 to restore the response to antidiuretic hormone in rats with polyuria induced by lithium. J. Endocrinol 1980;84(3):459-465
**ALZET Comments:** Prostaglandin A2; Vasopressin, arginine; Methanol; Propylene glycol; Saline; IV (atrium); Rat; 1701; 7 days; comparison of bolus injection vs. infusion; separate & simultaneous infusion of agents; pumps replaced 1-2 times; peptides.

**ALZET Comments:** Prostaglandin E2; Ethanol; Sodium phosphate; intrauterine; sheep; 1701; 6 and 7 days; replaced every 7 days until estrus or day 40; tissue perfusion (uterus).