

Ursidae



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Contraceptive methods:	GnRH agonist (implant)	GnRH agonist (injection)	Progestagen (injection)	PZP vaccine	Surgical/ Permanent
Contraceptive Product:	Deslorelin acetate	Luprolide acetate	Depot medroxyprogesterone acetate	PZP vaccine main components are antigens derived from porcine zona pellucida glycoproteins and an adjuvant to stimulate the immune response (Freund's modified complete adjuvant for primary vaccination and Freund's incomplete adjuvant for boosters).	N/A
Commercial Name:	Suprelorin ®	Lupron ®	Depo-Provera®, Depo-Progevera®,	Porcine Zona Pellucida	Vasectomy/Castration
Product Availability:	4.7mg ('Suprelorin 6') and 9.4 mg ('Suprelorin 12') widely available through veterinary drug distributors in the EU. 9.4 mg ('Suprelorin 12') is also available through Peptech Animal Health, Australia.	Luprolide acetate licenced for human use	Manufactured by Pfizer. Widely available throughout Europe through human drug distributors.	Not commercially available in Europe. Can be imported from the USA.	N/A
Restrictions and/or permit required by Importing Country:	EGZAC recommends: always check with your local licencing authority	Data deficient	EGZAC recommends: always check with your local licencing authority	License required UK and France; all other Countries unknown. EGZAC recommends always checking with local licencing authority	N/A
Mechanism of action:	GnRH agonist suppress the reproductive endocrine system, preventing production of pituitary and gonadal hormones. As an agonist of the GnRH initially stimulates the reproductive system -which can result in oestrus and ovulation in females or temporary enhancement of testosterone and spermatogenesis in males- therefore additional contraception needed during this time.	GnRH agonist suppress the reproductive endocrine system, preventing production of pituitary and gonadal hormones. As an agonist of the GnRH initially stimulates the reproductive system -which can result in oestrus and ovulation in females or temporary enhancement of testosterone and spermatogenesis in males- therefore additional contraception needed during this time.	Anti-estrogenic activity. Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	The PZP antibodies interfere with fertilisation by binding to the ZP glycoprotein receptors that surround the egg of the vaccinated female, blocking the binding and subsequent penetration of sperm.	Vasectomy: Surgical procedure in which the ductus deferens are cut, tied, cauterized, or otherwise interrupted. Castration: Permanent contraception by surgical gonadectomy, with similar side effects to those in domestic species - weight gain, loss of secondary sex characteristics.
Insertion/Placement:	Sub-cutaneous, in a place where it can be easily detected or seen for removal at a later date; refer Suprelorin fact sheet for effective method of implant placement (tunnelisation)	Injectable intramuscular or subcutaneously	Injectable intramuscular	Injectable Intramuscular	Surgical
Females					

Dose	Dosage depends on the body weight of the individual. From the average body weights of Ursidae species, 2-4 implants would be recommended. 4.7mg is recommended for a minimum duration of 6 months and 9.4mg is recommended for a minimum duration of 12 months. Implants must be inserted no later than November.	There are various formulations from 1-6 months. Dosing information is not available; extrapolation from human literature is likely the best place to start.	5 mg/kg body weight every 2-3 months	~ 10 ug of protein. Recommended dose is 2 injections given typically 2-6 weeks apart for species with well defined and short (2-3 months) breeding season, given 1-2 months prior to the breeding season and the second inoculation no later than 1-2 weeks prior to breeding activity. In species with longer breeding season, if the vaccine is give at a time other than prior to the breeding season the primary vaccination course should be given at day 0, day 21 and day 45. In African elephants a primary vaccination has been used followed by two boosters 4-6 weeks apart during the first year. This is followed by an annual booster in some species species and in year-round breeders booster inoculations should be given every 7 to 8 months. One-shot vaccine for year one is being developed.	N/A
Latency to effectiveness:	3 weeks average as GnRH agonist initially stimulates the reproductive system- please refer to Deslorelin datasheet for detailed information - separation of the sexes <u>or</u> additional contraception is needed during this time (see product data sheet. ~2mg/kg Megestrol acetate pills daily 7 days before and 8 days after has been used to suppress initial stimulation phase).	3 weeks average as GnRH agonist initially stimulates the reproductive system- please refer to Deslorelin datasheet for detailed information - additional contraception needed during this time (see product data sheet. ~2mg/kg Megestrol acetate pills daily 7 days before and 8 days after has been used to suppress initial stimulation phase).	1-3 days post injection. However, if the cycle stage is not known then extra time must be allowed; therefore, separation of the sexes or alternative contraception should be used for at least 1 week.	2-3 weeks after the last vaccination during year 1 (primary course of vaccination 2 injections 2-4 weeks apart, preferable 3 injections).	N/A
Oestrus cycles during contraceptive treatment:	Initial oestrus and ovulation (during the 3 weeks of stimulation) then no oestrus cycle. To suppress the initial oestrus and ovulation you can follow the megestrol acetate protocol mentioned above.	Initial oestrus and ovulation (during the 3 weeks of stimulation) then no oestrus cycle. To suppress the initial oestrus and ovulation you can follow the megestrol acetate protocol mentioned above.	Oestrus behaviour may be observed. Ovulation and cycling can occur in adequately contracepted individuals (but is unlikely and the degree of suppression is dose dependent).	PZP should not suppress estrous cycles and may extend the breeding season beyond what is considered typical, resulting in additional estrous cycles.	N/A
Use during pregnancy:	Not recommended	Not recommended	Not recommended for use in pregnant animals because of the risk of prolonged gestation, stillbirth or abortion.	Does not interrupt pregnancy or affect fetus	N/A
Use during lactation:	No contraindications once lactation established	No contraindications once lactation established; however, treatment during pregnancy may impede proper mammary development	Considered safe for nursing infant.	No known contraindications	N/A
Use in prepubertals or juveniles:	Data deficient in this group, see product information sheet	Lupron® may prevent epiphyseal closure of the long bones, resulting in taller individuals.	The use of synthetic progestagens in pre-pubertals or juveniles has not been fully assessed. Possible long-term effects on fertility are not known.	PZP-treated prepubertal white-tailed deer and feral horses were fertile as adults. Not associated with side effects in elephants. But there are no data for other species	N/A
Use in seasonal breeders:	Data deficient. Should start at least 2 months before start of breeding season.	Data deficient. Should start at least 2 month before start of breeding season.	Should be injected at least 1 week before the breeding season starts.	Can be used in seasonal breeders but initial treatment and annual boosters should be carried out 2 and 1 months before the start of the breeding season respectively.	N/A
Duration	Duration of efficacy has not been well established as a guide: 4.7 mg implants will suppress for a minimum of 6 months; 9.4mg will be effective for a minimum of 12months	Lupron® is available in various formulations lasting from 1 to 6 months, but because the release of hormone from the depot formulation varies by individual, actual duration of efficacy can vary considerably.	Dose dependant: 45-90 days in general. However, effects could last 1-2 years in some individuals.	Species -dependant: most species 1 year	N/A

Reversibility	Deslorelin is designed to be fully reversible and there have been a number of reversals recorded in Ursidae. There are no cases of this contraception failing. Removal of implant to aid reversibility.	Lupron® is designed to be fully reversible however there are no cases in Ursidae, and there are also no cases of this contraception failing.	Designed to be fully reversible but individual variations can occur. There are no current cases of reversal in Ursidae.	Species differences on reversibility. The possibility of ovarian damage increases the longer PZP is given (over 5 years) which makes this method unsuitable for animals highly valuable to captive breeding programmes or where reversibility is important. There are no records of reversals in Ursidae, however there are a number of successful cases using this product in brown bears.	N/A
Effects on Behaviour	Data deficient	Data Deficient	Effects on behaviour have not been studied, every individual may react differently. Progestins binds readily to androgen receptors and are antiestrogenic; females may experience male-like qualities (increased aggression, development of male secondary sex characteristics, etc.) Further research in the subject is necessary.	Since usually the vaccine doesn't suppress oestrus cycles it has almost no effects on social behaviour, and no undesirable behavioural effects have been registered in free-ranging elephants treated for up to 9 years. In some species the failure to conceive can result in longer than usual breeding season and in some cases this can result in aggression and social disruption.	N/A
Effects on sexual physical characteristics	Similar to gonadectomy	GnRH agonists may cause the suppression of physical secondary sexual characteristics.	Because it binds readily to androgen receptors and is antiestrogenic, females may experience male-like qualities (increased aggression, development of male secondary sex characteristics, etc.)	Data deficient	N/A
Males			Not recommended	Not Recommended	Vasectomy is NOT RECOMMENDED for species with induced ovulation in females because mating will result in female pseudopregnancies with prolonged periods of progesterone elevation, which can cause pathology of uterine and mammary tissue. Castration is Recommended.
Dose	Dosage depends on the body weight of the individual. From the average body weights of Ursidae species, 2 implants would be recommended. 4.7mg is recommended for a minimum duration of 6 months and 9.4mg is recommended for a minimum duration of 12 months.	Usually a higher dose than in females are required in males. There are various formulations from 1-6 months. Data Deficient	N/A	N/A	N/A
Latency to effectiveness:	3 weeks average as GnRH agonist initially stimulates the reproductive system - please refer to Deslorelin datasheet for detailed information - separation of the sexes OR additional contraception needed in the female during this time.	Because the initial effect is to stimulate the reproductive system, it is important to either separate treated animals from opposite sex individuals during the period of enhanced fertility or use another form of contraception. Males may remain fertile for 2 or more months, until residual sperm either degenerate or are passed.	N/A	N/A	N/A
Use in prepubertals or juveniles:	Data deficient in this group, see product information sheet	Because GnRH agonists suppress gonadal steroids, their use may delay epiphyseal closure of the long bones, resulting in taller individuals, similar to the effects of pre-pubertal spaying and neutering in domestic dogs and cats. GnRH agonist use in prepubertal domestic cats was followed by reproductive cycles after treatment ceased. However, species differences may occur.	N/A	N/A	N/A
Use in seasonal breeders:	Data deficient. Should start at least 2 months before start of breeding season.	GnRH agonists should be given more than 2 months prior to expected breeding season	N/A	N/A	N/A
Duration and Reversibility	Data deficient. Should start at least 2 months before start of breeding season.	Available in various formulations lasting from 1 to 6 months, actual duration of efficacy can show individual variation	N/A	N/A	Castration not considered to be reversible.

Effects on Behaviour	Data deficient	Data deficient	N/A	N/A	Castration will alter male sexual behaviour and may alter aggression if related to male hormones
Effects on sexual physical characteristics	Similar to gonadectomy	GnRH agonists may affect androgen-dependant characteristics causing suppression of physical secondary sexual characteristics.	N/A	N/A	Castration - results in loss of secondary sex characteristics
General:					
Side effects	Similar to gonadectomy; especially weight gain. Some dichromatic species may change colour.	In general weight gain as would be seen with ovariectomy or castration. Increased appetite will result in weight gain, especially in females. Males may lose muscle and overall weight if not replaced by fat. Males may become the size (weight) of females. EGZAC recommends always reading the manufacturer's data sheet	Use for only the short term because of possible deleterious effects on the endometrium following prolonged use. Progestins are likely to cause weight gain in all species. In the human literature, Depo-Provera® has been linked to mood changes. Because it binds readily to androgen receptors and is anti-estrogenic, females may experience masculinisation (increased aggression, development of male secondary sex characteristics, in dichromatic species, aspects of male colouration, etc.) EGZAC recommends always reading the manufacturer's data sheet	Treatment for over 5 years has been associated with ovarian failure in some species (species differences). Significant ovarian disruption has been noted in dogs, rabbits, mice and domestic sheep. Oophoritis unknown if transient or permanent. In some species the failure to conceive can result in longer than usual breeding season (aggression and social disruption)	N/A
Warnings	Causes initial gonadal stimulation. Duration may be reduced if implant is broken. Do not cut the implant. If implant is not completely removed at the end of treatment, the effects of the implant may stay in the system and affect reversal.	Causes initial gonadal stimulation.	Interaction with other drugs are known to occur and may influence protection against pregnancy. In some diabetic animals progestagens has led to an increased insulin requirement, it is advised that the product be used with caution in diabetic animals and that urine glucose levels are carefully monitored during the month after dosing. EGZAC recommends always reading the manufacturer's data sheet	The only adjuvant used with PZP is Freund's Modified adjuvant, which DOES NOT CAUSE TB+ TEST RESULTS, and injection site reactions are less than 0.05%. Following the initial treatments, boosters are required, using only Freund's Incomplete adjuvant.	Infection of the surgical wound might occur. Intradermal closure of the skin is advised together with prophylactic antibiotic treatment and NSAID
Reporting Requirements: In order to increase our knowledge of the efficacy of contraception methods in the Ursidae family it is recommended that all individuals on contraception be reported to EGZAC					
References: 1) 2)					
Disclaimer: EGZAC endeavours to provide correct and current information on contraception from various sources. As these are prescription only medicines it is the responsibility of the veterinarian to determine the dosage and best treatment for an individual.					