### Contraceptive methods

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<tr>
<td>RECOMMENDED</td>
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### Contraceptive Product:

- **Deslorelin acetate**
- **Lupron**
- **Depo-Provera**
- **Depo-Progesterone**
- **Delavirdine**
- **Jadelle**
- **Implanon**
- **Neplanon**

### Commercial Name:

- **Suprelorin**

### Product Availability:

- **4.7mg ('Suprelorin 6') and 9.4 mg ('Suprelorin 12') widely available through veterinary drug distributors in the EU.**

### Restrictions and/or permit required by Importing Country:

- EGGAC recommends: always check with your local licensing authority

### Animal name: Felids

### Mechanism of action:

- **GnRH agonist suppresses the reproductive endocrine system, preventing production of pituitary and gonadal hormones.** As an agonist of the GnRH it stimulates the reproductive system, which can result in oestrus and ovulation in females or temporary enhancement of testosterone and spermiation in males. Therefore additional contraception needed during this time. Please see below and refer to Deslorelin datasheet in our Product Recommendations section for detailed information.

### Insertion/Placement:

- **Sub-cutaneous, in a place where it can be easily detected or seen for removal at a later date** (proximal medial aspect of forelimb or hindlimb; loose fleshy skin at base of pinna; umbilical area, side of neck; - refer to Suprelorin Product Recommendation sheet for effective method of implant placement (tunnelisation).)

### Dose:

- **Gonadotropin Releasing Hormone Agonists are considered the safest reversible contraceptives, but dosages and duration of efficacy are not well established for all species; side effects are generally similar to those associated with gonadectomy, especially the potential for weight gain unless diet is controlled.** Dosages and duration of efficacy have not been well established for exotic felid species. As a guide: 1 implant ± 4.7 mg for a minimum of 6 months; 1 ± 9.4 mg for a minimum of 12 months. The average duration of efficacy however is about 1 year for 4.7mg and 2 years for the 9.4 implant. Current dosing recommendations are a single implant for felids up to and including cheetah/leopard size; and 2 implants for the larger species.

### Females

- **RECOMMENDED**
- **Data deficient**

### Data deficient - see side effects below

- **Not recommended**

### Not recommended

- **Not recommended**

### Ovariohysterectomy/ovariectomy - recommended

### Surgical Procedure in which the ductus deferens are cut, tied, cauterized, or otherwise interrupted. Generally considered irreversible though reversible techniques have been successful in certain species. Vasectomy of males will not prevent potential adverse effects to females from prolonged, cyclic exposure to endogenous steroids associated with the obligate hormonal pseudo-pregnancy that follows ovulation in most felids. Endogenous steroids and steroidal contraceptives cause similar side effects.

### Data deficient - see side effects below

- **Injectable intramuscular**
- **Orally daily**
- **Injectable subcutaneously - do not inject intradurally or into subcutaneous fat or scar tissue**
- **Intramuscular or subcutaneous, EGGAC recommends subcutaneous, upper inner arm for visibility (not for later removal).**
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### Side effects are generally similar to those associated with gonadectomy, especially the potential for weight gain unless diet is controlled. Generally considered irreversible though reversible techniques have been successful in certain species. Endogenous steroids and steroidal contraceptives cause similar side effects.

### Reference:

- EGGAC reccommends: always check with your local licencing authority

### Last Updated: 26.11.2014

### Fact Sheet Compiled by: Taina Strike BVSc MSc MRCVS

### Fact Sheet Reviewed by: Yedra Febrer; Henk Bortolzheimer

### Image
Latency to effectiveness: 3 weeks average as GnRH agonist initially stimulates the reproductive system - please refer to Deslorelin datasheet on this website for detailed information - separation of the sexes or additional contraception is needed during this time in order to suppress the initial stimulation phase (see product datasheet:  “2.5mg/kg Megestrol acetate p ks, Ovarid®” only 7 days before and 8 days after has been used to suppress initial stimulation phase)

Treatment MUST commence when the female is in anoestrus. Ovarid is designed to be fully reversible however there are no cases of reversal recorded in this species on the database.

In felids progestagen contraceptives can increase the risk of developing moderate to severe endometrial hyperplasia, endometrial mineralisation, pyometra, hydrometra (amongst other conditions), which would cause permanent infertility in affected animals. There is also the increased risk of mammary and uterine cancer.

If a progestin is used in felids, treatment should start well BEFORE any signs of proestrus, since the elevated endogenous estrogen can exacerbate side effects of the progestin.

Use during pregnancy: Not recommended

Use during lactation: no contraindications once lactation established

Use in prepubertals or juveniles: data deficient in this group, see product information sheet Deslorelin suppresses gonadal steroids, its 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 cats and lions. GnRH agonist use in prepubertal domestic cats was followed by reproductive cycles after treatment ceased. However, species differences may occur.

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. The average duration of efficacy however is about 1 year for 4.7mg and 2 years for the 9.4 implant. Individual variation occurs but durations tends to be regular for a particular individual’s contraceptive bout.

Duration of efficacy, and thus latency to conception following last injection, can be extremely variable and has been seen to vary from 4 weeks to 2 years in some individuals. In general, the recommended dose (2.5-5 mg/kg BW) is effective for at least 2 months in most species. Treatment should only be short term, because of the increased likelihood of side effects with prolonged exposure in felids.

Precautions - Vasectomy is not recommended for species with induced ovulation because mating will result in female pseudopregnancies with prolonged periods of progestosterone elevation, which can cause pathology of uterine and mammary tissue. Endogenous progestosterone and progestin contraceptives cause similar disease. In lions vasectomy commonly results in repeated mating many times without ovulation. Females get tired of being harassed and sometimes this results in fighting between sexes. As a result some collections have resorted to "switching off" females with deslorelin when they have a vasectomised male.
**Reversibility**

Considered reversible but every species has not been tested. Reversibility has been demonstrated on average 3 years after implantation with this product in female felids. 7 of these reversals have been in lion species; cycling has begun 3.5 years after treatment and conceptions have been recorded between 2-4 years after treatment. However it must be noted that recovery time is dependent on the individual and their age at reversal; some animals will recover earlier or later than others. It is currently felt that the more implant repeats a female has the less likely they are to reverse.

Cheetah and leopards have been seen to recover 2 years after a single 4.7mg implant. Lions and tigers where reversal is definitely required, 2x4.7mg rather than 1x 9.4mg implants are being recommended.

Data from studies of domestic cats and from African lions have identified a transition phase of about 6 months during the process of reversal, when follicles grow and produce estradiol sufficient to stimulate recurring signs of estrus and even mating behavior but without ovulation. These observations indicate that reversal is a process that may extend for 6 months, when abnormal or irregular cycles may be seen in females or a period of increased aggression may be seen in males. It should be possible to hasten or avoid this process by removing the implant(s).

Removal of implant to aid reversibility is recommended. (see product data sheet on this website for recommendations)

**Duration and Reversibility**

Use in seasonal breeders:

- Data deficient

Effect on sexual physical characteristics:

Similar to those seen with gonadectomy but should be reversible. Weight gain has been observed.

Effects on Behaviour

- Similar to those seen with gonadectomy but should be reversible.

Effects on sexual physical characteristics

- Similar to those seen with gonadectomy but should be reversible.

**Dose**

- Data deficient

**Latency to effectiveness:**

Depending on the species there may be fertile sperm present in vas deferens for 6-8 weeks post treatment or even longer. Testosterone decreases after 3-4 weeks but sperm can stay fertile for many weeks after. Generally 2 months is recommended as in vasectomy.

Post vasectomy allow 6-8 weeks post surgery to ensure no sterile sperm is ejaculated. Keep sexes apart during this period or keep females contracepted

**Use in prepubertal or juveniles:**

Data deficient in this group, see product information sheet. Deslorelin suppresses gonadal steroids, its 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 cats. Grifh agonist use in prepubertal domestic cats was followed by reproductive cycles after treatment ceased. However, species differences may occur. There appear not to be any such problems in cheetahs.

**Use in seasonal breeders:**

Data deficient. In males, Grifh agonist can transiently stimulate testosterone production even during the non-breeding season. Treatment should begin more than two months prior to the anticipated breeding season to prevent initiation of spermatogenesis, because it appears that suppression of sperm production is more easily accomplished before it has commenced. Common reversible techniques have been used in certain species, but no publications in exotic felids.

Vasectomy generally considered irreversible, however some successful reversible techniques have been used in certain species, but no publications in exotic felids.

Vasectomy does not affect male behaviour. Castration will alter male sexual behaviour and may alter aggression if related to male hormones.

**Duration and Reversibility**

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. Deslorelin is considered reversible and reversibility has been demonstrated in the domestic cat and a black footed cat. Cheetah take 18-24 months to reverse after a single 4.7mg implant.

Vasectomy generally considered irreversible, however some successful reversible techniques have been used in certain species, but no publications in exotic felids.

Vasectomy does not affect male behaviour. Castration will alter male sexual behaviour and may alter aggression if related to male hormones.

**Use in prepubertal or juveniles:**

Data deficient in this group, see product information sheet. Testosterone related aggression is likely to decrease. Loss of secondary sex characteristics (as with castration) eg lions will lose their manes).

Vasectomy – no loss of secondary sex characteristics

Castration - results in loss of secondary sex characteristics

**Effects on Behaviour**

- Data deficient

**Effects on sexual physical characteristics**

- Data deficient

**Body size may decrease, decrease testicular size, feminisation of males. Similar to gonadectomy but reversible. In cheetahs, use for up to 10 years has not reduced body size or weight. There have been no signs of feminisation and behaviour, excepting for aggression is normal in the group situation.
<table>
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<tr>
<th>Warnings</th>
<th>SHOULD NOT BE USED PRIOR TO GnRH IMPLANT PLACEMENT Depo-Provera® should not be substituted for megestrol acetate, because its initial high levels and prolonged release can interfere with Suprelorin® efficacy.</th>
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Reporting Requirements: In order to increase our knowledge of the efficacy of contraception methods in the Canidae family it is recommended that all individuals on contraception be reported to EGZAC.

References:


2) Contraception in Carnivores; Karen E Dematteo in Wildlife Contraception: Issues, Methods, and Applications edited by Cheryl S. Asa, Ingrid J. Porton; pg 105-118


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.