

Primates: Prosimii

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Fact Sheet Reviewed by:

We would recommend assessing any contraceptive bout with behavioural and hormone monitoring. For more information on this, please contact contraception@chesterzoo.org

Contraceptive methods:	GnRH agonist (implant)	Progestagen (implants)	Progestagen (injection)	Progestagen (injection)	Surgical/ Permanent
Contraceptive Product:	Deslorelin acetate	Etonogestrel 68 mg	medroxyprogesterone acetate;	proligestrone 100mg/ml	N/A
Commercial Name:	Suprelorin®	Implanon® Nexplanon®	Depo-Provera®, Depo-Progevera®	Delvosteron®	Vasectomy
Product Availability:	4.7mg ('Suprelorin® 6') and 9.4 mg ('Suprelorin® 12') widely available through veterinary drug distributors in the EU.	Manufactured by Bayer Schering Pharma AG. Available through human drug distributors	Manufactured by Pfizer. Widely available throughout Europe through human drug distributors.	Manufactured by MSD animal Health UK, Intervet Europe. Licensed for use in female dogs, cats, and ferrets; available through veterinary distributors	N/A
Restrictions and/or permit required by Importing Country:	The EAZA RMG recommends: always check with your local licencing authority	The EAZA RMG recommends: always check with your local licencing authority	The EAZA RMG recommends: always check with your local licencing authority	The EAZA RMG recommends: always check with your local licencing authority	N/A
Mechanism of action:	GnRH agonist suppress the reproductive endocrine system, preventing production of pituitary and gonadal hormones. GnRH agonists initially stimulate the reproductive system - which can result in oestrus and ovulation in females, or temporary enhancement of testosterone and spermatogenesis in males. Therefore additional contraception is required during this time. Please see below and refer to Deslorelin datasheet.	Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	Anti-estrogenic activity. Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	Anti-estrogenic activity. Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	Surgical procedure in which the ductus deferens are cut, tied, cauterized, or otherwise interrupted
Insertion/Placement:	Sub-cutaneously, in a place where it can be easily detected or seen for removal at a later date (i.e. Upper inner arm); refer to the Suprelorin® fact sheet for effective methods of implant placement (tunnelisation)	Subcutaneous in upper inner arm for visibility (aid for later removal)	Injectable intramuscular. As hand-catching is possible in prosimians, this provides greater assurance the appropriate dose is delivered	Injectable subcutaneously - do not inject intradermally or into subcutaneous fat or scar tissue	Surgical
Females					
Dose	Dosage depends on the body weight of the individual. 4.7mg is recommended for a minimum duration of 6 months and 9.4mg is recommended for a minimum duration of 12 months.	Recommended 1/3 to 1/2 implant, depending on species and weight. Doses not well established	5 mg/kg body weight at 40 days intervals throughout the breeding season for all prosimians. For <i>Hapalemur</i> sp. 5mg/kg at 30 days interval more effective.	A dose of 50 mg/kg of Delvosteron® has been used in a collection for short term contraception being effective for approximately 3 months	N/A
Latency to effectiveness:	3 weeks average as GnRH agonists initially stimulate the reproductive system- please refer to Deslorelin datasheet for detailed information - 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)	In general inhibition of ovulation after 1 day when inserted on day 1-5 of cycle or when replacing oral progestagen. As the exact stage of the menstrual cycle is often unknown, it is advised to use other contraceptive methods for at least 7-14 days after insertion of the implant	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.	1-3 days post injection. However, if the cycle stage is not known, extra time must be allowed; therefore, separation of the sexes or alternative contraception should be used for at least 1 week.	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.	Oestrus is inhibited. Menstruation in non-human primates are more or less present with regular cyclicity. This is an individual and dose-dependent response. Some will swell during treatment and some will not.	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).	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).	N/A
Use during pregnancy:	Not recommended	In non-human primates progestagens normally do not interfere with parturition.	In non-human primates progestagens normally do not interfere with parturition.	In non-human primates progestagens normally do not interfere with parturition.	N/A
Use during lactation:	No contraindications once lactation established	Considered safe for nursing; Does not affect lactation, but etonogestrel is excreted in milk.	Considered safe for nursing infant.	Considered safe for nursing infant.	N/A
Use in prepubertals or juveniles:	Data deficient in this group, see product information sheet	The use of synthetic progestagens in pre-pubertals or juveniles has not been fully assessed. Possible long-term effects on fertility are not known.	The use of synthetic progestagens in pre-pubertals or juveniles has not been fully assessed. Possible long-term effects on fertility are not known.	The use of synthetic progestagens in pre-pubertals or juveniles has not been fully assessed. Possible long-term effects on fertility are not known.	N/A
Use in seasonal breeders:	Should start at least 1 month prior the breeding season. In two ruffed lemur females implants were inserted in November and both females came into oestrus within a week, after which ovulation was effectively suppressed for the entire breeding season	To minimize progestin exposure, insert 1 month before the breeding season and remove 1 month after end of breeding season. e.g., <i>Eulemur macaco</i> , <i>E. fulvus</i> , <i>Lemur catta</i> insert in early September, remove end of June; <i>Varecia spp.</i> Insert in November, remove in May	Should be injected at least 1 week before the breeding season starts. In some prosimians as few as 1 to as many of 6-7 Depo-Provera® injections were given within a single breeding season	N/A	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	2-3 years in various primates	Dose dependant: 45-90 days in general. However, effects could last 1-2 years in some individuals. In black lemurs, contraception with medroxyprogesterone acetate can extend the breeding season to as much as 9 months; this requires an extension of the period of contraceptive treatment.	Dose dependant: 30-90 days in general. However, effects could last 1-2 years in some individuals	N/A

Reversibility	Reported reversibility in prosimians. Duration to reversibility extremely variable. Removal of implant to aid reversibility is recommended but often implant is difficult to recover	Designed to be fully reversible but individual variations can occur. To increase potential for full reversibility implants must be removed.	Reversal rate for prosimians is high. 22 ruffed lemur females successfully conceived after multiple bouts of Depo-Provera, [®] including nulliparous females conceiving at 7 to 10 years of age. 74 % conceived within one season , 26% in second season. In 84% of births at least one live-born infant were produced. Designed to be fully reversible but individual variation can occur.	Designed to be fully reversible but individual variations can occur	N/A
Effects on Behaviour	None observed except lack of libido. There are anecdotal reports of change of hierarchy with the behavioural implications that this may have.	Effects on behaviour have not been studied, every individual may react differently. Because progestagens can suppress ovulation it can be expected that courtship and mating behaviour will be affected in some way. Further research in the subject is necessary.	Effects on behaviour have not been studied, every individual may react differently. 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.) Further research in the subject is necessary.	Effects on behaviour have not been studied, every individual may react differently. 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.) Further research in the subject is necessary	N/A
Effects on sexual physical characteristics	Similar to gonadectomy	There might be some degree of sexual swelling and menstruation might occur. Ovulation may also occur even though pregnancy does not ensue.	In lemurs, genital odorants of contracepted females are dramatically altered, which affect the behavioural response in males	See Above	N/A
Males	Data deficient	Not Recommended	Not Recommended	Not Recommended	Reported
Dose	Usually a higher dose than in females is required in males. Data deficient	N/A	N/A	N/A	N/A
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. Either additional contraception or separation of the sexes is required for this time.	N/A	N/A	N/A	Depending on species and individual, perhaps as long as 2 months or more
Use in prepubertals or juveniles:	Data deficient in this group, see product information sheet	N/A	N/A	N/A	Data deficient
Use in seasonal breeders:	Data deficient. Should start at least 2 months prior the breeding season.	N/A	N/A	N/A	N/A
Duration and Reversibility	Data deficient in this group, but deslorelin is considered reversible. See product information sheet	N/A	N/A	N/A	The procedure should not be used in males likely to be recommended for subsequent breeding as reversal is unlikely
Effects on Behaviour	Testosterone related aggression is likely to decrease. Limited success as tool for aggression control in black lemurs and ring-tailed lemurs	N/A	In lemurs, genital odorants of contracepted females are dramatically altered, which affect the behavioural response in males	N/A	Vasectomy will not affect androgen-dependant behaviours
Effects on sexual physical characteristics	Some dichromatic species may change colour if testosterone related. Decrease in body size, feminisation of males.	N/A	N/A	N/A	None observed in non-human primates
General:					
Side effects	Similar to gonadectomy; especially weight gain. Some dichromatic species may change colour.	Possible weight gain, possible increased or decreased frequency of bleeding during menstruation. The EAZA RMG recommends always reading the manufacturer's data sheet.	Long term use is not recommended since it can have possible deleterious effects on the uterus and mammary tissue. 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 male-like qualities (increased aggression, development of male secondary sex characteristics, etc.) The EAZA RMG recommends always reading the manufacturer's data sheet.	Long term use is not recommended since it can have possible deleterious effects on the uterus and mammary tissue. Progestins are likely to cause weight gain in all species. In the human literature, progestagens has been linked to mood changes. As it binds readily to androgen receptors and is anti-estrogenic, females may experience male-like qualities (increased aggression, development of male secondary sex characteristics, etc.). In some diabetic animals Delvosteron [®] 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. The EAZA RMG recommends always reading the manufacturer's data sheet.	N/A
Warnings	Causes initial gonadal stimulation; correct administration essential - see product information sheet	Causes initial gonadal stimulation	Interaction with other drugs are known to occur and may influence protection against pregnancy. In some diabetic animals progestagens have 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. The EAZA RMG recommends always reading the manufacturer's data sheet.	Interaction with other drugs are known to occur and may influence protection against pregnancy. The EAZA RMG recommends always reading the manufacturer's data sheet.	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 Prosimian family it is recommended that all individuals on contraception be reported to the EAZA RMG					

References:

1) Asa, C.S. & Porton, I.J. (eds.) (2005) Wildlife Contraception: Issues, Methods, and Applications. The Johns Hopkins University press: Baltimore.

Disclaimer: The EAZA RMG 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