Animal name: *Cetacea*

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

Contraceptive methods	GnRH agonist (implant)	GnRH agonist (injection)	Progestagen (implants)	Progestagen (implant)	Progestagen (injection)	Progestagen (oral)	Permanent (surgical)
Contraceptive Product:	Deslorelin acetate	Luprolide acetate	Etonogestrel 68 mg	Levonorgestrel 2x 75mg	proligestrone 100mg/ml	Altrenogest	
Commercial Name:	Suprelorin ®	Lupron ®	Implanon® Nexplanon®	Jadelle®	Delvosteron®	Regu-mate®	**Not recommended**
Product Availability:	4.7mg ('Suprelorin 6') and 9.4 mg ('Suprelorin 12') widely available through veterinary drug distributors in the EU.	Luprolide acetate licenced for human use	Manufactured by Bayer Schering Pharma AG. Available through human drug distributors	Manufactured by Organon. Available 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.	Regu-mate® Equine 2.2ml/mg oral solution and Regu-mate® Porcine 0.4% w/v oral solution widely available through veterinary drug distributors.	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	EGZAC recommends: always check with your local licencing authority	EGZAC recommends: always check with your local licencing authority	EGZAC 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. 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. Please see below and refer to Deslorelin datasheet for detailed information	GnRH agonist suppress the reproductive endocrine system, preventing production of pituitary and gonadal hormones	Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	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	Interference with fertilization by thickening cervical mucus, interrupting gamete transport, disruption of implantation, inhibition of LH surge necessary for ovulation	
Insertion/Placement:	Sub-cutaneous, in a place where it can be easily detected or seen for removal at a later date (I.e. Dorsal fins/epaxial muscles); refer Suprelorin fact sheet for effective method of implant placement (tunnelisation). It is critical to avoid placing the implants in fatty tissue.	Injectable	Intramuscular or subcutaneous. EGZAC recommends sub-cutaneous, upper inner arm for visibility (aid for later removal)	Intramuscular or subcutaneous. EGZAC recommends sub-cutaneous, upper inner arm for visibility (aid for later removal)	Injectable subcutaneously - do not inject intradermally or into subcutaneous fat or scar tissue	Administered orally in feed or by syringe. Gloves must be worn when administering Regu-mate® (absorption through the skin can cause disruption to the menstrual cycle and prolongation of pregnancies in humans)	Surgical
Females		**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Recommended**	**Not recommended**
Dose	**Data deficient.** Dosages and duration of efficacy are not well established for all species. As a guide:2x4.7 mg for a minimum of 6 months; 2x9.4 mg for a minimum of 12 months. Our database suggests 2 implants are effective in species up to 300kg BW.	**Data deficient.** Lupron is available in varying dosages from formulations lasting 1-6 months.	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient.** Dosage studies have not been established in most species. Our database suggests 0.044 mg/kg daily in cetaceans (dosage established from bottlenose dolphin data).	

Latency to effectiveness:	Down regulation occurs after the initial stimulation phase which can last 3-4 weeks. During this period it is advisable to either supplement the contraception with daily Megestrol Acetate pills for 7 days before and 7 days after the implant has been placed or to separate the sexes.	**Data deficient.** Similar to deslorelin acetate.	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient.** As a guide:1-3 days.	
Oestrus cycles during contraceptive treatment:	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient.** In principle should be suppressed.	
Use during pregnancy:	**Data deficient. Not recommended**	**Data deficient. Not recommended**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient. Not recommended**	
Use during lactation:	**Data deficient. Not recommended**	**Data deficient. Not recommended**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Use in prepubertals or juveniles:	**Data deficient**	**Data deficient. Not recommended**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Use in seasonal breeders:	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Duration	**Data deficient**	**Data deficient.** Lupron is available in varying dosages from formulations lasting 1-6 months.	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Reversibility	Deslorelin is designed to be fully reversible. We have 2 reversals in bottlenose dolphins administered with 2x 9.4mg implants ranging between 1-6 months before conception. It is advised to remove any implants to aid reversal although the procedure may not be possible given the skin and environment in which cetaceans live.	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	3 records of reversals in bottlenose dolphins ranging between 1-4 months following expiration of the contraception.	
Effects on Behaviour	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Effects on sexual physical characteristics	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	**Data deficient**	
Males			**Not recommended**	**Not recommended**	**Not recommended**	**Not recommended**	**Not recommended**

Dose	**Data deficient.** Dosages and duration of efficacy are not well established for all species. As a guide: 8x4.7 mg for a minimum of 6 months; 8x9.4 mg for a minimum of 12 months. Our database suggests that in male bottlenose dolphins, a higher dose is required than that given to females. Up to 8 implants have been used in individuals ranging between 200-320kgs bw. Contraception was effective with 4 x4.7mg implants in an individual weighing 170kg. There are reports of one individual in which no suppression of testosterone was reported. He weighed 366 kgs and was implanted with 8x 4.7 mg Suprelorin.	**Data deficient.** Dosage studies have not been established in most species and the dose will depend on the formulation. Our records suggest 0.075 mg/kg IM in bottlenose dolphins in monthly treatments. We have one failure recorded in a bottlenose dolphin. We do not have any record of his weight however, the dosage administered was 16.9 mg.					
Latency to effectiveness:	Fertile sperm may be present in the vas deferens for 2 or more months following implantation, therefore it is advised to keep the sexes separated during this time or use additional contraception.	Males can remain fertile for 2 or more months following the first injection, and the initial stimulation phase may also present with an increase in aggression or sexual interest. It is recommended to keep the sexes separated during this time.					
Use in prepubertals or juveniles:	**Data deficient**	**Data deficient**					
Use in seasonal breeders:	**Data deficient**	**Data deficient.** Treatment should begin 2 months prior to the breeding season beginning.					
Duration and Reversibility	**Data deficient**	**Data deficient.** 1 record of a reversal in a bottlenose dolphin in our database with a dose of 0.083mg/kg bw 4 years following treatment with Lupron.					
Effects on Behaviour	**Data deficient**	The initial stimulation phase may increase aggression and sexual interest					
Effects on sexual physical characteristics	May be similar to effects of a gonadectomy, but is reversible; decrease in body size, feminisation of males and a decrease in testicular size.	Some secondary sexual characteristics can be suppressed.					
General:							
Side effects	**Data deficient**	**Data deficient**					
Warnings	When inserting deslorelin implants it is important to make sure that the implants are inserted in the correct site. It is imperative that the implants are not placed in fatty tissue as this can make a significant effect on the effectiveness of the product. It has been reported that a successful placement site is beside the pectoral fins.	**Data deficient**	Progestagens are not recommended for use in diabetic animals.	Progestagens are not recommended for use in diabetic animals.	Progestagens are not recommended for use in diabetic animals.	Weight gain is a common side effect of progestagens. Progestagens are not recommended for use in diabetic animals.	Female permanent contraception is not recommended due to the greater risk of potential complications of anaesthesia and surgery in invasive procedures. Male permanent surgical contraception is not recommended due to the intra-abdominal testes and lack of developed surgical techniques.
Reporting Requirements: In order to increase our knowledge of the efficacy of contraception methods in the Cetacea family it is recommended that all individuals on contraception be reported to EGZAC							

References:

1) Contraception in Pinnipeds and Cetaceans IN: Wildllife contraception: Issues, Methods, and Applications. P.P. Calle (Eds: C.S. Asa, I.J. Porton (2005).
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