

CONTRACEPTION PROTOCOL

GnRH protein conjugate (Improvac): Subcutaneous or intramuscular injection - Two injections of 600µg are given 35 days apart and boosters are usually administered every 4 months/yearly, although duration can vary between species. Latency to effectiveness can be up to 6 weeks so separation of the sexes is recommended if possible. In seasonal breeders initial injections should be administered 2 months prior to the breeding season. Many cases of Improvac have shown reversibility after 0.5 – 2 years if only the primary vaccination and booster occurred, but the future fertility of individuals after subsequent vaccinations is unknown in most species. There are currently no reversals in this species recorded on the database. It must be taken in to consideration that younger individuals will take longer to reverse in comparison to older individuals.

DATA COLLECTION PROTOCOL

If it is known when the female will come into oestrus, collect data for two oestrus cycles pre-contraception. If female oestrus start date is unknown, extend pre-treatment collection time to a minimum of 3 months. If this is not possible, start collection at day of contraception.

The timing of male rut must be identified prior to data collection. Samples should be collected both in and out of rut to examine how high testosterone levels increase to and see how low they drop with contraception.

If possible, this data collection should be carried out with the sexes separated to prevent pregnancy while individuals are untreated.

Behaviour:

Daily observations if possible.

- Signs of reproductive behaviour
 - Male interest in females
 - Male makes mating call/female bleats
 - Urine marking
 - Female presenting to male
 - Signs of mating attempts
 - Successful mating
- Changes to aggression
- Male marking territory (poll gland secretions)
- Changes to activity patterns

Physical observations:

Daily observations if possible.

- Lameness at injection site
 - Injection site swelling
- Infection at injection site
- Pregnancy (successful & terminated)
- Development of dulaa (males only)



Non-invasive hormone sampling:

- Faeces: Progesterone/testosterone concentrations (minimum of 3 samples/week in females, 1-2 samples/month in males).
 - Ensure sampling represents annual cycling and suppression and not just seasonal anoestrus. The same applies to males in and out of the rut season. See above for timings of data collection.
 - Collect samples as soon as possible after defecation. Mark sample bags with individual ID and date, and freeze. Chester Zoo sample collection protocol below.

Other:

- Examine ovaries and reproductive tracts through rectal palpation and ultrasonography (monthly)
- Measure testes size (monthly)

We would encourage all institutions to report all instances of contraceptive use in Bactrian camels to the EAZA Group on Zoo Animal Contraception (EGZAC). This can be done by completing the online survey through www.egzac.org or by contacting contraception@chesterzoo.org.



FAECAL COLLECTION PROTOCOL

Proper Identification

- The most important requirement for any sample collection protocol is that that you know **which animal the sample came from**.
- The best approach is to separate animals at night to properly identify faecal samples.
- Otherwise you must observe the animal defecating and collect the sample as soon as possible.
- It is also possible to mark the faecal samples by feeding a marker (i.e. food colouring)

Frequency of Collection

- The second most important requirement is you are able to collect samples with a frequency that will provide useful and meaningful data.
- The frequency of sample collection is species dependant and is also dependent on the question you would like to answer.
- Please contact us and we can help you determine what frequency you should be collecting samples

Contamination

Things to be careful of:

- The faeces are not contaminated with urine
(Urine has hormones too and this interferes with measurements of faecal hormone concentrations)
- The faeces are not contaminated with another individuals sample *(faeces or urine)*
- Try to collect samples as soon as possible. *(hormone concentrations in samples left exposed to environment for extended periods will increase the risk of incorrect values)*

Collection

- Once you have properly identified the sample, collect sample into zip-lock baggies
- Do not collect the entire faecal sample. Instead *(as 'pockets' of hormone concentrations can be found in the faecal sample)* turn bag inside out and collect several (3-4) 'sub' samples from the same faecal sample
- Try to minimize the amount of debris (hair/bones/hay) you collect, obviously the more faecal material present the better
- Label the bag using a waterproof permanent marker (i.e. Sharpie® pen) with:

Animal's Name
Species
Date (day/month/year)
Time Collected

Storage

- Store sample **ASAP** in freezer at -20°C
(Hormones concentrations will degrade if samples are left out too long)

For more information please contact:

Endocrinology
 North of England Zoological Society, Chester Zoo, UK
 Phone: 01244389747
 Email: contraception@chesterzoo.org

