Calcium chloride dihydrate in alcohol for male dogs and cats

Helping more animals across the globe...solving problems and saving lives.

In the US, the use of calcium chloride injections to sterilize male dogs is for veterinary use only. The described calcium chloride preparation may be prepared by a licensed veterinarian or purchased as a compounded drug. The use of calcium chloride dihydrate for non-surgical sterilization is not FDA approved.

This document is for educational purposes only. Spay FIRST assumes no liability for the use of calcium chloride to sterilize dogs or cats. The use of a compounded product may not be legal in all areas. Please check with appropriate agencies before using calcium chloride.

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Veterinarians using calcium chloride in pilot studies have confirmed that the testosterone level following injection with calcium chloride may equal castration when using the following dosage chart and injected according to the described protocol. Testosterone levels were determined following hCG stimulated tests. No claim is made or implied regarding the outcome of calcium chloride injections on any particular animal. Injection of any substance may be damaging or fatal. Animals are mildly sedated before injection; the use of any sedative or drug must be based on the existence of a veterinary client patient relationship; this chart does not endorse the use of calcium chloride injections outside of the existence of a valid veterinary client patient relationship (VCPR).

**CaCl₂ formulation and dosing chart:**

The alcohol solution of 20% calcium chloride dihydrate is prepared by the veterinarian or by an accredited compounder. Prepare as follows:

**Formulation:** 20 gr of pharmaceutical grade CaCl₂ [dihydrate] is brought to a final volume of 100 ml of 95% pharmaceutical grade ethanol, mixed, sterilized by autoclave or syringe filter and delivered in a stopper top container.

**Dosage:**

<table>
<thead>
<tr>
<th>Testicular Width</th>
<th>Dose per testicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14 mm and sexually mature adult cats</td>
<td>0.25ml (if testis feels overly full, STOP before full dose)</td>
</tr>
<tr>
<td>15-18 mm</td>
<td>0.5ml</td>
</tr>
<tr>
<td>19-22 mm</td>
<td>0.8ml to 1ml (continue to fullness)</td>
</tr>
<tr>
<td>23-24 mm</td>
<td>1ml to 1.5ml (continue to fullness)</td>
</tr>
<tr>
<td>25-26 mm</td>
<td>1.5ml to 2ml (continue to fullness)</td>
</tr>
<tr>
<td>27 mm and above</td>
<td>1.5ml to 2.5ml (continue to fullness)</td>
</tr>
</tbody>
</table>

Always pull 0.2 ml of calcium chloride over the maximum recommended dose. Up to 10% of dogs require up to 0.2 ml more calcium chloride in order to achieve a firm feeling upon injection. This includes large and small dogs as elongation of the testicle may change the required volume significantly.

**Supplies:**

1. Calcium chloride
2. Caliper
3. Luer lock syringes with 1” 23 gauge needles
4. Separate 1 ½” 23 gauge needles
5. Gauze in chlorhexidine solution mixed according to manufacturer's directions.
6. Drugs for sedation
7. Ketophen or other pain management
8. Exam gloves if desired
Preparing to inject:

1. Following sedation measure the width of each testicle separately and accurately. Measure each testicle separately as the size will vary in a small number of dogs and the difference may be significant enough to require different doses. Note the width for reference.

2. Wipe scrotum once with chlorhexidine solution mixed according to manufacturer’s instructions (one ounce or 30 ml to one gallon of water or 3.5 liters of water). If there is excessive dirt on the skin, clean only with mild soap and water. No irritating chemical cleaners!

3. To avoid getting any residue into the scrotum instead of into the testicle, use one needle to draw calcium chloride out of the bottle and replace the needle before injecting the testicle. Every injection should be made with a fresh needle.

   Use a single needle to pull the maximum correct dose plus 0.2 ml for each testicle (allowing for waste) into two separate Luer Lock syringes. Replace needle with a fresh needle of appropriate length (1” for small dogs and 1 ½ ” for large dogs) before injecting. Do not inject with a needle that has been in the bottle as residue on the needle may cause an abscess.

3a- insert a sterile needle into bottle

3b- remove the attached needle from sterile luer lock syringe and place needle to the side.

3c- fill the syringe to the maximum dose needed and remove syringe from needle.
3d- reattach the syringe with the correct dose to the fresh sterile needle that came with the syringe.

3e- repeat the process, ending up with a syringe with the correct dose for each testicle and a sterile needle attached.

Correct and incorrect methods of injecting calcium chloride:

4. Inject through the tail of the epididymis to the center of the testicle, injecting along the axis of the testicle. Inject calcium chloride solution completely at the center of the testicle, and inject very slowly (30 seconds per testicle) to allow pressure to equalize. Hold the testicle so you can feel the expansion but do not squeeze the testicle. Inject until a solid feeling occurs; hold still for several seconds before slowly pulling the needle out of the testicle. Any leakage into the scrotum will result in an abscess.

Testicle should feel firm, but not rock hard.

Do not inject the testicles at an angle.

In dogs with larger testicles USE THE APPROPRIATE LENGTH NEEDLE; do not use a shorter needle as the calcium chloride will not be injected at the center of the testicle.
Withdrawing the needle:

5. Gently pinch testicle at base of needle and hold for five to 10 seconds to ensure safe removal of the needle while avoiding release of any CaCl₂ into the scrotum. Remove the needle very slowly (15 to 30 seconds) to ensure that calcium chloride remains at the center of the testicle.
Tattoo the dog or cat for permanent marking:
This is one method for tattooing without a surgical blade.

6. Identify the dog as neutered by a permanent tattoo. Use either an intradermal tattoo, a standard score or an ear tattoo (see Parsemus Foundation website at)
http://www.parsemusfoundation.org/marking-street-dogs/

or link directly to the video: http://vimeo.com/76575635

6a. Remove plunger from syringe and fill tattoo paste from back of the syringe

USE ONLY A Luer Lock Syringe OR TATTOO PASTE WILL FORCE THE NEEDLE OFF THE PLUNGER!

6b. Replace the plunger, pushing paste to the open end

6c. Quickly replace the needle

6d. Insert the needle into the dermis, NOT BELOW, and gently plunge while withdrawing the needle.
Precautions regarding the use of intratesticular injections of calcium chloride:

Any calcium chloride that is accidentally injected into the scrotum will result in a serious abscess.

1. The animal must be completely immobilized (sedation is recommended), as any movement by the animal could result in calcium chloride being deposited into the scrotum.

2. Draw 0.2 ml of calcium chloride over the recommended maximum dose into the syringe. The dose is administered based on a “full” feeling in the testicle. Up to 10 percent of canine testicles will require 0.2 ml over the maximum dose. It is not desirable to inject the testicle twice. Even small dogs may require an additional 0.2 ml as elongated testicles require more calcium chloride.

3. Calcium chloride must be injected slowly so that the dose remains in the center of the testicle. Plunging calcium chloride into the testicle too quickly will cause seepage to quickly come up along the needle. Wait for five seconds after injecting to allow testicle to accommodate the space taken up by the calcium chloride. It should take 15 to 30 seconds to inject each testicle.

4. A fresh needle must be used when injecting each testicle, as even a tiny amount of residue on the needle may result in an abscess.

5. Excessive scrubbing or harsh chemicals may result in irritation of the scrotum and lead to licking.

Injections and aftercare must be conducted in accordance with state or province veterinary practice act and with a veterinary client patient relationship in place.

It is vital that the CaCl₂ go into the testicle, and not become subcutaneous in the scrotum. We recommend injecting dogs with well formed testicles and scrotums, meaning puppies no less than 16 weeks of age.

Caregiver instructions:

Caregiver must be notified that enlargement of the testicles will occur for up to 10 days.

Enlargement may double the size of the scrotum.

Injection is not followed by signs of pain, loss of appetite or lethargy. Any of these signs should be reported to the veterinarian immediately.

Unlike surgery, it is not necessary for the animal to remain dry, but excessive heat has been reported to possibly increase the swelling. Make sure the animal has continuous access to shade and normal temperatures for at least 48 hours.
Spay FIRST! extends our deepest thanks to Elaine Lissner, Executive Director of Parsemus Foundation, for her dedication to increasing public awareness of cost effective options in medicine that can make the world a better place for millions of people and animals. Elaine’s generous support enabled us to conduct pilot studies to confirm the safety and efficacy of calcium chloride for intratesticular injections for dogs and funded calcium chloride neuters at clinics that serve animals in chronic poverty. Thank you also goes to Dr Wayne Haney of Cache, OK, a pioneer in this field, to Lawton Oklahoma Animal Shelter Manager Rose Wilson along with the staff and volunteers of the Lawton Animal Shelter, Spay FIRST Advisory Board member Billy Clay, B.S., M.S., D.V.M., DIPLOMATE American Board of Veterinary Toxicology for countless hours of consultation, Spay FIRST board member Dr Charles Helwig for guidance, compassion and insight, to Dr Greg Campbell, for guidance and support for our non-surgical research, Dr Keith Bailey of Oklahoma State University, to the board of Spay Oklahoma for their ongoing support of innovative efforts to prevent the births of unwanted litters, to the veterinarians and student members of Vets Care Organization (VCO) of Lahore, Pakistan, the Health Administration and CHR offices of the Rosebud Sioux Tribe, the Fort Peck Assiniboine and Sioux Tribes, and the Taos, Cochiti and Santo Domingo Pueblos, to Jeff Young, DVM of Planned Pethood Plus of Denver, Colorado, to Michelle Huddle, DVM of Valentine, Nebraska and Chere Stephen, DVM of Ainsworth, Nebraska, to translators Dr Ricardo Gaitan, Dr Qiang Li and others for enabling us to share this all across the globe, to Don Rush, Tulsa, Oklahoma videographer, to Chris Green, Executive Director of Sacred Ground Sanctuary, Bristow, Oklahoma for assistance with photography, to the staff and veterinarians at Bristow Animal Hospital for assistance with photos, to donors large and small who make it possible for us to continue our vital research in non-surgical sterilents and contraceptives for street animals, to Paul Jolly, a true leader who is no longer with us but who encouraged and supported our research that is dedicated to helping animals in chronic poverty and last but not least to the millions of homeless dogs and cats who inspire us to further develop non-surgical sterilization options for animals who are never seen.