



PARSEMUS FOUNDATION

CALCIUM CHLORIDE NONSURGICAL STERILIZATION

BIBLIOGRAPHY

REVIEW DOCUMENTS

- **Photos, history, and overview video filmed in India with demonstration by Jana/Samanta team** available at Parsemus Foundation's website, http://www.parsemusfoundation.org/Parsemus/Nonsurgical_dog_%26_cat_sterilization-_males.html
- Password-protected videos of examples of the injection procedure, for veterinarians only, available at <http://vimeo.com/album/2045081>
(contact Parsemus Foundation, info[at]ParsemusFoundation[dot]org, for password)
- **Independent literature review, position statement, and recommendations** available by request from the **Alliance for Contraception in Cats & Dogs**, <http://www.acc-d.org/> . Includes summary of known unpublished work.

PUBLISHED LITERATURE

(only first two authors mentioned per publication)

- Koger, 1977 (USA): Calcium Chloride, Practical Necrotizing Agent. *Am Soc An Sci Ann Mtg*, #451, p 180. The very first known publication on calcium chloride, explaining how they got the idea, the results of their first pilot studies, and why they found an alcohol base to be better than a water/saline base.
- Koger, 1977 (USA): "Calcium Chloride, Practical Necrotizing Agent." *Bovine Practitioner*. Further details on the genesis of the idea and pilot studies in 45 bull calves.
- Bowman and Koger, 1978 (USA): "Blockage of sperm transport using intraepididymal calcium chloride injections in rams." Intrepididymal injections (as opposed to into the testicular tissue) resulted in sterilization without hormonal neuter.
- Koger, 1978 (USA): "Calcium chloride castration." First report of pilot results in dogs (in addition to more bull calves); photos.
- Samanta and Jana team, 1998-2007 (India):
 - 1998 - first controlled study ever published, 60 dogs
 - 2002 - rats, dose-finding, histology, and stress measures
 - 2005 - goats
 - 2006 - rats, testosterone measurements and mating. *Contraception*.
 - 2007 - 30 dogs: testosterone measures, stress measures, and histology. *Contraception*.

(calcium chloride nonsurgical sterilization, published literature cont.)

- Canpolat and Bulut, 2006 (Turkey): “An evaluation of the out come [sic] of bull castration by intra-testicular injection of ethanol and calcium chloride.” Poor results (scrotal abscesses and longer-lasting scrotal swelling, with inconsistent necrosis and minimal impact on serum testosterone) of calcium chloride in aqueous solution (water or saline, not clear which) in 12 young bulls, in fact poorer than ethanol alone. Includes photos. Concludes that calcium chloride injection is not effective.
- Baran and Ozdas, 2010 (Turkey): “Pilot Study: Intratesticular Injection Induces Sterility in Male Cats.” Poster at the Alliance for Contraception in Cats & Dogs 4th International Symposium on Non-Surgical Contraceptive Methods of Pet Population Control, April 8-10, 2010, in Dallas, Texas. Good safety and efficacy results at higher doses in 3 cats.
- Jana and Samanta, 2010 (poster, ACC&D Symposium, “History of calcium chloride injectable sterilization in male dogs and first report of use in cats”) and 2011 (publication, *BMC Veterinary Research*, “Clinical Evaluation of Non-surgical Sterilization of Male Cats with Single Intra-testicular Injection of Calcium Chloride”): 30 cats: dose-finding, testosterone & stress measures, and histology.

IN PROCESS/ IN PRESS

- Leoci, 2012/2013 (Italy):
 - dose-finding study, calcium chloride in saline, 40 dogs
 - 20% calcium chloride in alcohol, 21 dogs
 - 20% calcium chloride in lidocaine, 21 dogs

Concludes that alcohol and lidocaine bases are more effective than saline (some dogs in lower doses in the saline group regain some sperm production after 6 months, and some dogs in the higher doses in the saline group have abscesses, while the alcohol and lidocaine groups have effect without complications). Concludes that one of the two bases (alcohol or lidocaine) is the fastest-acting. Saline and alcohol groups 1-year study completed as of 9/2012; lidocaine group in process.



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*Committed to innovative and/or neglected medical research,
with a focus on animal sterilants, contraceptive development, and breast cancer.*
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