

History of Calcium Chloride Injectable Sterilization in Male Dogs and First Report of Use in Cats

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Calcium chloride solution has an extensive publication history as an injectable sterilant in dogs and other large mammals. Here we present first published use in cats. In dogs, publications go back to 1978 (e.g., Kroger LM) and more recent studies by our team have provided quantitative data on efficacy, testosterone reduction, and measures of stress levels such as plasma concentrations of cortisol (Jana and Samanta, 2007). With feral cat populations a continuing problem, we sought to explore its use in cats.

Six cats per group were injected with 5%, 10%, or 20% calcium chloride (dihydrate) in saline solution with lignocaine hydrochloride local anesthetic, preservative, and several minor ingredients (Chemisterisol™), with 20% determined to be the optimal dose. At 8 weeks, cat testes were collected and showed complete testicular necrosis and replacement by fibrous tissue; serum testosterone was reduced at least 70%. Due to its permanent reduction of testosterone, Chemisterisol is in a different category than the injectable sterilant currently on the market (Freedom of Information Summary, Neutersol™, NADA 141-217). It should be used in cases where elimination or reduction of sex-based behavior is desired, such as for family pets and in street-dog/feral-cat programs. The FDA-approved injectable male sterilant zinc gluconate neutralized by arginine (Neutersol™/Esterisol™) should be used when return of testosterone is desired for health reasons (such as in large purebreed dogs susceptible to orthopedic disorders) or when the owner wishes to preserve behavior such as guarding.

The primary practical advantage of Chemisterisol is ease of injection due to its less caustic nature, with little training required and complications avoided if any spilled solution is wiped away. The primary disadvantage is slow onset of action (4-6 weeks) and inter-individual variability in level of discomfort during injection, which we hope to address by calibrating injection volume more specifically to testicular volume rather than body weight. In our experience, unsexed older dogs with larger testes tend to experience little discomfort during injection, while unsexed cats and small dogs exhibit some distress during the two-minute procedure; all animals regain normal behavior and exhibit no distress immediately upon procedure termination.

In conclusion, Chemisterisol demonstrates potential for androgenesis-eliminating nonsurgical sterilization of male cats in addition to its proven efficacy in dogs and larger animals.