

# Chemical Sterilization

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## History of Non-Surgical Sterilization Methods

In 1963 it was discovered that drugs called synthetic progestins could suppress oestrus (heat cycle) in female cats. Denmark was one of the first countries to try the drug progestin megestrol acetate where, in 1971, several colonies of outdoor cats were administered low doses of 2.5 to 5mg orally once per week to prevent oestrus. Out of nearly 500 females to whom the bait was available, 20 became pregnant, five aborted, one died giving birth, and 14 produced normal litters. In some instances, cats developed mammary and cystic tumors as well as pyometra (a serious and potentially deadly condition in which the uterus becomes infected and filled with fluid) (Kristensen, 1980).

In 1977, Dr. Jenny Remfry worked with the Universities Federation for Animal Welfare to carry out several field trials for megestrol acetate in the United Kingdom. At the end of the study Remfry concluded: “Even the most reliable helper may be unable to ensure that a feral cat receives her weekly dose. Therefore trap-

ping and spaying is probably still the best method available to stabilize cat populations” (Remfry, 1978).

In 1984, a study conducted in Billings, Montana, used the drug megestrol acetate on cats. Approximately 70 percent of the cats did not produce kittens. However there were still some kittens born in the colony because some female cats did not receive adequate doses of the drug (Kirkpatrick and Turner, 1985).



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*Chemical sterilization is being investigated as an alternative to traditional surgical procedures, as it could provide a cheaper and less labor-intensive method of sterilizing large numbers of cats quickly in remote or hard-to-reach locations.*

In 1998, news of a new contraceptive grabbed headlines. A student at the Virginia-Maryland Regional College of

Veterinary Medicine, Michelle Meister-Weisbarth, received a grant from the Geraldine R. Dodge Foundation to develop a modified strain of the *Salmonella* bacterium that can be administered to cats through an oral bait. Making use of genetic engineering and molecular biology, the vaccine (for females only) causes the cat to produce antibodies that block the attachment of the sperm to the egg (Syufy, accessed 2014).

In 2000, the Alliance for Contraception in Cats and Dogs (ACC&D) was founded by Drs. Henry Baker, Stephen Boyle, and Brenda Griffin as a program of Auburn University. The organization's mission is to develop non-surgical birth control methods for managing cat and dog populations. In many developing nations where poverty is endemic, veterinary care and population control is usually non-existent. Surgical sterilization, especially for large populations of feral cats and dogs, is not feasible in these areas. Providing non-surgical methods of sterilization would make population control easier, faster, and cheaper (ACC&D, accessed 2014).

## Types of Non-Surgical Sterilization

### *Chemical Castration*

Several methods of chemical castration exist, with some already approved by the FDA and others undergoing field trials. Chemical castration has been studied for nearly 50 years and targets the destruc-

tion of gonadal cells in males causing infertility by a lack of sperm production (Hedge, 2013).

One such chemical castration drug is Zeuterin, also known as EsteriSol. It is a zinc gluconate compound that acts like a spermicide and destroys spermatozoa in all stages of development and maturation. Only one intratesticular injection is necessary for irreversible sterility. Since the testicles are left intact, a low level of testosterone is still produced. Zeuterin has only been approved by the Food and Drug Administration (FDA) for male dogs in the U.S.; however, it has been approved for cats in other countries (ACC&D, accessed 2014).

### *Immunocontraception*

Researchers at the USDA Animal and Plant Health Inspection Service National Wildlife Research Center (NWRC) developed a GnRH (gonadotropin-releasing hormone) immunocontraceptive vaccine called GonaCon. When the GnRH vaccine is injected, the body's immune response neutralizes the hormone's function, resulting in infertility in both males and females (National Wildlife Research Center, 2011). Scientists say the vaccine shows great promise as a wildlife infertility agent to be used instead of lethal control (Levy et al., 2011).

In 2011, scientists at the University of Florida found that a single dose of GonaCon controls fertility for at least five months and up to five years in adult female cats. Single dose vaccinations were

given to 15 female cats and placebos to five others. All five cats given placebos became pregnant. Of the cats treated with GonaCon, 93 percent remained infertile for the first year, 73 percent for two years, 53 percent for three years, and 27 percent were still infertile for five years as the cats' antibodies to the vaccine decreased (Carey, 2011).

“We’re hoping this research will lead to a nonlethal method of control for feral cat populations that is less expensive, labor-intensive, and invasive than current methods, such as surgical sterilization,” said Julie Levy, DVM, Ph.D., lead researcher of the study and director of the Maddie’s Shelter Medicine Program at the University of Florida (Carey, 2011).

### Sex Steroid Hormones

Progestins are synthetic hormones designed to control fertility. “Progestins continue to be used in pet cats as well as adjunct or alternative to surgical sterilization through TNR programs” (Romagnoli, 2015). One commonly used progestin is Megestrol acetate or MA.

MA is used as an oral contraceptive for female cats and dogs to prevent oestrus. It is available in several countries under different brand names and in generic form. In the U.S., generic forms of the drug are available; a low-dose version of the drug was previously sold as FeralStat for contraception of feral cats but it is no longer on the market. MA is also used to treat behavior disorders and skin conditions in cats (ACC&D, 2009).

MA can increase the risk of severe adverse reactions in cats, such as pyometra, developing diabetes, and an increased risk of mammary cancer (ACC&D, 2009). However 50 years of clinical research now suggests that “low doses [of MA] can be used relatively safely in cats” (Romagnoli, 2015). Proper MA dosage is vital in reducing side effects; cats are usually given too high of a dose.



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*Chemical sterilization could be used to treat feral cats where they are, in large, open spaces.*

## Conclusion

Alley Cat Rescue believes that chemical sterilants *can* have a place in controlling cat colonies in the U.S. but at this time, they cannot adequately *replace* surgical sterilization. There are several promising oral contraceptives and vaccines in existence but most are still in trial phases and are a long way from being approved by the FDA. Most of these chemical sterilants also require the cat to be trapped in order to administer the dose, and the cats need to be dosed regularly in order to be effective.

Subsequently, Trap-Neuter-Return (TNR) is still the *best* method for sterilizing feral cats in urban and suburban areas of the U.S, where veterinary services are available and caretakers are willing to pay to provide the best care for the cats. TNR not only reduces populations, but it also improves the health of the cats. Spaying/neutering greatly reduces their risk of reproductive cancers, while vaccinations, proper diet, and parasite treatments help boost their immune systems. Providing rabies vaccines also protects the public, especially in developing countries where the rate of rabies transmission is high.

ACR does, however, agree with the goals set out by the ACC&D and similar organizations for developing non-surgical

methods of population control and also recognizes the urgent need for such chemical sterilants in developing countries and areas with large, extensive open space. In areas where veterinary care is already limited, surgical methods of sterilization (spay/neuter) are not feasible at this time. Furthermore, vast areas of open wilderness provides another hurdle for implementing TNR programs, so administering a chemical sterilant would be most helpful. Populations of stray cats and dogs are commonly poisoned, shot, drowned, or electrocuted to control their numbers. The newer methods of oral contraception can certainly alleviate this suffering and needless loss of life, and hopefully engender a new ethic in these places for humane control.