Approaches with Potential for Nearer-term Impact

GonaCon™ in Male and Female cats

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Brief History

• 1991: USDA National Wildlife Research Center began research for control of wild and feral species
  • Active in deer, rats, squirrels, pigs, rabbits, coyotes, horses, bison . . .
• 2009: Registered for use in female white-tail deer
• 2013: Registered for use in wild horses and burros

Why GonaCon Has Current or Near-Term Potential

• Proven efficacy in multiple species
• Effective in both male and female cats
• Durable effect with a single dose
• Already registered for use in several species

Mode of Action

• Immunococontrceptive vaccine against GnRH
  — Synthetic GnRH conjugated to KLH or Blue carrier protein
  — Mycobacterium avium in light mineral oil adjuvant (derived from Mycopar)
  — Water-in-oil emulsion
  — Single intramuscular injection
• Antibodies inhibit activity of GnRH
  — Suppresses downstream hormone release (LH, FSH, estrogen, testosterone)
  — Infertility
  — Loss of secondary sex characteristics and sexual behavior
Summary of Key Research: Male Cats

- Single dose GonaCon
- 24 adult male SPF cats
  - Antibody titer
  - Testosterone
  - Semen analysis
  - Secondary sex characteristics
- Testicular histology
- Breeding trial
- 3-year follow-up

GnRH Antibodies vs. Testosterone

GnRH Antibodies vs. Scrotal Volume

GnRH Antibodies vs. Sperm
Secondary Sex Characteristics

GonaCon in Female Cats
- 20 adult female SPF cats
- Single dose GonaCon
- Monthly measurements
  - GnRH antibody titers
  - Estrogen, progesterone
- Breeding trial
- 5-year follow-up

Male Cats: Testosterone Suppression

Time to Pregnancy Following Vaccination

ACC&D 5th International Symposium on Non-Surgical Contraceptive Methods of Pet Population Control
Injection-Site Reactions

Late onset at ~24 months in 6/20 cats – non-painful

Current Status of Gonacon

Commercialization/Availability Status

- In the United States
  - Registered with EPA for use in white-tailed deer, wild horses, and burros
  - EPA would likely be route of approval for use in “feral” cats and FDA for “pet” cats
  - Current cost ~$25/dose
- Internationally
  - No known activity regarding cats
Target Market(s)
• Community cat management programs

Challenges
• Injection-site reactions
• Variability of contraceptive effect
• Scale-up manufacturing vs. affordability?
• Meeting cold-chain requirements in remote & developing locations
• Need for someone to undertake registration with EPA for feral cats

Summary: 3 Key Takeaways
1: GonaCon can be easily administered in the field to contained cats without sedation
2: Immune response controls both fertility and nuisance sexual behaviors; more effective in females
3: Half of female cats were infertile for at least 3 years following a single dose; may be useful in population management of community cats

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