SMART SYRINGES & STABLE OUTCOMES:
INNOVATIONS AND TRENDS IN ANIMAL-HEALTH INJECTABLES

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Singota® Solutions is a CDMO located in Bloomington, Indiana, USA that specializes in Parenteral, Early Phase Drug Development and Aseptic Filling projects.

Over the past decade, the animal health industry has experienced a remarkable transformation, propelled by rising global demand for both protein production and high-quality veterinary care for companion animals. Within this dynamic landscape, injectable drug formulations have emerged as indispensable tools, playing a central role in the prevention, treatment, and management of diseases across diverse animal species. The preference for injectables is rooted in their rapid onset of action, precise dosing, and suitability for delivering a wide range of therapeutic agents, from traditional small-molecule antibiotics and vaccines to complex biologics and long-acting depot formulations.

The momentum behind injectable animal health products is propelled by several converging trends. On the one hand, the scale of livestock production systems to meet the growing population demand has heightened the necessity for disease control strategies that are both efficient and cost-effective. On the other, a surge in pet ownership and the humanization of companion animals, especially in developed economies, has raised the bar for veterinary therapeutics. Owners now seek the same rigor, efficacy, and safety in animal care products as in human medicine, spurring innovation in injectable drug design and delivery, along with additional regulatory assessment.

Technological advances in drug formulation, sterile manufacturing, and delivery devices have unlocked new frontiers in veterinary injectables. Long-acting formulations, species-adapted delivery systems, and next-generation biologics are transforming expectations for dosing frequency, animal welfare, and treatment success. Meanwhile, the regulatory environment governing animal health products continues to grow increasingly sophisticated, with agencies demanding robust safety, efficacy, and species-specific data, pushing pharmaceutical developers to adopt innovative, science-driven approaches.

Yet, the road from molecule discovery to a market-ready injectable is complex and laden with challenges. Veterinary therapeutics must account for the wide physiological and metabolic variability among species, the unique pharmacokinetic and pharmacodynamic parameters of each therapeutic class, and the practical realities of animal handling in both clinical and farm settings. Innovations such as robotic aseptic fill-finish, advanced formulation platforms (including nanoparticles and polymer-based depots), and integrated development services are now pivotal for overcoming these hurdles.

In this article, we explore the evolving field of injectable drug development for animal health: from market drivers to formulation advances, regulatory considerations, and the new partnership models shaping the future of veterinary injectables. Throughout, we highlight how leveraging specialized expertise and advanced manufacturing technologies can accelerate development, mitigate risk, and ultimately deliver safer, more effective therapies for our animals.

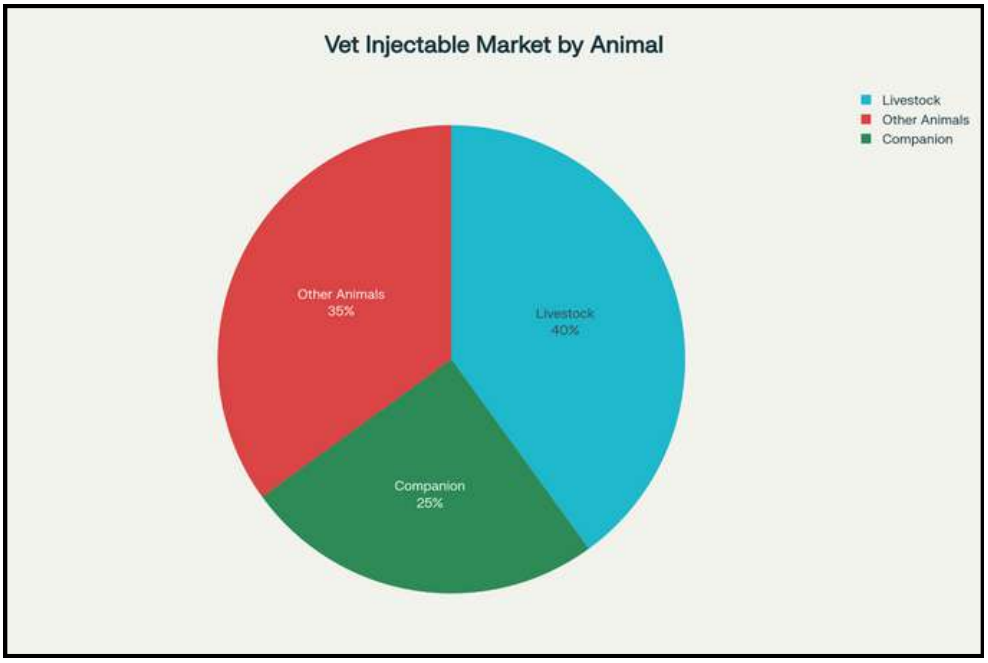
Market Growth of Injectable Veterinary Drugs

Injectable therapies remain the dominant drug delivery route in animal health, accounting for a significant share of the global animal drugs market and projected for robust growth. In 2024, the veterinary injectable devices market exceeded $948M, with projections surpassing $1.85B by 2037, growing at over 5.3% CAGR (1). The injectable segment alone is forecasted to expand at a CAGR of 5.7% through 2034 (1) , demonstrating rising preference among veterinarians and pet owners for reliable, long-acting, and efficient therapies.

Market drivers include growth in pet ownership, increasing livestock needs, rising disease management demands, and technological advancements in injectable formulation and delivery.

Preference Breakdown for Veterinary Injectables

- 60% of veterinary therapeutic market relies on injectables.
- Livestock drives 40% of injectable demand; companion animals about 25%.
- Vaccines comprise 35% of injectable use.
- Veterinary vaccines overall account for about 30–35% of all injectable usage, but vaccine usage occurs across both livestock and companion animals. (1)



Technological Advances in Injectable Formulations

1. Long-Acting Injectable (LAI) Technologies

Modern veterinary injectables focus on reducing dosing frequency, improving compliance, and ensuring sustained therapeutic effect.

- **Formulations:** Microspheres, liposomes, oil-based suspensions, in situ-forming gels, and polymer-based depots.
- **Materials:** Biodegradable polymers such as poly(lactic-co-glycolic acid) (PLGA), polycaprolactone (PCL) are routinely used for controlled release.
- **Therapeutic Classes:** Antibiotics, reproductive hormones, anti-inflammatory agents, vaccines, and novel biologics.

Example: ProHeart® (moxidectin, heartworm), Excede® (ceftiofur, antibiotic), and POSILACTM (recombinant bovine somatotropin) exemplify high-impact long-acting veterinary injectables in commercial use.

2. Extended-Release & Sustained Therapies

Recent product approvals, such as Merck's once-yearly BRAVECTO® QUANTUM injectable for flea and tick control, highlight innovation in achieving unrivaled dosing intervals. These advances improve animal welfare by minimizing repeated animal handling and stress, particularly in aggressive or hard-to-dose animals.

3. Species-Specific Formulation

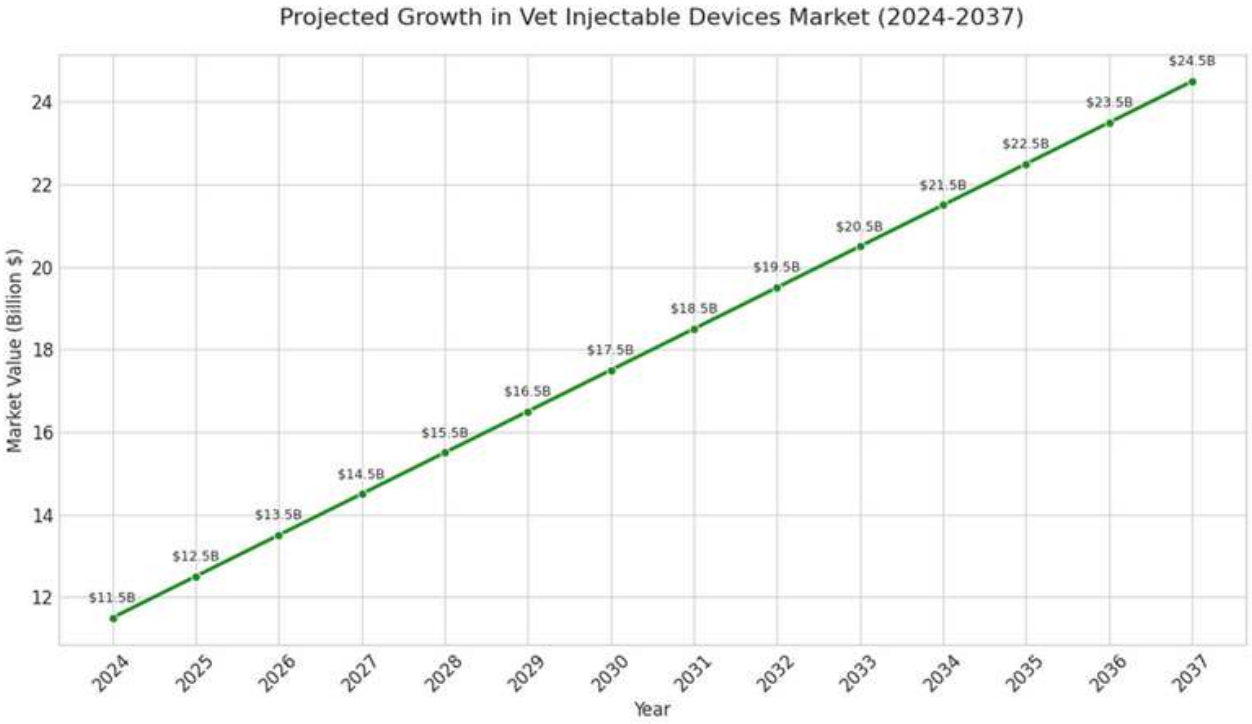
Animal injectables must address diverse species physiology, metabolism, and administration needs. This complexity demands customized formulation - what works for one species may not suit another, especially for livestock versus companion animals. High-volume and high-viscosity challenges arise particularly in large animal therapeutics.

Challenges in Injectable Drug Development

- **Regulatory Hurdles**: Navigating strict approval processes (FDA, EMA) for multi-species drugs, with species-specific efficacy and safety requirements.
- **Patient Variation**: Broad physiological, behavioral, and metabolic differences among target species complicate formulation.
- **Manufacturing & Quality**: Maintaining sterility, stability, proper dosing, and biocompatibility across different drug modalities and container/closure systems.
- **Cost and Compliance:** The need to balance high R&D costs with the market's willingness to pay and animal-owner compliance, especially for recurring treatments.

The Shift Towards Outsourced and Partnership-Driven Development

Biologics and complex injectables increasingly dominate the R&D pipeline, with sterile manufacturing and specialized expertise in controlled-release and depot technologies now standard. The rise of contract development and manufacturing organizations (CDMOs) is a key trend, enabling animal health companies to innovate faster through collaboration while managing risks and leveraging specialized capabilities.



Market Growth in Veterinary Injectable Devices

The Singota Solutions Advantage: Your Partner in Veterinary Injectables

As the animal health landscape evolves, success in injectable drug innovation demands a partner with not only expertise in formulation, sterility, and scale-up, but also deep regulatory understanding and flexible manufacturing - across all key species.

Singota Solutions combines state-of-the-art aseptic injectable manufacturing, comprehensive analytical and development capabilities, and a proven track record of navigating the complex regulatory and technical challenges unique to animal health. Whether your project involves a simple solution or a sophisticated sustained-release depot, Singota's collaborative approach ensures your molecule advances efficiently from concept to market-ready product.

Ready to move your next animal health injectable from vision to reality? Trust Singota Solutions as your CDMO partner for successful, safe, and innovative veterinary injectable drug development.

Singota Solutions is a US based CDMO in Bloomington, Indiana. Singota specializes in formulation development and aseptic fill finish for injectable projects. Once a formulation is established, Singota utilizes state of the art robotic filling technology and focuses on smaller batch size requirements. For more information, visit Singota.com to explore how Singota has established itself as a one-stop solution for all your developmental needs.

Contact **solutions@singota.com** to schedule a meeting with our business development team to further discuss your current or future projects.