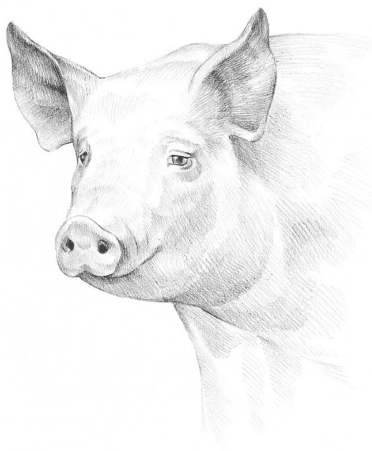


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Mange Control in Swine: Rationale for Injectable Therapy with Dectomax® vs Ivomec® in the Feed

Thayer Hoover, D.V.M.
Animal Health Group
Pfizer Inc
812 Springdale Drive
Exton, PA 19341

Mange is a major ectoparasitic disease of swine inflicting millions of dollars of damage each year in the US.¹ The disease is caused by swine mange mites, *Sarcoptes scabiei* var. *suis*, that spend their entire life-cycle on the skin of pigs, producing irritation, scaly lesions, hair loss, debility, loss of body condition, and poor performance.

Mange mites can be controlled and even eradicated by using acaricidal (mite-killing) products administered via spray, pour-on, feed, or injection. With shrewd management and strategic use of an effective acaricide, producers can virtually eliminate the adverse economic impact of mange in a herd. However, each of the various available acaricides possess advantages and disadvantages that must be contrasted with the degree of mange control they offer. For instance, some producers elect to administer an oral acaricide by including Ivomec® in the feed. Closer examination of this dosage route, however, exposes some concerns that should not be ignored. This bulletin contrasts these issues regarding feed-grade Ivomec with the mange control benefits offered by injectable Dectomax®, a potent new antiparasitic product from Pfizer.

Key Points

- Dectomax is the choice therapeutic strategy for mange control of swine.
- The injectable Dectomax formulation ensures that every animal receives a complete, effective dose, preventing the possibility that poor-eating, under-dosed pigs will serve as undetected sources for herd reinfestation.
- Dectomax disrupts the mange life-cycle; efficacy has been demonstrated to last up to 18 days post-treatment.

Dectomax 1% Injectable Solution

Dectomax injectable solution is the powerful, next-generation endectocide offering a broad spectrum of antiparasitic activity. Doramectin, the novel active ingredient of Dectomax, was developed by Pfizer scientists searching for a compound with high potency and an extended pharmacokinetic profile.^{2,3} The intrinsically favorable pharmacokinetic properties of the doramectin molecule are further enhanced by a patented, oil-based, virtually pain-free



Dectomax formulation that exhibits excellent tissue toleration when administered intramuscularly (IM). Dectomax kills both nematodes and parasitic arthropods by causing nonspastic paralysis that results from modulation of chloride ion channels in their nervous systems.

Dectomax is a stable, ready-to-use injectable solution for IM administration at the rate of 1 mL/75 lb body weight (300 µg/kg body weight). This dosage provides excellent, broad-spectrum activity for treatment and control of economically important swine parasites: *Sarcoptes scabiei* var. *suis* (mange mites, adults/immature stages); *Hæmatopinus suis* (sucking lice, adults/immature stages); *Ascaris suum* (ascarids, adults and 4th-stage larvae) (L₄); *Oesophagostomum dentatum* (nodular worms, adults and L₄), *O. quadrispinulatum* (nodular worms, adults); *Strongyloides ransomi* (thread-worms, adults); *Hyostrogylus rubidus* (stomach worms, adults); *Metastrongylus* spp. (lungworms, adults); and *Stephanurus dentatus* (kidney worms, adults).

Dectomax is safe for use in swine of any breed or age, including neonatal pigs, weaned pigs, growing/finishing swine, and breeding stock. Experimental doses up to 10-times the recommended rate produced no adverse effects. Dectomax should not be administered within 24 days of slaughter.

Dectomax is available in 100-, 250-, and 500-mL multi-dose, amber glass bottles enclosed in clear polycarbonate shields. The recyclable polycarbonate shield holds and protects the bottle during use and has a pre-drilled eye-hook for easy hanging.

Ivomec in the Feed

Administration of an acaricide such as Ivomec in the feed, at first consideration, appears to be an appropriate option for mass-medication. Closer scrutiny, however, makes this administration route less attractive, especially in contrast with other available treatment alternatives.

Perhaps the most critical factor associated with feed-grade mange treatment concerns

the amount of drug actually administered to each animal. Use of feed-grade Ivomec demands that special care be taken to properly measure and mix the drug into the feed. Assuming this step has been reliably accomplished, the feed must then be administered for 7 consecutive days. Ivomec requires a *consistent feed intake* during this week-long treatment period to ensure efficacy. This may be difficult since feed intake can be affected by a number of variables, such as temperature, health status, shipping stress, feed changes, competition among pigs, and social order in the herd. Pigs receiving medicated feed must be closely observed to confirm that appropriate amounts of feed are actually consumed. Group-fed animals are especially difficult to monitor, *with a high probability that one or more animals will fail to consume the correct amount of feed*. Even confined sows may not consume feed consistently. For instance, if feed is placed in a trough with crates side-by-side, a sow might not fully consume its ration that day, but a neighbor animal might reach over and consume the available feed. The under-fed sow, therefore, has failed to consume the recommended therapeutic level of medication.

Such marginally dosed animals may remain a source of mite infestation for other animals in the herd, perpetuating the disease and economic losses. For example, when an infested, under-dosed sow farrows, mange mites may be transmitted to nursing piglets, thus eventually spreading the infestation into the grower/finisher facility. Retreatment may be required for under-dosed pigs and pen-mates that come in contact with them. More likely, however, is the scenario where mite infestation of under-dosed animals escapes detection, subtly eroding productivity and allowing mite populations to gradually become re-established in the herd. An example of this potential for continued infestation in Ivomec-treated pigs was recently reported.⁴ While feed-grade Ivomec demonstrated good overall mange efficacy in this study, 9 of the 64 pigs treated 8 weeks earlier had positive dermatitis scores at

slaughter, and live mange mites were recovered from 3 animals.

The addition of mange-control medication to the feed may necessitate the removal of other growth promotants or disease control agents due to regulatory cross-clearance issues, possibly compromising proven management strategies for optimizing productivity and health (Ivomec has only 1 approved cross-clearance). Furthermore, some producers find that managing yet another feed change just for mange control is not worth the inconvenience, especially when other more efficient treatment methods are available.

Reliance on the feed-grade administration route can also impact overall mange control success. The inconvenience of managing a special feed-change just for mange control may prompt some producers to only treat for mange upon observation of clinical signs, though their particular circumstances might demand more frequent treatments for complete economic control of the disease. In other words, inconvenience associated with the route of drug administration may limit the extent of mange control benefits realized.

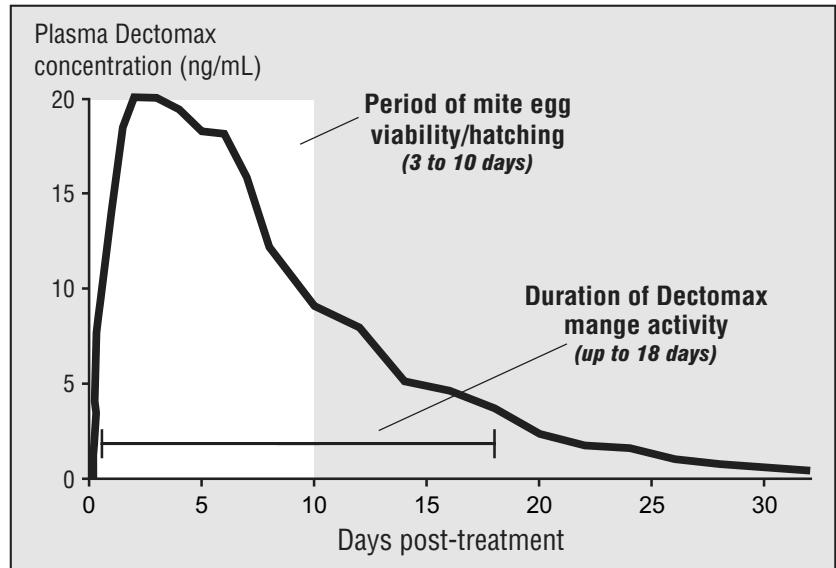
Feed wastage is yet another variable that impacts feed-grade mange control. The fact that a portion of feed is inadvertently wasted in most any swine production unit means that a corresponding portion of costly medication is also being wasted, compared to other treatment routes.

Finally, feed-grade mange control is not immediate. The complete 7-day treatment period is required by Ivomec premix to assure efficacy.

Advantages of Dectomax

Injectable treatment of swine with Dectomax offers distinct advantages over mange control strategies employing Ivomec feed-grade medication. Foremost is the fact that the injectable route of drug administration ensures that *every* animal receives the *correct, precise dosage* required for optimal therapeutic efficacy and duration of activity. No correctly treated animal will be vulnerable to the occasional under-dosing that occurs when medications are administered

Fig. 1. Mean plasma concentrations of Dectomax after IM administration to swine, and duration of Dectomax mange efficacy.^{3,7}



in the feed and drug efficacy is consequently dependent on the consistent attainment of normal rates of feed consumption over several consecutive days. Thus, the threat posed by unknowingly perpetuating mange in a herd via under-dosed, infested pigs is alleviated with injectable Dectomax, and the prospect for long-term mange control is improved.

When injectable Dectomax is used for mange control, the drug dose is administered directly into body tissues, allowing the pharmacokinetic processes of absorption and systemic distribution to immediately commence. Within just a few hours after drug administration, effective plasma concentrations of Dectomax are achieved and the therapeutic process is underway (Figure 1).³ Injectable Dectomax allows pigs to promptly begin generating the productivity benefits associated with the absence of mange mites, lice, or internal helminth parasites.

Dectomax is an ideal mange control agent for sows and gilts because it prevents transmission of mange mites to suckling pigs and, therefore, the subsequent introduction of disease into the grower/finisher herd. Prefarrowing control of mange in sows has been reported to generate economic

Advantages of Dectomax Injectable

- Complete disruption of the mange mite life-cycle
- Correct, effective dose assured
- Every animal receives full treatment
- No under-dosed, infested pigs persisting as source for reinfestation
- No monitoring of feed consumption to estimate or ensure correct dosing
- No feed-change hassle (scheduling, mixing, storage, clean-out, etc.)
- No medication wasted in unconsumed/spilled/soiled feed
- No disruption of other feed-grade agents fed for performance or health optimization
- No management limitations as to when mange control can be conveniently applied
- Prompt acaricidal activity
- Earlier opportunity for productivity benefits resulting from mange control
- Breaks mange life-cycle in sows, preventing disease transmission to piglets, grower/finishers
- Improved prospects for long-term mange control

dividends through enhanced reproductive efficiency (more pigs weaned per litter, etc.).^{5,6} Therefore, mange control strategies focusing on breeding stock (in contrast to those relying on feed-grade Ivomec and aimed at weanling/grower/finisher pigs) seem logical and beneficial because they offer the opportunity for comprehensive control through all production phases but with the added benefit of enhanced reproductive efficiency. Dectomax administration to sows before farrowing effectively kills all active mite stages that might be populating the pig (larvae, nymphs, adults). Furthermore, the efficacy of Dectomax against mange has been demonstrated to persist for 18 days following treatment (Figure 1), about twice that afforded by Ivomec injectable (up to 9 days).⁷ This means that Dectomax activity is still present during the generally accepted 3- to 10-day viability period when mite eggs left in the skin by the deceased mite population might hatch.¹ Newly hatched mite larvae will be promptly killed by Dectomax. As a result, the mite life-cycle is completely disrupted; the earlier mite infestation cannot re-establish itself because the viability of mite eggs is much shorter than the duration of Dectomax activity. This potent, prolonged acaricidal activity of Dectomax prevents infestation of piglets by sows and the subsequent transmission of mange into the grower/finisher herd that can

occur when acaricides with shorter activity durations are employed.

Conclusions

While use of a feed-grade acaricide such as Ivomec may initially appear to be an attractive option for mange control, a careful comparative analysis distinguishes injectable Dectomax as the choice therapeutic strategy.

Dectomax, the new, next-generation endectocide for swine, completely disrupts the mange mite life-cycle. The injectable dosage form ensures that every animal receives a complete, effective dose of medication, preventing the possibility that variable feed intake will cause some pigs to become undetected sources for reinfestation of the herd and perpetuation of economic losses caused by mange.

Because the activity of Dectomax has been demonstrated to last up to 18 days post-treatment, Dectomax is the ideal medication to break the mange mite life-cycle in sows, preventing disease transmission to piglets and subsequent introduction of mange into the grower/finisher facility. For mange control in swine, injectable Dectomax offers a better route of drug administration than oral dosing via the feed.

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TAKE TIME



OBSERVE LABEL
DIRECTIONS

Dectomax® is the Pfizer Inc registered trademark for doramectin.
Ivomec® is the Merck and Co. Inc. registered trademark for ivermectin.



Animal Health

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