



BREAKTHROUGH.
BEFORE THEY DO.

Exzolt[®]
FLURALANER

PRODUCT DETAILER

 **MSD**
Animal Health

BREAKTHROUGH MITE CONTROL

Exzolt[®], new from MSD Animal Health, provides comprehensive management of Poultry Red Mites and Northern Fowl mites in chickens. Exzolt[®] is delivered through the drinking water – reducing stress caused by conventional chemical sprays and minimising the potential of chemical exposure to human workers. In two convenient administrations, Exzolt[®] offers fast and nearly complete elimination of mite populations that contributes to long term mite control in conjunction with the implementation of proper biosecurity measures.

KEY USES

- ▶ Mite infestations in pullets, breeders and layers
- ▶ In situations where mites demonstrate resistance to classical acaricides
- ▶ To improve overall animal health, welfare and productivity.

KEY PERFORMANCE BENEFITS

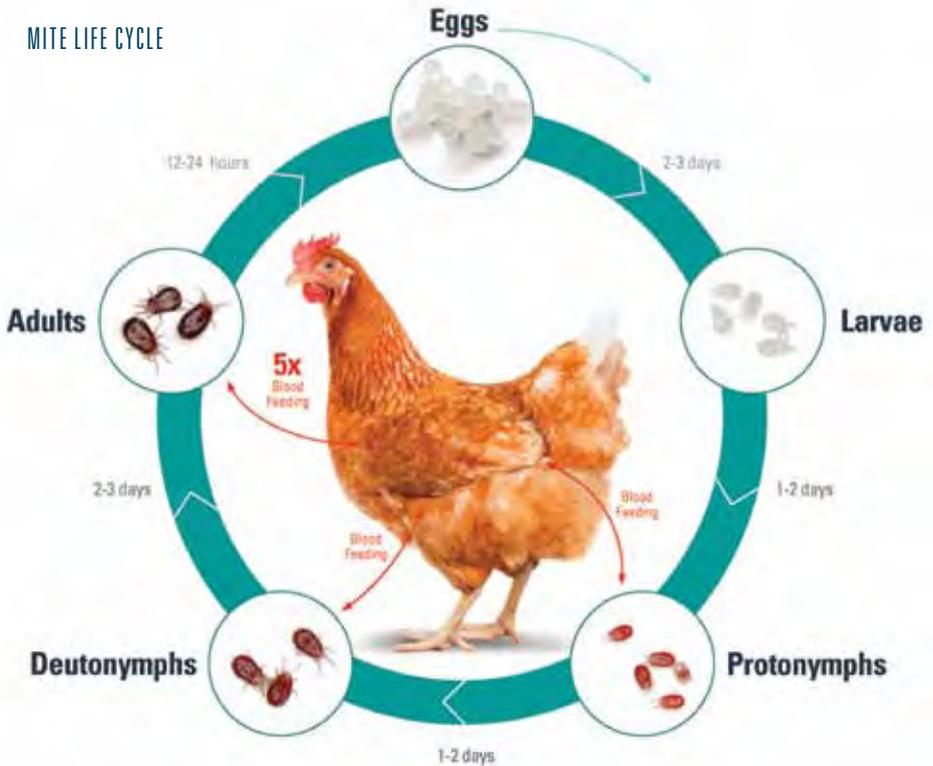
- ▶ Treatment of poultry red mite infestations in pullets, breeders and layers
- ▶ Zero-day withdrawal period for eggs and a short 12 day withdrawal for meat or offal
- ▶ Safe and well tolerated in layer and breeder chickens, with a very wide margin of safety
- ▶ Avoids exposure of house workers and birds to chemical sprays
- ▶ Dosage regimen spans two mite life cycles – achieving more than 99 % mite-killing efficacy
- ▶ Ready-to-use solution for simple dilution, with no sedimentation, clogging or spoilage.



Dermanyssus gallinae
Adult poultry red mite

THE THREAT OF POULTRY RED MITES

Poultry Red Mites (*Dermanyssus gallinae*) are a primary mite threat. These pests can increase rates of anaemia, mortality and disease susceptibility while eroding productivity parameters like feed efficiency, egg production, egg quality and weight gain.¹ In addition to physiological damage, mites are a costly global problem for poultry production.



The life cycle of the poultry red mite, *Dermanyssus gallinae*. Aside from the egg, the poultry red mites have 4 life cycle stages: larva, protonymph, deutonymph, and adult. Larvae hatch with 6 legs and do not feed. After the first molt, both nymphal stages and adults have 8 legs. Protonymphs, deutonymphs, and adult females routinely feed on host blood, but males only occasionally feed¹.

PHYSIOLOGICAL AND ECONOMICAL DAMAGE

Mite bites are painful and induce skin irritation, contributing to high stress levels in infested birds. Increased self-grooming and head scratching both day and night (characteristic symptoms of anxiety that also contribute to decreased weight gain) have been observed in artificially infested hens.¹ In addition to experiencing anaemia as well as higher rates of mortality and disease susceptibility, flocks infested with mites typically suffer eroded productivity as evidenced by:

- ▶ Decreased feed intake
- ▶ Decreased egg production
- ▶ Decreased egg quality (shell thinning, spotting)
- ▶ Decreased weight gain.

Economic losses from poultry mite infestations severely affect the productivity of the egg industry. Current management methods lack sufficient efficacy to keep mite infestations under control on many poultry farms and often pose safety threats for both birds and humans. Exzolt® however, is different.



COMBATTING POULTRY RED MITES AND NORTHERN FOWL MITES

Exzolt[®] is a unique parasiticide for chickens that provides potent efficacy against Poultry Red Mites and Northern Fowl Mites. Administered through the drinking water, Exzolt[®] provides a convenient oral solution dosage form in the drinking water. Exzolt[®] provides fast, convenient and potent acaricidal efficacy, with proven safety for chickens and the users of the product.

ACTIVE INGREDIENT

Fluralaner (carbamoyl-benzamide-phenylisoxazoline), the active substance in Exzolt[®], is a member of the novel antiparasitic compound class of isoxazoline-substituted benzamide derivatives. Never before used in agriculture, fluralaner is truly a new and innovative treatment for poultry. Orally administered, fluralaner reaches target ectoparasites through absorption from the gastrointestinal tract and circulation in the bloodstream.

PHARMACOLOGY

After oral medication via medicated drinking water, fluralaner is rapidly absorbed and reaches maximum plasma concentrations 36 hours after the first administration and 12 hours after the second administration. The drug is highly bioavailable (~91 %), highly bound to proteins, widely distributed throughout the body (highest concentrations in liver

and skin/fat), minimally metabolised and eliminated mainly via the hepatic route.

Once ingested by a mite feeding on a treated chicken, fluralaner acts as a potent inhibitor of parts of the arthropod nervous system.

COMBAT RESISTANCE

As with most medicinal or chemical interventions used for animal health, the development of resistance is an ongoing concern. However, resistance has not been detected against fluralaner, a new agent recently introduced in veterinary medicine. *In vitro* bio-assays have shown that fluralaner is effective against parasites having proven field resistance against :

- ▶ organophosphates (tick, mite)
- ▶ pyrethroids (tick, mite)
- ▶ carbamates (mite).



POTENT EFFICACY

Treating the chicken with Exzolt®, rather than treating the chicken's environment, is an innovative approach to targeting mite parasites. Convenient treatment with Exzolt® through the drinking water causes effective levels of the acaricide to be systemically distributed within all birds, ready to kill mites whenever parasites extract a blood meal from their hosts.

At the recommended dosage regimen of 0,5 mg fluralaner/kg BW twice, seven days apart, near-total elimination of mite populations in clinical trial treated houses was quickly achieved in all layer, breeder and/or pullet houses.

EXZOLT®

- ▶ Induces a rapid and massive decrease in mite populations in a chicken house
- ▶ Treats the bird, not just the environment
- ▶ Starts quickly (within four hours), with prolonged duration in birds spanning two mite life cycles
- ▶ Offers high bioavailability and systemic distribution in poultry
- ▶ Acts against mites resistant to classical acaricides.

TREATMENT REGIMEN

The recommended treatment regimen for Exzolt® (0,5 mg/kg BW twice at a seven-day interval) was identified as a result of a comprehensive dose-determination programme that evaluated multiple doses and durations using artificial infestations of poultry red mites under experimental conditions. The objective of the dose-determination studies was to select a treatment regimen that provides efficacy for the duration of two consecutive mite life cycles (~15 days). Mite development from egg to the first blood-feeding stage (haematophagous protonymphs) normally occurs within three to five days, and a blood meal is required for further development of protonymphs to deutonymphs and adults, and also for production of mite eggs. Thus, the mite life cycle is disrupted due to the rapid onset of fluralaner activity, the very high mite-killing efficacy (duration of at least two mite life cycles) and the absence of egg production

from female mites exposed to treated chickens. Data indicates that Exzolt® is more effective than traditional spray products for rapidly and dramatically decreasing building infestation burdens.

TREATMENT PROGRAMME

Apply 0,5 mg fluralaner/kg BW to the drinking water twice, seven days apart. Exzolt® is a ready-to-use solution for simple dilution, with no sedimentation or clogging.

When used in conjunction with proper biosecurity measures, Exzolt's® treatment programme of two doses seven days apart fights mite resistance and contributes toward long-term control of mite populations in poultry houses.

MITE CONTROL IN THE WATER

- ▶ Treats all birds, unlike hit-and-miss spraying
- ▶ More convenient and simpler application than sprays
- ▶ Uniform dosing accuracy
- ▶ Two short one-day treatments, one week apart
- ▶ Flexible; easy to tailor treatment to bird management programs (feeding, housing, etc.)
- ▶ Reduced labour compared to sprays and other treatment methods
- ▶ Re-sealable, multiple-entry container.

SAFETY

Containing fluralaner, Exzolt® is a potent yet safe acaricide from a new chemical class, the first isoxazoline approved for use in poultry. Exzolt® is well tolerated in all classes of chickens, with a very wide margin of safety, and avoids exposure of house workers and birds to chemical sprays.

WORKER SAFETY

Administration through the drinking water minimises the potential of chemical exposure to human workers. Treatment compliance is also enhanced by convenient administration of the ready-to-use solution in drinking water, greatly reducing the workload for house workers compared to spraying (e.g., removing birds and/or eggs, multiple applications, quarantines, less safety equipment, fewer safety precautions, etc.).

ANIMAL WELFARE

Two target animal safety studies demonstrated that Exzolt® was well tolerated and highly palatable in chicks and adult hens, even when dosed at 15-times the intended total dosage.³ In breeder chickens, a reproductive safety study demonstrated that Exzolt® is well tolerated even at six-times the intended total dosage. There are no adverse effects on fertility, hatchability, chick viability or overall reproductive performance.

Eggs from hens treated with Exzolt® are completely safe for consumers and no withdrawal period is necessary before collection of eggs for human consumption – even on the day of treatment or between treatment days. A withdrawal period of 12 days after the last administration of Exzolt® is required for human consumption of meat and offal.

ASSURED SAFETY

- ▶ Zero egg withdrawal time for layers
- ▶ Not stressful for hens
- ▶ Safe for breeders
- ▶ No harm on egg production, hatchability or progeny
- ▶ Broad safety margin.

Use of Exzolt® at the recommended daily dose rate of 0,5 mg/kg BW twice at a seven-day interval offers a wide margin of safety for all classes of pullets, breeders and layers and does not impact rates of water consumption.



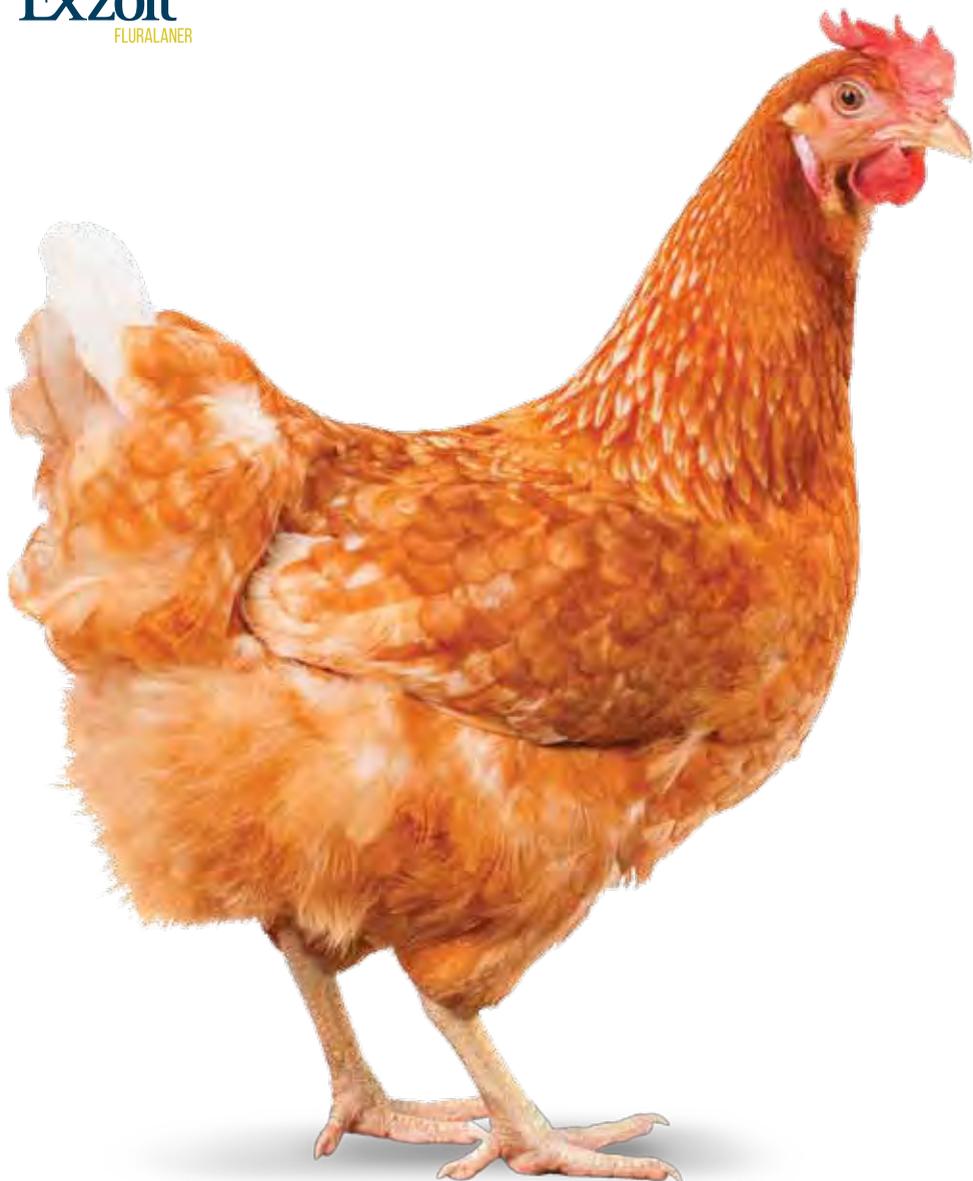
DISCOVER BREAKTHROUGH MITE CONTROL

Exzolt® represents an innovative, completely new approach for comprehensive management of poultry Red Mites and Northern Fowl mites in chickens, providing systemic acaricidal activity within the bird instead of relying on external contact with a pesticide or other treatment compounds. Only Exzolt® offers a unique combination of features and benefits that, together, distinguish the product as a major advancement for optimising the health and productivity of layers, breeders and pullets threatened by poultry mites.

EXZOLT® SUMMARY

- ▶ Induces a rapid and massive decrease in mite populations in a chicken house, with demonstrated 99 %+ efficacy
 - ▶ Fast kill starts within hours of administration, and the two administrations a week apart span two mite life cycles, thus disrupting mite population dynamics
 - ▶ Convenient treatment in the drinking water at a low dose of 0,5 mg/kg BW per day, repeated one week later, allowing uniform and accurate dosing compared to other control methods
 - ▶ Ready-to-use solution (1 % fluralaner, 10 mg/ml) for simple dilution, with no sedimentation, clogging or spoilage
 - ▶ More effective, safe, targeted and convenient than mite sprays
 - ▶ Highly active against mite strains resistant to classical acaricides
 - ▶ Ideal for layers due to zero egg withdrawal period
- ▶ No adverse impacts on egg production, hatchability or chick survival of breeders (in fact, positive impacts often observed)
 - ▶ Safe and well tolerated in all classes of chickens, with a very wide margin of safety
 - ▶ Avoids exposure of house workers and birds to toxic sprays
 - ▶ Short 12-day withdrawal for meat or offal.





¹ Sparagano O.A.E., George D.R., Harrington D.W.J., Giangaspero; A. Significance and control of the poultry red mite; *Dermanyssus gallinae*. *Annu Rev Entomol* 2014; 59:447-466.

² Mozafar F. 2014. Die rote vogelmilbe, eine grosse herausforderung für eierproduzenten. Frühjahrveranstaltung; *Deutschen Vereinigung für Geflügelwissenschaft*. Leipzig, 11-12 März 2014.

³ Data on file. MSD Animal Health.



RedMiteExpert.com

EXZOLT® Reg. No. G4363 (Act 36/1947)

Active ingredient: Fluralaner 10 mg/m²

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