Article Id
AL04529

SCALY LEG MITE INFESTATION (*Knemidocoptes mutans*) IN POULTRY

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Scaly leg mite infestation, commonly termed Knemidocoptic mange or "tassel foot," is a chronic parasitic skin disease of poultry caused by the burrowing mite *Knemidocoptes mutans*. The condition primarily affects the unfeathered portions of the legs and feet of chickens, although turkeys, pheasants and several wild avian species may also be affected (Sreedevi *et al*., 2015 and Shehata *et al*., 2025). The disease is encountered more frequently in backyard and smallholder poultry systems where hygiene, nutrition, and ectoparasite control are often inadequate. Chronic infestations compromise bird welfare and may result in hyperkeratosis, lameness, secondary bacterial infections, reduced productivity, and permanent deformity of digits if neglected (Morishita *et al*., 2005). The MSD Veterinary Manual describes *K. Mutans* as a mite that "tunnels into the tissue under the scales of the bird's legs," producing progressive crusting and thickening of the legs.

Etiology and Epidemiology

Knemidocoptes mutans is a microscopic burrowing mite belonging to the family Epidermoptidae. The complete life cycle occurs on the host bird, generally within 10–14 days. Transmission occurs mainly through direct contact between infected and healthy birds. Contaminated litter, wooden perches, nesting material and poorly sanitized housing may facilitate spread within the flock (MSD Veterinary Manual, 2025).

Predisposing factors include:

Poor sanitation, damp housing conditions, nutritional deficiencies, overcrowding, chronic stress, advanced age and lack of ectoparasite control.

Recent investigations in indigenous poultry systems demonstrated that *K. Mutans* continues to be an important ectoparasite in scavenging birds maintained under rural production systems (Nadia *et al*., 2025).

Pathogenesis

The pathogenic effects arise from continuous burrowing activity beneath the keratinized epidermal scales. Mechanical irritation caused by the mites induces chronic inflammation, serous exudation and excessive keratin production, ultimately leading to hyperkeratosis and scale elevation (Shanta *et al*., 2006). Affected legs gradually develop rough, thickened, crusty lesions with accumulation of whitish-gray debris beneath the scales. In advanced cases, lesions interfere with joint flexion and locomotion, producing lameness and deformity (Ikpeze *et al*., 2008; Sreedevi *et al*., 2015). *Morishita et al.* (2005) documented severe infestations associated with "digit necrosis" in bantam chickens, highlighting the chronic and progressive nature of untreated disease.

Clinical Signs

Clinical signs generally develop gradually over several weeks or months. Common findings include:

- Raised and thickened leg scales
- Whitish or grayish powdery lesions
- Hyperkeratotic crusts
- Rough, honeycomb-like appearance of the legs
- Irritation and pecking at affected areas
- Pain while walking or perching
- Reluctance to move
- Progressive lameness
- Deformed or necrotic toes in chronic cases
- Reduced body condition and egg production

Diagnosis

Diagnosis is usually based on characteristic clinical appearance and flock history. Confirmation can be achieved by microscopic examination of skin scrapings obtained from beneath affected scales, where mites, eggs, or developmental stages may be demonstrated (Sreedevi *et al.*, 2015).

Differential diagnoses include:

Favus (fungal dermatitis), Nutritional dermatoses, Chronic bacterial dermatitis, Frostbite lesions and Hyperkeratotic skin disorders

Treatment and Field Management

Successful treatment requires elimination of mites together with correction of environmental and nutritional factors. In practical field conditions, topical management remains economical and effective, particularly in backyard poultry. Soft soap cleansing followed by application of petroleum jelly (vaseline) has shown satisfactory clinical improvement in many cases. Gentle scrubbing helps soften crusts and remove accumulated debris, while vaseline acts by occluding mite burrows and limiting parasite survival beneath the scales.

Repeated applications are generally necessary because mites remain protected within hyperkeratotic lesions. Supportive supplementation and correction of nutritional deficiencies further aid tissue repair and recovery in debilitated birds.

Traditional occlusive therapy continues to be widely recommended. The British Hen Welfare Trust notes that thick application of vaseline helps “suffocate the mites and soften the

scales." (British Hen Welfare Trust) In moderate to severe infestations, ivermectin therapy may be administered under veterinary supervision. Sreedevi *et al*. (2015) reported successful therapeutic management of *K. Mutans* infestation using ivermectin in backyard poultry.

Environmental sanitation is essential to prevent reinfestation:

- Thorough cleaning and disinfection of poultry houses
- Replacement of contaminated litter
- Treatment of wooden perches and nest areas
- Isolation of severely affected birds
- Reduction of overcrowding
- Prevention of contact with infested birds and wild carriers

Integrated ectoparasite management strategies are recommended for sustainable control in poultry systems (*Sparagano et al.*, 2020).

Prevention

Preventive measures include:

- Maintenance of dry and hygienic housing
- Routine ectoparasite monitoring
- Quarantine of newly introduced birds
- Balanced nutrition and mineral supplementation
- Avoidance of overcrowding and chronic stress
- Regular inspection of legs, particularly in older birds

Early detection and prompt intervention substantially reduce chronic deformities and production losses.

Conclusion

Scaly leg mite infestation caused by *Knemidocoptes mutans* remains an important chronic ectoparasitic disease of poultry, particularly in backyard poultry characterized by hyperkeratosis, crusting, scale elevation, lameness and progressive deformity of the legs and feet. Early diagnosis, environmental sanitation, supportive therapy, and effective mite control are essential for successful management. Practical field approaches such as soft soap cleansing,

vaseline application, nutritional supplementation, and improved flock management continue to provide economical and effective control under rural poultry conditions.

References

Morishita, T.Y., Johnson, G., Johnson, G., Thilsted, J., Promsopone, B. and Newcomer, C. (2005) Scaly-leg mite infestation associated with digit necrosis in bantam chickens (*Gallus domesticus*). *Journal of Avian Medicine and Surgery*, 19(3): 230-233.

MSD Veterinary Manual. (2025) Mites of Poultry. 11th Edition. Merck & Co., Inc.

Nadia, N., Shohana, N.N., Hossain, M.S., Labony, S.S., Ali, M.H., Lovelu, M.A., Shirin, A., Ritu, S.N., Islam, U.R., Parvin, R. and Talukder, M.H. (20250 Research note: Mite infestations in non-descriptive indigenous chickens in Bangladesh: Present status and pathology. *Poultry science*, 104(3): 104889.

Shanta, I.S., Begum, N., Anisuzzaman, A., Bari, A.S.M. and Karim, M.J. (2006) Prevalence and clinico-pathological effects of ectoparasites in backyard poultry. *Bangladesh Journal of Veterinary Medicine*, 4(1): 19-26.

Shehata, A.A., Abd El-Wahab, A. and Hernandez-Velasco, X. (2025) An overview of ectoparasites in poultry, with particular attention to control challenges and prospects. *German Journal of Veterinary Research*, 5(3): 94-106.

Sparagano, O.A. and Ho, J. (2020) Parasitic mite fauna in Asian poultry farming systems. *Frontiers in Veterinary Science*, 7: 400.

Sreedevi, C., Ramesh, P., Mala Kondaiah, P., Lakshmi Rani, N. and Abhishek, M. (2016) Occurrence of *Knemidokoptes mutans* and *Laminosioptes cysticola* in backyard poultry in India. *Journal of parasitic diseases*, 40(4): 1627-1630.