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Scaly leg mite infestation in an Aseel chicken and its successful treatment with neem oil: A case report

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Abstract

A two year old Aseel chicken was found to have thickening of the skin in the shank, exfoliation and restlessness. Clinical examination revealed no pain on palpation and no abnormal gait. The bird was also off feed with pale comb and wattles. On examination of a deep skin scraping, *Cnemidocoptes mutans* mites were identified and the condition was confirmed as a scaly leg. The bird was treated topically with a 50:50 mixture of kerosene and neem oil, for a period of 5 days continuously. Gradual healing was observed. The crusts slowly got removed and the scales became normal. As a preventive measure, neem oil was also applied to the litter material. The present findings indicate the miticidal property of neem oil against *Cnemidocoptes mutans* mites in chicken and its potential use as an ethnoveterinary medicine for treatment of scaly leg mites avoiding the use of chemical acaricides.

Keywords: *Cnemidocoptes mutans*, Aseel chicken, neem oil

1. Introduction

Scaly leg in chicken and other birds is caused by the mite, *Cnemidocoptes mutans*. These mites are very common pests in poultry. They burrow under the scales in the bird's leg, but also infests other areas, such as the comb and wattles of chicken. The mite spends its entire life cycle on the bird and is usually spread by direct contact. Birds infested with scaly leg exhibit raised or protruding scales in the affected legs, sometimes with a white crusty appearance. Scaly leg causes severe irritation to the infected bird, and in extreme cases can result in lameness and often leading to bleeding and secondary bacterial infection in the exposed tissues [1, 2, 3]. Affected chickens exhibit severe weight loss and decreased egg production. The scales on the legs of healthy chicken are smooth and lie flat and if the scales start to peel up, flake or look rough and uneven, it could be due to infestation with scaly leg mites. These mites cause the scales to become crusty and lift up instead of laying flat and smooth. Feathered legged breeds of chicken are more susceptible to scaly leg mites. In severe cases blood supply to the toes may get cut off and the bird can lose the affected toes. Scaly leg infested birds are unable to roost and eventually die [4, 5, 8]. Acaricides are commonly used for mite infestations in chicken as dip or spray. They have several harmful effects. Use of acaricides cause environmental pollution, enter the food chain and cause residues in meat and other food products and sometimes can be detrimental to the beneficial insects and natural enemies found in the farm premises. Herbal acaricides are ecofriendly and ecosensitive alternatives and can help to overcome the harmful effects of chemical acaricides in use. Several herbal preparations including aqueous extracts and oils commonly available in the farm premises and easy to prepare are used as acaricides to treat mite infestations. This paper presents scaly leg in an Aseel chicken and its successful treatment with neem oil.

2. Materials and Methods

A two year old Aseel cock was found with the lesion of thickening of the skin in the shank, exfoliation and restlessness. The bird was found off feed and stay away from the flock with signs of pale comb and wattle. The shank was found to have crusty scales, flaking and with a hard, roughened and uneven surface. On clinical examination there was no pain on palpation and no abnormal gait. A deep skin scraping was taken (since it was a borrowing type of mite) from the shank and beak (the affected parts) and was processed by routine parasitological procedure [7, 9]. The skin scraping was transferred to a clean glass test tube and added with 10 ml of 10% sodium hydroxide solution. The mixture was then boiled for 10 min until all the scales were digested, cooled for five minutes by dipping in cold water and the contents were centrifuged at 3000 rpm for 5 minutes. The supernatant was discarded and the sediment was collected. A drop of sediment was placed in a clean grease free glass microscopic slide and viewed under 10X power of a compound microscope.

On examination of the skin scraping it was found to be positive for mites, which were identified as *Cnemidocoptes mutans*, the scaly leg mite of chicken based on morphological characteristics. The mites were seen in large numbers. In addition to adult mites, various life cycle stages of the mites viz., eggs and nymphal stages were also found in the skin scraping material.

3. Results and Discussion

After the confirmation of the mite infestation the affected bird was treated topically with a 1:1 mixture of kerosene and neem oil, for a period of 5 days continuously. After treatment gradual healing was found evident. In addition as a preventive measure, neem oil was also applied to the litter material of the mite infested sheds and this was also found to control mite infestation. A number of herbal insecticides are used on chickens, including tea tree oil, citronella oil, garlic, soybean oil, peppermint oil, lemongrass oil, eucalyptus oil and cedar wood oils. Chickens are bathed with soap containing these oils, or treated with a spray containing the oils mixed with water. The oils are very concentrated, so the sprays contain only 1 to 2 percent oil. The infested feet and legs of chickens are rubbed with soybean oil, linseed oil or any type of vegetable oil to help with scaly mites. Neem oil, which is

commonly available, kills mites by disturbing their life cycle. In the present case also it was found to be highly effective in killing mites and curing of the scaly leg lesions. Application of vegetable oil with kerosene as a 50:50 mixture was found effective in the control of scaly leg infestation in a small population of backyard poultry and similar lesions were also observed [2, 6]. Thus the usage of amitraz, cypermethrin and other chemicals whose residues leaves harmful effect on the environment can be minimized with use of etho-veterinary drugs. It is normally advised to apply a thick layer of Vaseline in the affected legs to suffocate the mites before application of any acaricide [1]. The present study concluded that kerosene and neem oil has the acaricide property and fly repellent and this could be used as an alternative strategy for treatment as well as control of mites.

4. Conclusion

Based on the above findings, it can be concluded that scaly leg caused by *Cnemidocoptes mutans* in poultry can be treated by topical application of neem oil with significant miticidal activity, healing of lesions and regrowth of new tissues. Neem oil is available commonly in even remote places and can be effectively used.



Fig 1: Scaly leg mite infestation before treatment and leg free of treatment with neem oil

5. References

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