Short Communication

RABBIT MANGE INFESTATION AND ITS THERAPEUTIC MANAGEMENT

P. Gopu[1*], T. Chandrasekar[2], M. Arul Prakash[3], Karu. Pasupathi[4] and D. Balasubramaniam[5]

Postgraduate Research Institute in Animal Sciences
Tami Nadu Veterinary and Animal Sciences University
Kattupakkam, Chengalpattu – 603 203, Tamil Nadu, India

ABSTRACT

A study was conducted on Soviet chinchilla rabbits (n=28) with mange infestation at Rabbit Breeding Unit, Post Graduate Research Institute in Animal Sciences, Kattupakkam, Tamil Nadu. The infested rabbits evinced the symptoms of alopecia, anorexia, pruritus, skin erosion, and dry crust like lesions on extremities, ears, nose, and face. The affected rabbits were grouped into four groups (7 for each group) for different therapeutic treatments along with antihistamine and vitamin supplementation for a period of 4 weeks with weekly intervals. It was established that treatment group 4 was successful in curative and early revival of mange infestation.

Keywords: Rabbit, Soviet chinchilla, Mange infestation, Tamil Nadu.

Received : 06.10.2022 Revised : 10.03.2023 Accepted : 10.03.2023

Rabbits are micro-livestock with more salient features in the production aspect such as early maturity, faster growth rate, prolificacy and early marketing age than other farm animals. Skin infestation is the universal clinical condition in rabbits (Deshmukh *et al.,* 2010). The prevailing temperate and tropical climatic conditions have an effect on production of rabbits in India (Darzi *et al.,* 2007). Mange is one among the skin lesions in rabbits which causes the contagious disease which also has zoonotic importance (Kumar *et al.,* 2002) and spread to non-infected rabbits (Panigrahi and Gupta, 2013). This study revealed the incidence of mange infestation in Soviet chinchilla rabbits and its treatment methods.

The study was carried out in Rabbit Breeding Unit, Post Graduate Research Institute in Animal Sciences (PGRIAS), Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Kattupakkam, Tamil Nadu, India. A total of 72 Soviet chinchilla adult rabbits were examined. Out of which 28 rabbits (ten male and eighteen female) were affected with mange infestation during May to July 2020.

[1]Assistant Professor, Corresponding author Email id: gopu76@yahoo.co.in
[2]Assistant Professor, Livestock Farm Complex, Veterinary College and Research Institute, Theni – 625 534
[3]Assistant Professor
[4]Associate Professor
[5]Professor and Head

The affected (n= 28) rabbits were aged about 1-2 years and the clinical signs observed were anorexia, anaemia, intense itching, erythema, grey to dry crust like lesions on extremities. (Fig.1). Infested rabbits were grouped into four groups (7 for each group) for different therapeutic treatments as listed in the Table 1. All affected rabbits were segregated and treated for wound by cleaning with Povidone Iodine 10% solution (Betadine antiseptic solution) and applied benzyl benzoate. The rabbit cages were cleaned thoroughly to control the infection.

The mange infestation was identified with clinical signs of rabbits with alopecia, anorexia, pruritus, skin erosion, and dry crust like lesions on extremities and the same was also observed by Darzi *et al*. (2007). Skin scrapping examination revealed sarcoptic mite (Fig.2). The adult and young rabbits are commonly affected with mange infestation (Prakash *et al.,* 2017). *Sarcoptic scabiei* is the common burrowing mite infested in rabbits with distinguished morphology and distribution of lesions all over the body (Deshmukh *et al.,* 2010). The higher incidence of skin infestation due to *S. scabiei* mite in Soviet chinchilla breed was also observed in the early report of Soundararajan and Iyue, (2005) and Prakash *et al.* (2017).

Ivermectin given subcutaneously @ 400 µg / kg. body weight selectively binds to gamma-amino-butric acid (GABA) gated chloride channels in the mite's nervous system, resulting in hyperpolarization of cells, paralysis and finally death of mites, which was in accordance with the observations of Quesenberry and Carpenter (2004). Treatment with subcutaneous administration of Ivermectin @ 400 µg / kg body weight at 7 days interval was effective in treating *S. scabiei* (Panigrahi and Gupta, 2013). In this treatment, group 1 rabbits recovered after 28 days (Table 2).

Chlorpheniramine maleate reduced the pruritus in group 2 rabbits which improved the recovery in 21 days (Table 2). Inj. Vitamin AD_3E in group 3 rabbits resulted in recovery in 14 days. Vitamin AD_3E has antioxidant activity against oxidative stress induced by mite infestation as reported by Kambur *et al.* (2008). Group 4 rabbits were treated with Ivermectin, Chlorpheniramine Maleate, Vitamin AD_3E on the day of segregation and Vitamin C therapy every day orally for seven days. Supplementation of vitamin C was found to improve components of the immune system such as antimicrobial and natural killer cell activities, lymphocyte proliferation, chemotaxis, and delayed-type hypersensitivity. Vitamin C concentrations in the plasma and leukocytes rapidly decline during infections and stress. Vitamin C contributes to maintenance of the redox integrity of cells and thereby protects them against reactive oxygen species generated during the respiratory burst and in the inflammatory response. Therefore, vitamin C played important role in immune function and the modulation of host resistance to infectious agents, reducing the risk, severity, and duration of infectious diseases (Wintergerst *et al.,* 2006). The present

Fig. 1. Crust like lesions on ear, withers and leg area due to mange infestation of Soviet chinchilla rabbit before treatment

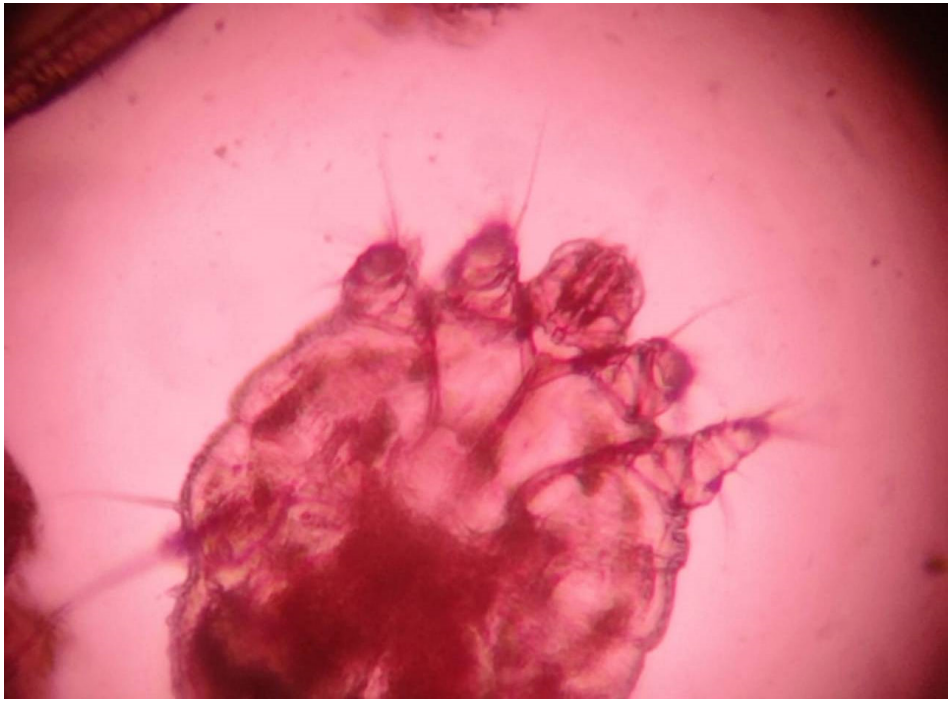

Fig 2. *Sarcoptic scabiei* **mite under microscope (10X)**

Fig. 3. Post treatment appearance of the affected by mange infestation of Soviet chinchilla rabbit

observation indicated in group 4 Ivermectin coupled with Chlorpheniramine maleate, Vitamin AD_3E and Vitamin C therapy was effective for curing the affected rabbits in 7 days (Table 2).

The mange condition was cured and the rabbits recovered from lesions in the body after 3 weeks of treatment. At the same time the general health was also improved (28^{th} day) in all groups (Fig.3). The same result was observed in the earlier reports (Kachhawa *et al.,* 2013; Mitra *et al.,* 2014 and Singh *et al.,* 2017).

It is concluded that the mange infection in rabbits is a universal problem in rabbit and was managed by proper treatment along with sanitary and biosecurity measures. Administration of effective drugs in appropriate period is a way of controlling the mite infestation. Ivermectin formulation with anti-histaminic injection and vitamin supplementation is very effective. This combination of drugs facilitates the early cure of severe cases and also showed complete recovery.

ACKNOWLEDGEMENTS

The authors are thankful to the Tamil Nadu Veterinary and Animal Sciences University for providing the facility to carry out this work.

Table 1. Treatment schedule

Classification (n=7)	Treatment schedule
Group 1	Long acting injectable Ivermectin formulation 1% w/v (Neomec LA, Intas Pharmaceuticals Ltd.) subcutaneously at a dose rate of 400 µg/kg body weight
Group 2	Group 1 treatment plus 0.5 ml Chlorpheniramine maleate injection intramuscularly
Group3	Group 1 & 2 treatment plus 0.1 ml Vitamin AD_3E injection intramuscularly
Group 4	Group 1, 2 & 3 treatment plus 30 mg of Vitamin C orally

Table 2. Percentage of rabbits improved from Sarcoptic mange infestation

Group	Week 1 (%)	Week 2 (%)	Week 3 (%)	Week 4 (%)
1	84	10	06	0
2	72	28	0	0
3	16	0	0	0
4	0	0	0	0

REFERENCES

Darzi, M.M., Mir, M.S., Shahardar, R.A. and Pandit, B.A. (2007). Clinicopathological, histochemical and therapeutic studies on concurrent sarcoptic and notoedricacariosis in rabbits (*Oryctolagus cuniculus*). *Veterinary Archives*, **77**:167–175.

Deshmukh, V.V., Varshney, J.P., Chaudhary, P.S. and Desai, S.N. (2010). Clinical management of scabies in rabbit. *Intas Polivet*, **11**: 112-114.

Kachhawa, J.P., Kachhawa, S., Srivastava, M., Chahar, A. and Singh N.K. (2013). Therapeutic management in rabbits. *Intas Polivet*, **14**: 306-308.

Kambur,M., Ataley,O., Ica, A., Eraslan, G. and Cam, Y. (2008). The curative and anti oxidative efficiency of doramecetin and Doramecetin + Vitamin AD_3E treatment on *Psoroptescuniculi* infestation in rabbits. *Research Veterinary Science*, **85**: 291-293.

Kumar, P., Sahay, M.N., Sinha, V.K. and Samantaray, S. (2002). Comparative efficacy of some acaricides against mange in dog. *Indian Veterinary Journal*, **79**: 828-830.

Mitra, J., Shikari, R.N., Das, A.K., Roy, B.B. and Mitra, M. (2014). Therapeutic management of Sarcoptic mange in rabbit with Ivermectin. *Exploratory Animal and Medical Research*, **4**: 119-122.

Panigrahi, P.N. and Gupta, A.R. (2013). Therapeutic management of concurrent sarcoptic and psoroptic acariasis in rabbits. *Intas Polivet*, **14**: 319-321.

Prakash,M.A., Soundararajan, C., Nagarajan, K., Gnanaraj, P.T. and Saravana kumar, V.R. (2017). Sarcoptic mange infestation in rabbits in an organized farm. *Journal of Parasitic Diseases*, **41**: 429-432.

Quesenberry, K. and Carpenter, J. F. (2004). Rabbits and Rodents. In: Clinical Medicinal Surgery. 2nd Edn. Saunders Company. Philadelphia. pp- 368-384.

Singh, B., Gupta, D., Tiwari, A. and Shukla, P.C. (2017). Therapeutic management of sarcoptic mange in rabbit- A case Report. *Global Journal of Bio science and Biotechnology*, **6**: 398-399.

Soundararajan, C. and Iyue, M. (2005). Mange infestation in rabbits. *Journal of Veterinary Parasitology*, **19:** 161-162.

Wintergerst, S.E., Maggini, S. and Hornig, H.D. (2006). Immune-enhancing role of Vitamin C and Zinc and effect in clinical conditions. *Annals of*