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Diagnosis and therapeutic management of Sarcoptic mange in a rabbit

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Abstract
A two-year-old female rabbit with a history and clinical signs of alopecia, erythematous lesions, severe pruritis, and crusty lesions on the eyes, ears, and nose for one month. Based on the history, clinical symptoms and skin scraping examination, the diagnosis was made. Upon skin scraping examination, with a low-power microscope confirmed the presence of live *Sarcoptes scabiei* mites. Ivermectin injection was given @300 micrograms/kg b.wt s/c once every two weeks for two doses, accompanied by Inj. Chlorpheniramine maleate @0.5 mg/kg b.wt i.m. After 1st dose of treatment, there was a reduction of clinical signs and after the completion of 2 doses there was complete remission of clinical signs and upon skin scraping examination it revealed negative for *Sarcoptes scabiei* mites.

Keywords: Sarcoptic mange, rabbit, ivermectin

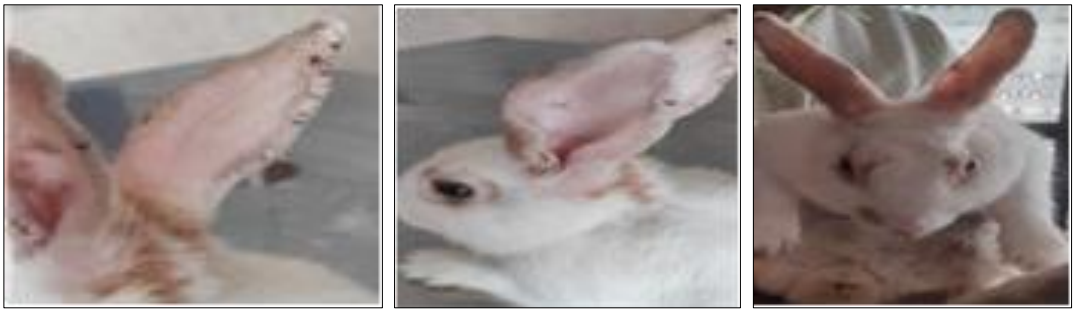
Introduction
Rabbits are increasingly being raised in many nations throughout the world and have been considered important livestock (Meenakshisundaram and Anna 2016) [12]. The incidence of mange is relatively high among all the parasitic infestations that occur in rabbits (Rajeshwari *et al*. 2001) [18]. Infestation with sarcoptic mange is one of the most prevalent and major limitations to commercial rabbit production in India (Darzi *et al*. 2007) [8]. The burrowing mite *Sarcoptes scabiei* lives in the skin's epidermis and causes sarcoptic mange in both mammals and humans (Suckow *et al*. 2002) [22]. Chewing and deep-burrowing *Sarcoptes scabiei* var. cuniculi mites invade and create tunnels under the skin of rabbits (Arlian and Morgan 2017) [1]. Larval and nymphal feeding behavior irritates, triggers a hypersensitivity reaction, and inflames the skin, leading to hyperkeratosis, seborrhea and alopecia (Scott *et al*. 2001) [19]. Lesions generally appear on the face, neck and ears of rabbits. Since it is a contagious parasitic skin disease, mites are typically transmitted from rabbit to rabbit by contact with the environment or through direct skin-to-skin contact between infected and uninfected rabbits (Panigrahi and Gupta 2013) [16]. Overcrowding and lack of hygiene are essential factors for mite infestation (Carthy *et al*. 2004) [16]. Due to the low temperatures and heavy humidity, the disease is prevalent in subtropical regions, especially during the rainy and winter seasons (Narang *et al*. 2015 and Borkatak *et al*. 2018) [14, 5]. Ivermectin, abamectin, doramectin, eprinomectin and selamectin are among those drugs in the ivermectin group that can be employed in treating rabbits that are naturally infested with scabies. Ivermectin, if administered orally or parenterally, has been shown to be efficacious in treating acariosis (Aulakh *et al*. 2003 and Erasian *et al*. 2010) [2, 10]. The current article discusses the effective management of sarcoptic mange in rabbit.

Materials and Methods
A two-year-old female rabbit with skin lesions and severe pruritis around the eyes, ears and nose was brought to the Teaching Veterinary Clinical Complex, College of Veterinary Science, Mamnoor. Alopecia, erythema and white indurate dry crusty-like lesions on the ear pinna, around the eyes and on the face were noticed on clinical examination (Fig.1, 2 and 3). Skin scraping examination was done as per standard procedure for confirming the diagnosis. (Soulsby, 2001) [21]. For the microscopy study, a sample of skin scraping from the affected regions was obtained aseptically and placed in 10% potassium hydroxide. The mixture was heated, centrifuged, the supernatant was removed and a few drops of the sediment were placed on a microscopic slide. A significant number of live *Sarcoptes scabiei* mites were found when samples were examined under low magnification (Fig. 4 and 5). Adult Sarcoptic scabiei has a long, unjointed stalk with a sucker on the front pair of legs and short legs.

A sarcoptic mite's dorsal body surface is covered in a thick, chitinous wall with protruding spines. The anus is terminal and the dorsum has scales, cones and setae that resemble blades. (Chitwood and Lichtenfels 1972) [7].

Results and Discussion

The sarcoptic mange-affected rabbit was treated with Inj. Ivermectin @300 micrograms/kg b.wt s/c once in two weeks for two doses (White *et al*. 2003) [23], Inj. Chlorpheniramine maleate @0.5mg/kg i/m along with drops. Zincovit @6 drops twice a day orally and topical application with 5% betadine solution regularly for 14 days. After 1st dose of treatment, there was a reduction of clinical signs and after the completion of 2 doses there was complete remission of clinical signs (Fig. 6,7 and 8) and upon skin scraping examination, it revealed negative for Sarcoptes scabei mites**.** Following therapy, the rabbit was maintained under monitoring for 4 months to look for any recurrence of *Sarcoptes scabiei* infestation.



1 2 3

Fig 1-3: Dry crusty lesions on ears, nose and around eyes in rabbit affected with sarcoptic mange

4 5

Fig 4-5: Presence of live sarcoptes scabiei mites on microscopic examination

6 7 8

Fig 6-8: Complete recovery observed after 2 nd dose of treatment

Major skin conditions identified in both young and adult rabbits include mange and ear mite infestation (Siegmu, 1979) [20]. S. Scabiei mange was more prevalent in rabbits and could be identified by the presence or absence of pruritus, the mite's morphology and the location of lesions (Deshmukh *et al*. 2010 and Bhardwaj *et al*. 2012) [9,3]. Skin scraping examination is usually performed to confirm the diagnosis, although occasionally the results are false negative, in which case repeat deep scrapings are required (Birchard and Sherding 2000) [4]. Clinical signs such as the presence of scales, scabs, crusts and alopecia, as well as a high density of S. scabiei beneath crusts, were noticed in the current study and supported the findings of Kaplaywar *et al*. 2017 [11] and Oraon *et al*. 2005 [15]. Ivermectin, @ 0.2–0.4 mg/kg of body weight given subcutaneously once every two weeks for 2-3 times, tends to be a simple, safe and effective treatment (Mitra *et al*. 2014 and White *et al*. 2003) [13, 23]. In the present study, ivermectin was given @ 300micrograms/kg b.wt s/c once in two weeks for two doses. Ivermectin activates glutamate- and gamma-aminobutyric acid-gated chloride channels, preventing the mite's central interneurons from sending impulses to its peripheral neurons. As a result of the cells' increased polarity, the muscular membrane's resistance decreases, the parasite develops paralysis and it ultimately dies (Aulakh *et al*. 2003) [2]. In most animal species, the drug has shown broad-spectrum efficacy against endoparasites and ectoparasites. Ivermectin's

effectiveness in treating rabbit mange is well-known around the world (Panigrahi *et al*. 2016) [16].

Conclusion

According to the results of the current study, ivermectin therapy in combination with supportive therapy works well in controlling sarcoptic mange in rabbits.

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