



Original Research Article

A pragmatic approach to treat sarcoptic mange in goats

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ABSTRACT

The efficacy of single long acting Ivermectin injection, oral micro minerals for 5 days and external application of Arnica mother tincture in oil on the third day brought good relief from sarcoptic mange infection. The reason for the efficacy may be due to synergistic action of three treatments.

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1. Introduction

Skin is a major target of oxidative stress due to reactive oxygen species (ROS) that originate in the environment and in the skin itself. ROS are generated during normal metabolism, are an integral part of normal cellular function, and are usually of little harm because of intracellular mechanisms that reduce their damaging effects. Antioxidants attenuate the damaging effects of ROS and can impair and/or reverse many of the events that contribute to epidermal toxicity and disease. However, increased or prolonged free radical action can overwhelm ROS defense mechanisms, contributing to the development of coetaneous diseases and disorders.¹ Evaluated oxidative stress using malondialdehyde, total antioxidant capacity, total oxidant status, and oxidative stress index markers in sheep naturally infected with *Psoroptes ovis* and found that the serum malondialdehyde, total oxidant status levels, and oxidative stress index increased significantly ($P < 0.01$) in group II, while the serum total antioxidant capacity levels decreased significantly ($P < 0.01$) in this group. Further they observed that negative correlations between total antioxidant capacity and total oxidant status and total antioxidant capacity and

malondialdehyde, and a positive correlation between total oxidant status and malondialdehyde.

Sarcoptic mange is a highly contagious and purity acariosis of the skin affecting more than 100 domestic and wildmammalian species, including humans.² The causative mite, *Sarcoptes scabiei*, inflicts damage to the skin mainly by forming tunnels within the upper epidermal layers.³ Intense pruritus, manifested over the face, pinnae, neck, limbs, or over the body and associated with the presence of papules, crusts, excoriations, and hypotrichosis-alopecia, on an erythematous or hyper pigmented, lichenified, thick, and folded skin make up the typical clinical picture of sarcoptic mange as it appears in the goat. The affected animals usually die at the final stage of the disease, preceded by anorexia, emaciation or cachexia, lethargy.⁴

The single application of parenteral acaricide (Ivermectin, long acting), not only increases the efficacy of treatment with lower number of application but also delays emergence of resistance, decreases the accumulation of chemical residues in meat/milk and reduces the contamination by release of chemical compound to environment.⁵ Also, use of long acting formulations permits prolonged parasite control and their effect on resistant parasite genetic selection is discrete when compared to other

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Table 1:

S.No	Year	Number of goats and kids	Observations
01	2018	22	The recovery is 99%.
02	2019	17	There was a luxuriant growth of the hair.
03	2020	13	The goats were active and healthy.

variables like short intervals between treatments.

Ivermectin produces parasite paralysis by ingestion or contact and eventually death of the invertebrate and several sub lethal metabolic disorders.⁶ The drug inhibits the neurotransmission, interfering at neuromuscular synapses. Basically, there is substantial evidence that Ivermectin among vertebrates enhances the release of the neurotransmitter Gaba amino butyric acid (GABA) from the neurons simultaneously enhancing the binding of GABA to its postsynaptic receptors, leading to the consequent opening of chloride channels and decreased cellular functions. In invertebrates, Ivermectin targets the glutamate-gated chloride channels located at neuromuscular junctions, independently of GABA since GABA channels are ubiquitous from mammals, thereby paralyzing pharyngeal and somatic muscles.⁶

Parental Ivermectin's absorption compared to the oral route, but leads to an overall higher availability in plasma, a longer duration of activity, and better efficacy.⁷

2. Materials and Methods

The diagnosis of mange infection was made based on clinical symptoms and identification of the sarcoptic mite. Fifty goats and their kids brought for treatment to Sreepathi veterinary Services, Kadapa formed the clinical material for the study.

Neomec LA is a brand product of Intas pharmaceutical limited, Ahmadabad containing 31.5 mgs of Ivermectin per ml with oily base, with extended control of gastrointestinal & pulmonary nematodes, mites, ticks, & lice. Neomec LA was given @ 630µg/kg body weight. S/C (1ml/ 50 kg) only once.

Bioplex High Seven Boli (a brand name of Alltech, Bangalore with Zinc 360 mg, Manganese 143mg, Copper 60 mg, Iodine 14.5 mg, Cobalt 6.25 mg, Selenium 1.5 mg and Chromium 1.68 mg) was purchased from local authorized dealer

One bolus of Bioplex high seven was added to 100 ml of Drinking water and soaked overnight and given @ 5 and 10 ml per kid and adult for 5 consecutive days daily with help of 10 ml disposable syringe.

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Arnica mother tincture was purchased from Rama Krishna Stores, Hyderabad. One milli litre was mixed with 30 ml of coconut oil and agitated thoroughly. Arnica oil was rubbed to the mange affected parts on third day of injection.

3. Observation, Results and Discussion

Prior to therapy, was a mortality of 5 to 10% in kids. The condition of goats and kids were pathetic, they were dull, prostrated and inappetance and the skin and hair lusterless. After the treatment, there was no mortality, kid were active drinking milk normally, the appetite was returned to adults, the condition of skin and hair was normal and luxuriant. With single injection, the recovery was within 15 days, the rapid relief and cure of was due early and sustained action of Neomec la. According to Xu et al. 2007 after s/c injection of long acting aqueous suspension of ivermectin @ 600 µg per kg body weight to Little Tailed Ham sheep, the ivermectin was detected in plasma within 4 hours and the concentration increases rapidly and with average of 230.8 +/-109.1ng per ml at 45 days and below 0.05 ng per ml by 21 days post administration. Further bioplex might have acted as strong antioxidant and nullified the oxidative stress brought by sarcoptic mange.

Several studies established oxidative stress in parasitic infections⁸⁻¹⁰ and anti-oxidative role micro minerals.¹¹⁻¹³ The luxuriant growth may be due to the application of Arnica oil which stimulated the hair follicles. Arnica is being used for hair growth in homeopathy system of medicine. The rapid and eventual recovery may be synergistic activity of Ivermectin, Bioplex high seven and Arnica oil.

4. Conclusion

In conclusion the effect of long acting injectable Ivermectin given only once, oral drenching of bioplex High seven for 5 days and external application of arnica oil on affected part from the day 3 in sarcoptic mange in goats brought rapid relief from mange.

5. Source of Funding

None.

6. Conflict of Interest

None.

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