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Epidemiological Studies and Evaluation of Biochemical Alteration, Oxidative Status in Sheep Infected with Mange Mites

A Thesis submitted By

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Abstract

The present study was aimed to investigate the prevalence and clinical signs of mange infestation in sheep beside the effects of age, gender and seasons in Ismailia governorate, examine the oxidative status in blood of sheep infected with sarcoptic mange and investigate the pathological changes in infected tissues. 760 sheep aged 1-3 years, suffering from pruritis, crusted skin lesion and alopecia during preiod from October 2017 to March 2019. Microscopical examination of skin scraping revelated that 80 out of 760 sheep were infested with sarcoptic mites with an overall percentage 10.5 %. The prevalence of infestation was highest in Winter (14%), followed by Autumn (11.5%), Spring (10.7%) and Summer (4.4 %). Higher prevalence of mange mites was observed in younger animals aging less than one year (15 %) and lowest in sheep with age (1-3) years old (6.60%).

Females had a significant ($p<0.05$) higher prevalence rate (12%) than male sheep (6.3%). Significant association ($p<0.05$) was found between the prevalence rate of sarcoptic mite and season, age and gender. The change in biochemical paramteres were compared in two groups, infested group and non infested healthy ones. The following paramters were assessed: MDA, NO and Albumin were significant increased in blood of sheep infected with sarcoptic mites compared with control group, the effect of parasite on activities of antioxidant SOD, CAT, GSH, GPx, ZN, Cu showed significant decrease compared with control group. Inflammatory markers (IL1β and CRP) showed significant increase in infected sheep than healthy ones. From the present study, we conducted that sarcoptic mange infestation increase oxidative stress and decreases antioxidant status in sheep. Scanning electron microscopy (SEM) of female revelated the tortoise-like *Sarcoptes scabiei* with four long bristles, suckers (pulvillus) on I and II pairs of legs, cuticular spines and a terminal anus. The epidermal histological findings in lesions of sarcoptic mange were severe hyperkeratosis with parakeratotic crusting and thickening of the epidermis, acanthosis and mononuclear cell infiltration.

To clarify the taxonomic status of genus *Sarcoptes*, the second internal transcribed spacer (ITS-2), as well as phenotypic characteres were investigated. These results support the conspecificity of the mites investigated and confirm the view that the genus *Sarcoptes* consists of a single, heterogeneous species.

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