

Endris Feki Ahmed 2007: Epidemiological Survey and Assessment of Optional Therapy for Ovine Fascioliasis around Middle Awash River Basin, Afar, Ethiopia. Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Kanchana Markvichitr Dr. med. vet. 111 pages.

The Epidemiological survey was conducted in three districts (Gewane, Bure Modaytu and Amibera) of Middle Awash River Basin located in Afar Regional State, Ethiopia. A total number of 3,697 fecal samples (3,467 from Afar and 230 from Blackhead sheep breeds) were collected and performed by ethyl acetate centrifugation procedure to identify eggs of the parasites. Two experiments were also conducted at Gewane Agricultural Technical and Vocational Education Training College, Gewane district, Ethiopia, in order to study natural fasciola infections in local breeds of sheep and optional treatment of ovine fascioliasis in Afar and Blackhead local breeds of sheep. The survey result indicated that overall prevalence of ovine fascioliasis was 13.23%. Amibera district had the highest number (17.42%) of infections among the 3 districts. No significant differences of prevalence were associated with sex and breed. Infection rates for the different age groups were found significantly differences ($P < 0.001$). As the age of the animals increased, the prevalence of the diseases also increased. Infection rates for the sheep with poor body condition were significantly higher ($P < 0.001$) than that for the sheep with good body condition. With regard to the seasonal factors, the high infection rate was observed during the cool season (October to February) and a lower infection rate was recorded during the main rainy season (July to September). In addition mixed parasitism infection was higher than single infection. It was concluded that to control the disease the appropriate preventive controlling strategies have to be urgently designed to reduce the impact of the disease on sheep production. Results of the study on the overall prevalence of natural fasciola infections in 24 Afar and Blackhead local breeds of sheep were 54%. Infection rates for breeds were 37.5% and 33.3% for Blackhead and Afar breeds, respectively. The prevalence within sex groups was 61.5% and 38.5% for female and male sex groups, respectively. Infection rates for the different breeds and sex groups were found not to be significant ($p > 0.05$). The result for healthy status also revealed a general reduction in body weight, red cell counts (RBC), packed cell volume (PCV), total protein (TP) and hemoglobin (Hb), which obviously indicated to be more severe in the infected sheep. The severity of the infection started around fourteen weeks after exposure and continued up to the end of the experiment. Breeds resistant potency occurred at sixteen weeks for all infected breeds; with the latter shedding the recovery rates of the Blackhead breed was higher than the Afar breed. On the basis of fecal egg count (FEC) and clinicopathology, the Blackhead breed was considered slightly more susceptible to *Fasciola spp.* infections than the Afar breed. The Afar breed may be better adapted to the study area as its percentage of PCV and other blood parameters were higher than the Blackhead breed, but no significant difference within treatments between two breeds and sex was observed.

Throughout 90 days study period for the optional treatment study of ovine fascioliasis, a total of 72 Afar and Blackhead local breeds of sheep naturally infected by fascioliasis were randomly allotted into 3 groups, two nutrition levels (supplementation and no supplementation) and three section treatments. One treatment group received 10mg/kg of Triclabendazole drenching orally on the 1, 21, and 42 days during the study period. The second group received 100 gm of crushed or chopped chili solution drenching orally on the 1, 21, and 42 days during the experimental period and the control group received no treatment. Triclabendazole and chili treated groups of animals had the efficacy of 100% and 84%, respectively. Animals treated by Triclabendazole and chili in addition supplementation had high reduction of fecal egg count (FEC) compared to the treatment groups with no supplementation ($p < 0.05$). No significant difference within treatments between two breeds was observed. The result indicated that chili could be an alternative treatment for subclinical ovine fascioliasis to alleviate the production loss in sheep herds.



Student's signature



Thesis Advisor's signature

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