Case Report

A Case Study on: Effect of Anthelminthic on Production and Health Condition of a House Hold Holstein Friesian

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Abstract | Gastrointestinal nematodes are characterized by reduced production and anemia leading to the death of animals. This study was performed at field condition in a village of District Dera Ghazi Khan in July 2016. The history of animal reveals decrease production, diarrhea and weight loss with anorexia. Fecal sample was taken directly from rectum of diseased and normal animals and preserved at 4°C until further process. Direct smear and McMaster techniques were performed on the samplesfor identification of worm load in both animals. At day 0, the eggs per gram (EPG) was 200 and 750, respectively in normal and infected animals, while milk production was 9.50kg and 7.75kg and live weight was 580 and 505kg respectively. The anthelmintic efficacy was 93.33% at day 14, while increment of milk production and live weight gain were 0.75kg and 10.00kg in infected animal on 28 days compared with day 0. On statistical analysis, EPG reduction was highly significant (<0.05), increase in milk production, weight gain and body condition score were not significant (>0.05).

Keywords | Anthelmintic efficacy, Holstein Friesian, Milk production, Weight gain, Body condition score

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Dairy farmers introduce highly productive animals (exotic breeds), but the environmental condition of the area (Pakistan) cannot allow them to attain their peak production that limit the farmers dream on their feasibility report (Rashid et al., 2018). Intestinal parasites are the major constraints for economic losses in productive animals at dairy farms. They cause anorexia, anemia, retarded growth, weight loss, delayed sexual maturity, low productivity (milk and meat) and increased susceptibility of animals to other infections (Yadav et al., 2004). Gastrointestinal parasitic problem is the worldwide (Regassa et al., 2006). Ruminants gastrointestinal nematodes of cattle includes, *Trichuris, Haemonchus, Oesophagostomum, Bunostomum, Ostertagia, Trichostrongylus, Cooperia, Capillaria* (Hosking et al., 2008). The reported prevalence of helminths in Pakistan ranges from 33.68-51% (Khan et al., 2010). The use of broad spectrum anthelmintic of benzimidazole (albendazole) group was evaluated its effect on milk production, body condition score and eggs per gram (EPG). Reported albendazole efficacy against *Ostertagiaostertagi*, adult, DL4 and EL4 is 99.00, 95.50 and 84.90%, respectively.

The current study was performed on a Holstein Friesian cattle with the history of decrease production, diarrhea and weight loss with anorexia. The studied animal was purchased from local market. Fecal samples from normal and infected animals were taken for the diagnosis of anthelmintic, its efficacy and effect on milk production and body condition score for a period of one month. The normal animal was dewormed with albendazole one month

Table 1: Comparison of egg per gram (EPG), milk production, body condition score (BCS) and weight gain in control and infected cattle.

Days	EPG				Milk (Kg)		BCS (grades)		Weight gain (Kg)	
	Control	Increment %	Infected	Reduction %	Control	Infected	Control	Infected	Control	Infected
0	200.00	-	750.00	-	9.50	7.75	2.50	1.50	580.00	505.00
7	200.00	0.00	450.00	40.00	9.25	7.50	2.50	1.50	577.00	507.00
14	250.00	20.00	50.00	93.33	9.75	8.25	2.50	1.50	583.00	509.00
21	350.00	42.86	100.00	86.67	9.00	8.00	2.50	2.00	580.00	512.00
28	400.00	50.00	150.00	80.00	9.75	8.50	2.50	2.00	581.00	515.00
P-value	<0.0001				0.999		0.975		0.999	

before this study.

The study was conducted at field condition in a village of District Dera Ghazi Khan, Province of Punjab, Pakistan in July 2016.The animal was presented to Civil Veterinary Hospital, Tehsil KotChutta complaining the anorexia, weight loss, decreased milk production and diarrhea. The history reveals that diseased animal was purchased from local market two weeks before while the normal animal was originated from owner itself and was dewormed one month before with albendazole. For helminthes diagnosis, fecal sample was collected directly from rectum and preserved in labeled Ziploc® plastic bags and preserved at 4°C till further process. The samples were processed at Disease Diagnostic Laboratory, Dera Ghazi Khan, province of Punjab, Pakistan.For laboratory examination, 3 gram sample for each technique was examined by 1) Direct smear technique 2) McMaster egg counting technique accordingly (Soulsby, 1982).

The McMaster egg counting technique for EPG was performed at day 0, 7, 15, 21 and 28, while milk production was taken for a month on daily basis comparing with normal animal.The animal was considered positive with the EPG ≥300.

The anthelmintic drug used by hospital consultant was Sanazole (25mg/ml; Sana Laboratory, Faisalabad, Pakistan) at the rate of (albendazole at 10 mg/kg body weight). Animal live weight for drug dose calculation was taken by digital weight balance available at hospital. The live weight of healthy animal was 580kg and worm infested animal's live weight was 505kg at day 0. After deworming of both animalslive weights of worm infected animal increased to 515kg at day 28. The efficacy of anthelmintic drugwas determined by the formula already used by (Saqib Ali et al., 2017).The both animals were kept in same environmental condition with feeding of 30kg sorghum supplemented with 2 kg cotton seed cake. Both animals were in 2nd trimester of lactation.

The data was analyzed by Chi-square using SPSS version 20.0 (IBM Corporation, Armonk, New York). Probability level of <0.05 was consider statistically significant.

The anthelmintic drug efficacy and its effect on milk production, BCS and weight gain are shown in Table 1. Anthelmintic efficacy was 93.33% closely related to already reported one (Saqib Ali et al., 2017). The highest efficacy of anthelmintic was observed on 14th day post-medication due to its absorption and complete elimination of rumen flora having parasitic eggs. Its efficacy from current study was not 100 % as suspected, indicate resistance of parasites against anthelmintic drug used that is already reported by (Williams and Broussard, 1995). This anthelmintic resistance might be due to frequently usage of same drug, under dose or low quality.That is why it is recommended the usage of alternate or simultaneously two different class anthelmintic drug (Ramos et al., 2016) for complete elimination of parasites. Upon elimination of parasites, the infected animal increased milk production, live weight and BCS of 0.75 and 10.0 kg, and 0.5 grades, respectively at day 28 compared to day 0. This study closely relate with the reported one who also calculate 0.42 lit./animal/day increments upon anthelmintic treatment (Nødtvedt et al., 2002). The weight gain was not according to standard, like in beef cattle due to their different genetic profile and current life stage of animal. If this study will be proceed to the herd, area or country wide then this production increment post-medication might be beneficial for farmers and country GDP value. Body condition score upon anthelmintic drug treatment was not much improved due to less study duration as increase or loose of live body weight is time taking, while rough hair coat changes to smooth and shiny. So, it is suggested that government should held regular deworming campaigns in local areas and should held camps in animal sale markets. Mostly people bring unhealthy animals to market for sale.

It is concluded that anthelmintic has significant effect on worms load reduction and production increment, while use of same drug for a long duration creates drug resistance.

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CONFLICT OF INTEREST

All the authors equally contribute for this study. There is no conflict of interest.

AUTHORS CONTRIBUTION

Muhammad Rashid organises and wrote this case report. Amir Bakhsh handles this case and collected data. Muhammad Adeel Hassan and Ejaz Hussain helped for paper writing while Muhammad Amjad helped for statistical analysis and revision report.

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