Online Journal of Animal and Feed Research

Volume 6, Issue 2: 57-61; Mar 30, 2016 ISSN 2228-7701

EFFECT OF MEDICATED UREA MOLASSES BLOCKS ON SUB-CLINICAL PARASITIC INFESTATIONS IN GOATS

Rameez Abid[1], Imad Khan[1], Jalees Ahmad Bhatti[2], Zahir Shah[3]✉, Arshad Zahoor[3], Shakoor Ahmad[3]

[1]College of Veterinary Sciences, Abdul Wali Khan University, Mardan (23200), Pakistan

[2]Department of Livestock Production, University of Veterinary and Animal Sciences, Lahore (54000), Pakistan

[3]Department of Animal Health, University of Agricultural Peshawar (25120), Pakistan

ABSTRACT: The aim of this study was to evaluate the effect of medicated urea molasses blocks (MUMB) on sub-clinical parasitic infestations and urea molasses blocks (UMB) to replenish nutrients scarcity. Twenty four goats were divided randomly into three groups of eight animals each (n=8) according to Completely Randomized Design (CRD) a group was no supplement (control) and the other were supplemented with UMB and MUMB for 90 days. Data were recorded and statistically analyzed under CRD through one way analysis of variance (ANOVA). Mean daily dry matter intake was higher (1.502 ± 0.121 kg) in MUMB supplemented group and lowest in control group (Lenovo). Mean daily weight gain of goats in control, UMB, MUMB was 64 ± 23, 71 ± 22 and 85 ± 21 grams, respectively. Body condition score (BCS) was recorded in 1-5 scale of meat goats. The mean BCS in control, UMB and MUMB was 2.741 ± 0.193^{b}, 2.816 ± 0.185^{ab} and 2.903 ± 0.248^{a} respectively. Mean fecal egg count was lowest in MUMB as followed by UMB and control group. It is concluded that feeding of MUMB have significant effects for the control of sub-clinical gastrointestinal worm's infestation and replenishes nutrients deficiency by providing energy and protein.

Keywords: Goats, Nutrients Deficiency, Gastrointestinal Worm, Infestations

ORIGINAL ARTICLE

pii: S2228770116000096

Received 12 Jan. 2016

Accepted 20 Feb. 2016

Accepted 15 Mar. 2016

INTRODUCTION

Livestock sector contributes 55.4% in agricultural GDP while 11.9% in national GDP of Pakistan. Current population of sheep and goat in the country is 28.8 and 64.9 million respectively, producing about 643 thousand tons mutton annually. Agriculture, including livestock, have vital role in Pakistan's economy (Anonymous, 2013). Sheep and goat production is central to the livelihood of the rural population in the country and can play vital role in poverty alleviation and keep in elating the socio-economic condition of our rural masses. Small livestock holders derive 10-25% of their income from sheep and goat farming in Pakistan. Therefore, in developing countries like Pakistan, small ruminant rearing is very significant for the livelihood of farmers (Kioumarsi et al. 2008). Small ruminants are more prone to gastrointestinal worms and their effects also are more severe in sheep and goats. These animals are susceptible to a lot of parasites; the most important is *Haemonchus contortus.* Who sucks blood of animal and causes loss in production, fertility and high mortality in young animals. The most prevalent regions for this parasite are temperate and tropical regions (Ijaz et al. 2008). There was a need to investigate different substitutes to overcome feed shortage and parasitic infestations.

Keeping in view the importance of these aspects, we have designed to conduct the effect of medicated urea molasses blocks on fecal egg count, daily dry matter intake, average daily weight gain, body condition score (BCS), body measurements (body length, heart girth, height at withers) and blood profile (blood glucose, blood urea nitrogen, total protein) were investigated.

MATERIALS AND METHODS

Experimental site

Study was conducted at Small Ruminants Training and Research Centre, University of Veterinary and Animal Sciences, Ravi Campus Pattoki, Panjab, Pakistan.

Meteorological data

The study site is located at Latitude 31.057254 (North), Longitude 73.878469 (East) and Altitude (Above sea level) of 186 meters (613 feet). Average Annual Rainfall 550-600mm and average mean temperature of location is 23±2˚C.

To cite this paper: Abid R, Khan I, Bhatti J A, Shah Z, Zahoor A, Ahmad Sh. 2016. Effect of medicated urea molasses blocks on sub-clinical parasitic infestations in goats. *Online J. Anim. Feed Res.*, 6(2): 57-61.

Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

Selection of animals

For this study, 24 castrated Beetal bucks with age 10±2 month and body weight 20±3 were used. The goats were allowed to adapt to their surroundings for at least three weeks before the start of the experiment. Special attention was taken to maintain all goats under the same management conditions. During that time they were gradually shifted to their respective feed. The goats were randomly divided into three groups (A, B and C) of eight animals in each group (n=8 each) according to the Completely Randomized Design. Fresh green maize fodder *ad libitum* and 0.5Kg concentrate/animal were fed daily to all groups and refusal was weighed and recorded. The animals in group-A were treated as control group, whereas, the animals in groups B & C were treated as treatment groups, supplemented with urea molasses blocks and medicated urea molasses blocks, respectively (100g/goat/day for A and B groups). Blocks were prepared at the expermental site using different feed stuffs and ingredients (Table 1).

Variables of interest

Feed intake/dry matter intake: Feed intake was calculated on dry matter basis. Dry matter intake was calculated by using the following formula:-

Feed intake (kg) = Feed offered–Feed refused

Average daily weight gain: Initial body weight of the individual goats was taken at the start of the experiment and then subsequent weights were taken at the end of every week. The weight gain of every week was calculated by using following formula:-

Weight gain (kg) = Weight of last week (kg) – Weight of current week (kg)

Body condition score: Body condition Score was taken at the start of trial of individual goats and then monthly to the end of trial. BCS was recorded in 1-5 scale.

Fecal egg count: Fecal egg count (FEC) for egg per gram (EPG) was performed through Modified McMaster Technique (Sloss et al. 1994) at 0 day and then the whole study period, to check parasitic infestation and efficacy of drug used in medicated urea molasses blocks.

Statistical analysis

Statistical analysis was performed with a commercially available software program SPSS version 18, SPSS Inc, Chicago, IL, USA. The data were analyzed using one way analysis of a variance (ANOVA) between treatments. The Bonferroni test was applied when significant differences were found. The value of $P<0.05$ was considered to be significant.

RESULTS

Daily dry matter intake

Dry Matter Intake (DMI) was recorded on daily basis in goats allocated to different treatments group. The daily mean DMI (kg) of goats in control, UMB and MUMB was 1.395±0.129, 1.499±0.128 and 1.502±0.121 kg, respectively. Mean daily DMI was higher ($P>0.05$) in MUMB and UMB supplemented groups as compared to control group (Table 2). However the monthly mean DMI trend is given in Figure 1.

Average daily weight gain

Weight gain of goats was recorded on weekly intervals throughout the trial period. Mean daily weight gained (MDWG) in control, UMB, MUMB were 64±23, 71±22 and 85±21g, respectively. Average weight gained during the experiment were higher ($P<0.05$) in MUMB treatment group followed by UMB group ($P>0.05$) when compared to control group as shown in Figure 2.

Body condition score

Body condition score (BCS) was taken at the start of the experiment of every individual goats and then monthly basis till to the end of the study. BCS was recorded in 1-5 scale of meat goats. The mean body condition score in control, UMB and MUMB were 2.741± 0.193, 2.816±0.185 and 2.903 ± 0.248 respectively. The increase in the BCS was higher ($P<0.05$) in MUMB supplemented group compared to UMB and that of control group. However no difference ($P>0.05$) were observed among the UMB and control group into the experiment (Table 2).

Fecal egg count

Fecal egg count for EPG was performed at start of each trial and then at the end of study. Data for FEC were transformed by taking log 10 (count+50) before analysis to stabilize variance within groups. Our result indicated that the Mean FEC at the end of experiment in MUMB group was significantly decreased ($P>0.05$) when compared

To cite this paper: Abid R, Khan I, Bhatti J A, Shah Z, Zahoor A, Ahmad Sh. 2016. Effect of medicated urea molasses blocks on sub-clinical parasitic infestations in goats. *Online J. Anim. Feed Res.*, 6(2): 57-61.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

to that of UMB and control group. There were no difference were observed among UMB and control group as shown in Table 2.

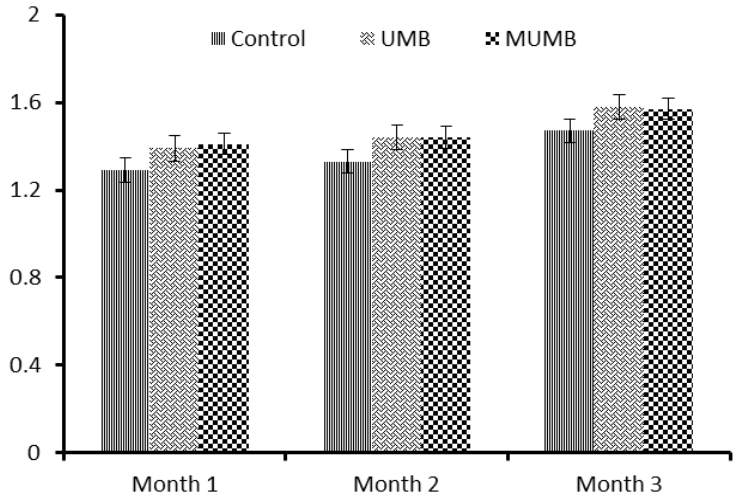

Figure 1 - Average daily dry matter intake (Kg) trend on monthly basis (mean±SE). The values between groups do not differ (P>0.05) from the control group, UMB and MUMB. UMB and MUMB refer to urea molasses blocks and medicated urea molasses blocks respectively.

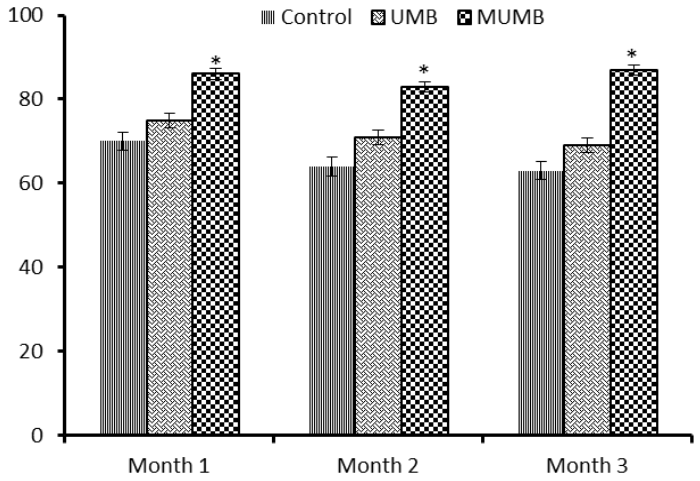

Figure 2 - Effects of treatment on average daily weight gain (g) trend on monthly basis (mean±SE). The values with one asterisk differ (P<0.05) from the control group, UMB. UMB and MUMB refer to urea molasses blocks and medicated urea molasses blocks respectively.

Table 1 - Nutritional profile of urea molasses blocks and concentrate ration

Nutrient	Urea Molasses Block	Concentrate Ration
Dry Matter	79	87.6
Protein	42.68	16.72
Fat (Ether Extract)	5.1	6.5
Crude Fiber	8.5	12.5
Ash	25.8	9.4

Weight gain (kg) = Weight of last week–Weight of current week

Table 2 - Mean daily Dry Matter Intake (kg), Mean daily weight gain (grams), Mean Body Condition Score and Mean fecal egg count at end of experiment in Beetal male goats supplemented with different blocks.

Treatments	Mean DMI (kg)	MDWG	Mean BCS	Mean FEC at
Control	1.395± 0.129^{b}	64± 23^{c}	2.741± 0.193^{b}	2.764± 0.130^{a}
UMB	1.499± 0.128^{a}	71± 22^{b}	2.816± 0.185^{ab}	2.518± 0.108^{a}
MUMB	1.502± 0.121^{a}	85± 21^{a}	2.903± 0.248^{a}	1.850± 0.301^{b}

The values with the different lowercase superscript letters in the same column differ (P< 0.05). DMI, daily dry matter; ADWG, Average daily weight gain; BCS, body condition score, FEC, Fecal egg count; UMB, Urea molasses blocks; MUMB, medicated urea molasses blocks.

To cite this paper: Abid R, Khan I, Bhatti J A, Shah Z, Zahoor A, Ahmad Sh. 2016. Effect of medicated urea molasses blocks on sub-clinical parasitic infestations in goats. *Online J. Anim. Feed Res.*, 6(2): 57-61.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

DISCUSSION

The quantity of feed blocks offered to MUMB and UMB groups was same and concentrate offered and consumption by all groups was same. Blocks increased the green fodder intake in both groups. In agreement to our finding, study have reported that feeding UMB supplement has increased mean pasture DMI 708.7±49.9 gram in UMB group than 461.9±70.9 gram in control (Vatta et al. 2008). This is completely in agreement with the findings of this study.

These findings are also in accordance with Unal et al. (2005) as they reported that UMMB can cover weight loss due to poor quality roughages in feed scarcity seasons as in winter. Statistical analysis of data depicted that DMI increased significantly ($P<0.05$) in UMMB fed groups. However Anindo et al. (1998) studied the effect of MUMB in 120 Menz lambs of 5-7 months of age divided into 6 groups. The results showed that MUMB increased DMI 568 ± 11g (MUMB) versus 532 ±11g per head per day in control.

Weight gain of goats supplemented with different blocks was recorded on weekly intervals throughout the trial period. Statistically mean daily weight gain was significant ($P<0.01$) between treatment groups. Mean daily weight gain of goats in control, UMB, MUMB was 64 ± 23, 71 ± 22 and 85 ± 21 grams, respectively. Highest average daily weight gain (85±21g) was observed in treatment MUMB followed by UMB and Control, respectively. These results are consistence with Suresh et al (2013) who reported significantly ($P< 0.01$) higher weight gain in goat on UMMB (63.19 g/day) than in control (52.70g/day).

Hossain et al (1995) reported the same findings as average daily weight gain in treated urea molasses lick blocks (UMLB) group was 70g as compared to 41g in control group. These findings are in accordance with Aganga et al (2005) who carried a study on 16 Tswana sheep divided in two groups of 8 sheep. The results revealed that supplementation with MUB almost doubled the average daily gain of sheep (189.0g/day) as in control (97.30g/day). Kioumarsi et al. (2012) showed the results that molasses/mineral feed blocks and medicated blocks have significant effects ($P<0.05$) on average daily gain as 216 ± 9.50, 179 ± 7.60, 193 ± 10.50 and 164 ± 9.82 in UMMB+MUMMB, MUMMB, and control group respectively. MUMB combats with the gastro-intestinal parasites and aids in maximum growth rate. Geleta et al. (2013) reported significant ($P<0.05$) increase in average daily weight gain in grazing sheep supplemented with urea molasses blocks (UMB). Results showed that sheep supplemented with UMB had higher growth rate 74.8± 11.13 g/head/day than control 33.6 ± 3.03 g/head/day.

The mean BCS was significant higher ($P< 0.01$) in MUMB goats. It indicated that increase in the mean body condition score was highest in MUMB as followed by UMB and control group. Anindo et al. (1998) studied the effect of MUMB on the BCS and found same results as discussed above. Treated animals deposited more body reserves as judged by BCS 3.2 ±0.1 versus 2.4±0.1 in control group after 6 months. These findings are also in line with Rafiq et al. (2003) who studied the effect of supplementation of multi nutrient UMBs on the BCS in Lohi ewes (treated, n = 514). Ewes in treated flock had high BCS 2.31 as compared to 2.08 in control group. On the contrary, Vatta et al. (2008) stated that there was no significant difference ($P>0.05$) in BCS of goats supplemented with MUMMB and control treatment.

Fecal Egg Count for EPG of goats was performed at start of trial and then at the completion of study. The initial oral administration of dewormer before the start of trial was effective in reducing the existing nematode infections, as evidenced by the reduction of FEC to zero. At the end, MUMB group had almost zero FEC. Data for FEC were transformed before analysis by taking log 10 (count+50) to stabilize variance within groups. Mean FEC at end of experiment was highest in MUMB as followed by UMB and control group. Statistically mean FEC at end of trial was significant ($P<0.05$) among goats on MUMB. These findings are in agreement with Waruiru et al. (2004) that treated MUMB group had mean worm count 482±299 while control group had mean worm count 1302 ± 410. The result of the study finding indicated that feeding MUMB is recommended in order to control sub-clinical gastrointestinal worm's infestation in goats and also provides nutrients requirement (energy and protein) in order to perform normal metabolism process of the body.

Conflict of interest

None of the authors has conflict of interests with this submission. None of the authors has conflict of interests with the corporations and the software mentioned in this paper.

REFERENCES

Anonymous, (2013). Economic Survey of Pakistan, Government of Pakistan. Ministry of Finance Economic Advisers Wing. Islamabad, Pakistan.

Aganga AA, Lelata P, Tsiane MV (2005). Molasses urea blocks as supplementary feed resource for ruminants in Botswana. J Anim Vet Adv. 4: 524-528.

To cite this paper: Abid R, Khan I, Bhatti J A, Shah Z, Zahoor A, Ahmad Sh. 2016. Effect of medicated urea molasses blocks on sub-clinical parasitic infestations in goats. *Online J. Anim. Feed Res.*, 6(2): 57-61.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

Anindo D, Toe F, Tembely S, Mugerwa EM, Kassi AL, Sovani S (1998). Effect of molasses-urea-block (MUB) on dry matter intake, growth, reproductive performance and control of gastrointestinal nematode infection of grazing Menz ram lambs. Small Rumin. Res. 27: 63-71.

Geleta T, Negesse T, Abebe G, Geotsch AL (2013). Effect of supplementing grazing Arsi-Bale sheep with molasses-urea feed block on weight gain and economic return under farmers' management condition. J. Cell. Anim. Biol., 7(10): 125-131.

Hossain KB, Sarker NR, Saadullah M, Beg MAH, Khan TM (1995). Effect of feeding straw supplementing with urea molasses block lick on the performance of sheep. Asian-australas. J. Anim. Sci. 8: 289-293.

Ijaz M, Khan MS, Avais M, Ashraf K, Ali MM, Saima (2008). Infection rate and chemotherapy of various helminthes in goats in and around Lahore. Pak Vet. J. 28: 167-170.

Kioumarsi H, Yahaya ZS, Rahman AW (2012). The effect of molasses/mineral feed blocks and medicated blocks on performance, efficiency and carcass characteristics of Boer goats. Ann Biol Res. 3: 4574-4577.

Kioumarsi H, Khorshidi KJ, Far MZ, Seidavi AR, Yahaya ZS (2008). Estimation of relation between carcass quality and quantity components in Taleshi lambs. Asian-australas. J. Anim. Sci. 3: 337-343.

Rafiq, Khan M, Aujla MF, MK (2003). Economic benefits of flushing and supplemental feeding of salt range ewes on Pothwar ranges of Pakistan. Pak. J. Biol. Sci. 6(2): 115-121.

Suresh BN, Wali SY, Jaishankar TN, Thirumalesh, Ramesh BK (2013). Effect of Supplementation of UMMB or Mineral Mixture on Performance of Goats. Res. J. Agric. Sci., 4(2): 292-293.

Sloss MW, Kemp RL, Zajac AM (1994). Modified McMaster Test . Vet Clin Parasitology, 6th Ed., Iowa State Press., Ames, Iowa. Pp 9.

Unal Y, Kaya I, Oncuer A (2005). Use of urea molasses mineral blocks in lambs fed with straw. Rev. Med. Vet. 156(4): 217-220.

Vatta AF, Krecek RC, Pearson RA, Smith MF, Stenson MO, Vanwijk EF, Harrison LJS (2008). Relative economic benefits of tactical anthelmintic treatment and urea-molasses block supplementation of Boer goats raised under extensive grazing conditions at Onderstepoort, Pretoria, South Africa. Onderstepoort J. Vet. Res. 75: 237-247.

Waruiru RM, Ngotho JW, Mutune MN (2004). Effect of urea molasses block supplementation on grazing weaner goats naturally infected with gastrointestinal nematodes. Onderstepoort J. Vet. Res. 71(4): 285-289.

To cite this paper: Abid R, Khan I, Bhatti J A, Shah Z, Zahoor A, Ahmad Sh. 2016. Effect of medicated urea molasses blocks on sub-clinical parasitic infestations in goats. *Online J. Anim. Feed Res*., 6(2): 57-61.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir