

SHORT NOTE

Effect of a medicated home-made lick block on the performance of dairy cows in the Rahad Scheme

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Endoparasites are those organisms living within their host in the gut, body cavities, liver, lungs, gall bladder and blood or within intercellular spaces, tissues or cells of the host. Since they totally depend upon their host, endoparasitism is also referred to as infection (Bilma, 2009). The most important and widely prevalent nematodes are *Oestertagia* sp., *Trichostrongylus* sp. and *Oesophagostomum* sp. in cattle and buffaloes (Karki, 2005). During the dry season, shortages of fodder place many animals under nutritional stress, which can influence the severity of gastrointestinal infection (Fritsche *et al.*, 1993). The general health of the animal such as reduction in blood haemoglobin concentration (Lassisi *et al.*, 2001) and packed cell volume (PCV), red blood cells and total serum protein were also observed by Reyaz *et al.* (2007).

In Rahad Agricultural Scheme (RAS) which is one of the crop producing areas in the Sudan, animal population was estimated by Hassan (1990) to be 106250 cattle, 278500 sheep, 207500 goats and 5000 camels. Animal production activities in the scheme included milk and fattening. The dominant system of production is an extensive system with many episodes of feed shortage (summer) and communal grazing of agricultural residues. The ecological conditions in the scheme area, especially pasture high moisture content and increased temperature favour the growth and development of larvae, hence increased contact between host and parasites.

Due to parasitic problems in the area, this work was conducted with the objectives of implementation of a simple applicable method using medicated lick block to control animal internal parasites and hence to improve animal performance. Also a comparison was made between this proposed method and the classical methods (drenching through bottle) in terms of drug efficacy.

This experiment was conducted in the Animal Production Farm at Al-Fau City, the head quarters of RAS. The total cattle population is 250 heads including calves. The cows are cross bred of different blood levels ranging from 50-62.5% and the major activity is milk production. The experiment was conducted during the period from January to July, 2009.

The milking cows of the herd were fed on forage grazing (legume+ grass), where the conditions of the pasture (remains of fodder field) was poor, in addition, a supplementary ration was offered during milking (Table 1). Milk yield of each cow was measured three weeks before and three weeks after receiving the treatments (42 days).

Table 1. Ration composition

Ingredient	Percent	Calculated		Calculated Calcium(mg/kg)
		ME MJ/KgDM	CP g/g	
Sorghum grains	36	4.8	39	0.18
Groundnut cake	32	3.6	144	0.70
Wheat bran	32	3.5	54	0.51
Total	100	11.9	237	1.39

Energy, protein and calcium were calculated according to Suleiman and Mabrouk (1999).

To determine the presence of endoparasites, 30 faecal samples were taken from 30 cows and examined according to Soulsby (1986). From endoparasite examined cows, 9 cows of 300-400 kg body weight were randomly selected. The animals were divided into three groups of three cows each. The first group received no anthelmintic and was used as control, the second and third groups received anthelmintic in the form of classical glass bottle drenching and licking from a home made 10% tetramizole medicated lick block, respectively.

Blood samples were collected three times (ten days apart) from the jugular vein of each animal in heparinized tubes. The samples were used to determine the haemoglobin concentration (Hb) and packed cell volume (PCV) using systems-Rx-2 1N device (digital machine). The data were analyzed statistically for Hb and PCV (Figs 1 and 2) and then the means over the sampling period were used to show the cumulative effects of the treatments on these traits as in Table 2. The experimental design used was the completely randomized design with three replicates. Duncan's Multiple Range Test was used to separate the treatment means.

Table 2 shows significant ($P < 0.05$) differences between the three treatments (control, drenched and block-licking groups), where cows in both treatments, that received the medicine (tetramisole 10%) had significantly ($P < 0.05$) higher haemoglobin levels compared to the control but the increase in haemoglobin level was higher in drenched group than

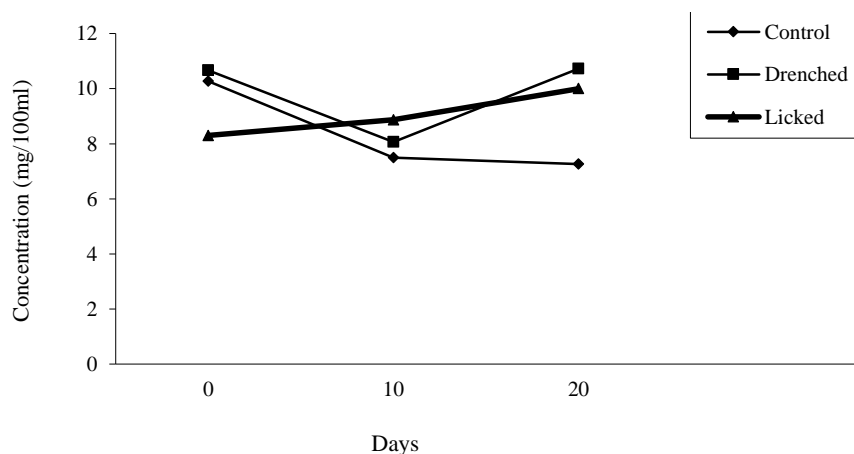


Fig. 1. Effect of different treatment on haemoglobin concentrations

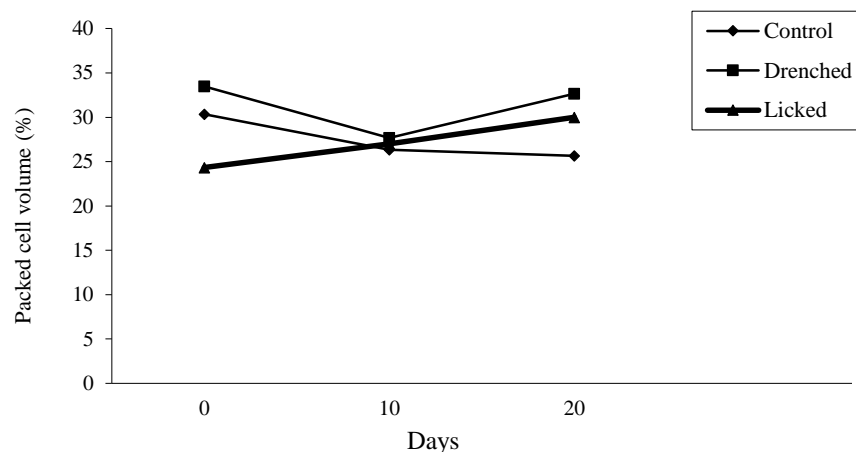


Fig. 2. Effect of different treatment on packed cell volume concentrations.

Table 2. Means of haemoglobin (Hb) and PCV in different treatments.

Treatment	Hb (mg/100 ml)	PCV (%)
Control	8.34 c	27.44 b
Drenched	9.82 a	33.28 a
Block licking	9.06 b	27.28 b
SE \pm	0.83	2.0
CV%	12.95	9.87

Means in the same column having the same letter(s) were not significantly different at ($P \leq 0.05$) level.

Hb=Haemoglobin, PCV= Packed Cell Volume

in block-licking group. As shown in Fig. 1, the haemoglobin level showed a consistent decline in the control group, while there was a consistent increase in the licked treatment. The increase in haemoglobin concentration in both drenched and licked groups could be attributed to the reduction of the internal parasites. This result agreed well with that reported by Lassis *et al.* (2001) who stated that the increase in haemoglobin concentration could be attributed to the reduction in blood loss due to parasite inhibition or clearance specially *Haemonchus* sp. (a blood sucker worm).

It is clear from the results in Table 2 that there were significant ($P < 0.05$) differences between PCV values between the different treatments. Cows that received the medicine through direct drenching have a significantly ($P < 0.05$) higher PCV value than those received the medicine through the licking blocks and the control. However, there was no difference between the control and the licking group.

As shown in Fig. 2, there was a consistent decrease in PCV in the control. However, a little decline in the first 10 days of the experimental period, followed by a sharp increase was seen in the drenching treatment. For all treatments the PCV values were within the normal range of 20-40%.

The results obtained in the present study for both haemoglobin concentration and PCV level were in line with those reported by Kochapakdee *et al.* (1995) who found that both PCV and haemoglobin concentrations in untreated goats were lower than those of treated goats under natural infection. Moreover, Michael *et al.* (1979) found that PCV, Hb concentrations and total erythrocytes counts

declined after infection but became significantly ($P<0.05$) higher in treated animals. Similar observations were reported by Reyaz *et al.* (2007) who stated that decreased values of Hb, RBC, PCV and total serum protein were observed in *Haemonchus contortus* infected animals compared to treated ones.

As presented in Table 3, there was a highly significant ($P<0.01$) difference between treatments in milk yield. However, there was an erratic feed consumption due to deterioration of pasture and shortage in concentrates. Regardless of these conditions, the medicated lick in the block licking cows showed significantly ($P<0.05$) higher milk yield after the treatment compared to that before the treatment. The drenched cows maintained similar production (before and after the treatment). In the control treatment, milk production decreased significantly ($P<0.05$) in the last three weeks of the experiment. This result agreed with Sanyal and Singh (1995) who reported that long term low level administration of fenbendazole incorporated medicated urea-molasses block removed the already established adult parasites and prevented larval establishment and treated buffaloes produced more milk. Other observations were reported by Sanyal *et al.* (1992) who found liter per day advantage in cross bred cows treated with medicated urea molasses block.

It could be concluded that the overall results of this study confirm the beneficial effect of anthelmintic treatment on milk production. Incorporation of anthelmintic in lick blocks save time, labour cost and improves milk yield compared to the classical drenching with drug.

Table 3. Effect of different treatments on milk yield (liter/week) before and after treatment.

Treatment	Before	After
Control	91 a	80 b
Drenched	138 a	138 a
Licked	103 b	128 a
SE±	6.09	
CV%	13.2	

Means in the same row having the same letter were not significantly different at ($P\leq 0.05$) level.

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أثر حجر اللحوس الطبي المصنع منزلياً على أداء أبقار الألبان بمشروع الرهد الزراعي

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الخلاصة

أجريت هذه التجربة التي تشمل طريقتين مختلفتين لمعالجة الحيوانات بمضادات الديدان (التجريع أو حجر اللحوس) بمزرعة الإنتاج الحيواني بمؤسسة الرهد الزراعية في الفترة من يناير حتى يونيو 2009. الهدف من هذه التجربة هو مقارنة فعالية الدواء في السيطرة على الديدان الداخلية وتحسين بعض أداء الحيوان من الناحية الصحية ومن ناحية إنتاج اللبن. تم اختيار 9 بقرات (300-400 كجم وزن حي) عشوائياً من 30 بقرة مصابة بالديدان وقسمت هذه الأبقار إلى ثلاثة مجموعات. أعطيت كل مجموعة أحد من المعاملات الثلاثة (شاهد بدون دواء، دواء عن طريق التجريع والدواء عن طريق اللعق من مكعب حجر اللحوس) تم جمع عينات الدم لإيجاد الهموقلوبين وحجم الخلية المكتنظ لثلاثة فترات (كل فترة عشرة أيام). كما تم تسجيل إنتاج اللبن قبل ثلاثة أسابيع من إجراء بين المعاملات الثلاثة في كل القياسات التي ($P < 0.05$) التجربة وبعد ثلاثة أسابيع بعدها. أظهرت النتائج أن هنالك فروق معنوية من ناحية الهموقلوبين وحجم الخلية المكتنظ بينما أن تجربة اللعق هي ($P < 0.05$) أجريت. وقد كانت تجربة التجريع هي الأفضل الأفضل من الشاهد في مستوى الهموقلوبين. أما من ناحية إنتاج اللبن فكانت تجربة اللعق هي الأفضل إذ زاد الإنتاج زيادة معنوية بينما حافظت تجربة التجريع على الإنتاج قبل وبعد المعاملة عليه يمكن استخدام حجر اللحوس الطبي بأمان لمكافحة ($P < 0.01$) الديدان الداخلية في الحيوان ومن ثم تحسين إنتاج اللبن في الأبقار الحلوب.