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PERFORMANCE AND SOME RUMEN AND BLOOD PARAMETERS OF BALADI COWS FED RATIONS SUPPLEMENTED WITH PRODUCTIVE CHAMOMILE FLOWERS DURING LATE PREGNANCY AND LACTATING PERIODS.

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ABSTRACT

This research was conducted to evaluate effects of two levels of chamomile flowers to the rations of baladi cows on their milk production, feed conversion and feeding values as well as some rumen and blood parameters. A total of 18 cows with average live body weight of 401.00 kg and 2-7 parities, were used in this study. Animals were divided into three groups (6 in each group) and fed diets according to NRC (1988) recommendation that contained 0, 5 and 10 g chamomile / 100 kg BW / day. The animals were in the late pregnancy period and continued for 4 months after calving. In addition, 9 Zaraibi bucks were used to evaluate the feeding values of the tested rations, and some rumen liquor parameters .

The results showed that the digestion coefficients of all nutrients and feeding values were improved with increasing the level of chamomile (0, 5 and 10 g / 100 kg BW / day) in the rations (G_1, G_2 and G_3, respectively) and the differences were significantly in digestibility of DM, CF and CP as well as TDN and DCP %. The results of rumen parameters of Zaraibi bucks showed that pH value and ammonia-N were not significantly different among the groups. But, addition of chamomile had significantly increased total volatile fatty acids (TVFA's) concentrations at 4 hr post-feeding in rumen fluied of bucks. The highest values of protozoa count and microbial protein at 4 hr were recorded with G_3 (0.840 and 0.685, respectively) and the lowest values were recorded with G_1 (0.770 and 0.580, respectively).

Concerning biochemical parameters, the results indicated that most tested constituents of blood were not significantly affected by the tested experimental rations during the late pregnancy and lactation periods. Serum globulin was increased while ALT enzyme were reduced as a result of adding chamomile especially with the high level (G_3).

Daily milk yield was increased by 5.81 and 9.42 % for G_2 (9.10 kg) and G_3 (9.41 kg) compared with the control (8.60 kg). However, milk composition was not significantly affected by both of the two levels of chamomile. But, yields of fat and protein as g/d were significantly increased ($p< 0.05$) by the high chamomile level.

The feed conversion based on DM was improved by about 6.0 and 8.5 % as a result of using chamomile in G_2 and G_3, respectively compared to G_1. A similar trend was noticed when feed efficiency was based on TDN where the best was G_3 (0.752) followed by G_2 (0.767) and lowest the control group (0.794).

Accordingly, it could be concluded that using chamomile in baladi cows rations had positive effects not only in improving milk yield, but also in improving feed utilization without any adverse effects on milk composition and blood metabolic parameters.

Keywords : Productive performance –lactating cow – some rumen and blood parameters – chamomile flowers – milk production – feeding value- feed conversion.

INTRODUCTION

The use of medicinal herbs and plants for human has been well known since the old civilization of ancient Egyptian. Many attempts were carried out to use natural materials such as medicinal herbs which are widely accepted as feed additives to improve the efficiency of feed utilization and productive performance of farm animals such as sheep, goats , buffaloes and cows (Allam et al. 1999, Maged 2004, Shehata et al. 2007 and Shwereb, 2012). In addition, using medicinal herbs in animal rations was the preventive solution to avoid the hazard of side effects using chemicals. Row material of these herbs and their extracts and drugs proved to be always safe (Zeid, 1998, Tawfik et al. 2005, and Maged 2011). In the meantime, using medicinal herbs as natural additives in animal feeding for various proposes such as improvement of the milk yield and its composition and consequently improving milk quality (Shehata et al. 2004), improving the ruminal fluid environment and digestion coefficients as well as reducing the cholesterol and improve some the enzymes activity (ALT, AST and ALP) in the blood (Maged 2004, and 2011), reducing the incidence of digestive disturbances such as diarrhea and bloat and consequently minimizing the mortality rate of the offspring (Shehata et al. 2007), improvement of immunity and detoxification of the afflatoxin (Tawfik et al. 2005). Consequently they are used in both human and veterinary medicines.

Shehata et al., (2004 and 2007) studied the effect of using chamomile flowers on production and hygiene of goat milk and they concluded that adding chamomile flower has positive effect on milk production and its quality and general animal performance as well. These positive effects might be attributed to active ingredients like flavonoids, coumarins, aromatic oils (alpha bisabolol, azulene and chamazulene) in chamomile flowers that function as better tonic, antiseptic, stomach pain release , anti-inflammatory and antispasmodic agent(Mann and Staba, 1986, Korting et al., 1993 and Ody Penelope, 1993).

Therefore, the present study was conducted to evaluate effects of chamomile flowers on digestibility, feeding values and milk production as well as feed utilization efficiency some rumen parameters and blood constituents as affected by dietary treatments were also studied.

MATERIALS AND METHODS

This study was carried out during 2014-2015 at El-Serw Experimental Station belonging to the Animal Production Research Institute, Agriculture Research Center, Egypt.

Animals:

A total of 18 Baladi cows during their last two months of pregnancy, with an average live body weight of 401± 20.15 kg and 2^{nd} to 7^{th} parities, were used in this study. The experimental cows were divided according to LBW, parity and milk production to three experimental groups, six animals in

each group. The three groups were assigned at random to receive the three dietary treatments . Animals were housed under semi-open shed.

Feeding system:

During pre-and 4 months post-partum period, cows in all groups were fed diet composed concentrate feed mixture (CFM), and berseem hay (BH) , while rice straw (RS) was offered ad lib. The CFM consisted of 27% wheat bran, 41 % yellow corn, 26% uncorticated cotton seed meal, 4% molasses, 1.5% premix and 0.5% common salt. Chemical analysis of CFM, BH and RS are shown in Table (1).

Table (1) : Chemical analysis of feed ingredients (% as fed basis).

Feed stuffs	DM	OM	CP	CF	EE	Ash	NFE
Concentrate feed mixture	93.47	90.34	14.71	16.88	3.53	8.34	56.54
Berseem hay	91.34	85.52	13.67	24.31	2.67	15.26	44.09
Rice straw	90.19	82.60	2.49	40.59	1.93	17.25	37.74

Cows in the 1st group were fed the control diet(untreated), while those in the 2nd and 3rd groups were fed the control diet supplemented daily with 5 or 10g of chamomile flowers / 100 kg BW, respectively. Supplements of each treatment group were well mixed with the ingredients of the daily amount of CFM immediately before feeding. Feeds were offered to animals in all groups twice daily for 2 months pre- and 4 months post-partum period. Cows in all groups were individually fed on different experimental diets and water was individually offered three time/ day with daily recording of water consumption.

Cows in the 3 groups were fed based on body weight milk yield and fat percentage according to (NRC,1988). Amount of feeds were adjusted biweekly based on milk yield and reproductive status.

Milking and milk samples :

Milk yield was measured after the calves were allowed to suckle colostrums from their dams for the first seven days. Cows were milked by milking machine twice daily at 5 a.m. and 5 p.m. After each milking, milk was weighed on certain day for each week for all lactation periods. Milk composite samples of each animals (mixture from morning and evening milking) were taken during mid-lactation period for the determination of milk composition.

Blood sample :

Blood samples were taken once during the last month of pregnancy and first month of lactation from 3 cows of each group. Blood serum samples were separated by centrifugation at 4000 rpm for 10 minutes, then frozen at -20c until analysis for total protein, albumin, globulin, urea, creatinine, total lipids, AST and ALT using kits and the methods reported by biochemistry (Bio merieux) laboratory reagents and products.

Digestion and rumen fluid parameters :

Three digestibility trials were conducted on 9 adult bucks (3 per group) to evaluate feeding values of the tested diets. Each digestibility trail lasted 35 days, of which four weeks were preliminary period followed by 7 days collection period.

At the end of digestibility trails rumen fluid samples were taken from bucks using stomach tube before feeding (0 time) and at 2, 4 and 6 hrs post-feeding. The samples were filtered through 3 layers of gauze without squeezing and immediately subjected to the determination of pH value by pH meter. Ammonia nitrogen (NH3-N) concentration was measured according to Conway (1957), total volatile fatty acids (TVFA's) according to the technique described by Warner (1964), microbial protein by the method of Shultz and Shultz (1970) and total number of protozoa was counted according to Abo-Akkada and El –Shazly (1964).

Chemical analysis:

Chemical analysis of feeds and feces was determined after the Official methods of A.O. A.C (1980), while chemical analysis of milk and somatic cells was determined using milk Scan (Model 133B).

Statistical analysis:

Data was statistically analysis using SAS (2003). The significant differences among means were assigned according to Duncan (1955).

RESULTS AND DISCUSSION

Digestibility trails:

Digestion coefficients :

The obtained data in Table 2 indicated that the effect of the experimental rations on digestibility of DM, CF and CP and feeding value (TDN, and DCP) were significant. Whereas , the digestibility of OM, EE and NFE were not significantly different as a result to addition of chamomile herbs in goats rations. The highest values of digestion coefficients of all nutrients were recorded with the high level of chamomile (G3) but the lowest values were detected with unsupplemented ration (control, G1). Similarly, the TDN and DCP% of tested diets were improved with increasing the level of chamomile in goats diets and the differences were significant between G1 and G3. The improvement in digestibility and feeding values with the presence of chamomile herb may be due to the role of the active ingredients that function as an antiseptic against the antagonistic flora and stimulate the digestive enzymes and processes (Abou-Zeid, 1986, Khanna et al., 1993 and McIntyre, 1995). The results are in line with those reported by Abdelhamid et al (2004) who showed that most digestion coefficients and feeding values were higher as a result of using of chamomile flowers in diets of Rahmani sheep.

Table (2) : Digestion coefficients and feeding values (%) of tested diets fed to bucks.

Items	Groups		
	G_1	G_2	G_3
Digestion coefficients (%):			
DM	67.01 ± 0.52 ^{b}	68.3 ± 0.03^{b}	70.00 ±0.55^{a}
OM	70.30 ± 0.44	71.43± 0.25	72.54 ± 0.86
CF	60.55 ± 1.32^{b}	62.33 ± 0.62^{ab}	64.46 ± 0.42^{a}
CP	71.55 ± 0.39^{b}	73.6 ± 0.55^{ab}	74.8 ± 0.90^{a}
EE	77.33 ± 0.56	78.18 ± 0.22	79.47 ± 0.44
NFE	72.89 ± 0.42	74.44 ± 1.07	75.07 ± 0.65
Feeding values (%):			
TDN	67.29 ± 0.40^{b}	68.82 ± 0.48^{a}	69.81 ± 0.47^{a}
DCP	9.03 ± 0.05^{b}	9.29 ± 0.08^{a}	9.45 ± 0.12^{a}

Means in the same row with different superscripts differ significantly at < 0.05

Rumen liquor parameters :

Results of pH values (Table,3) indicated that maximum pH values were recorded at 0 time with all groups without significant differences among treatments and then gradually decreased to the minimum values at 4 hrs post feeding and tended to increase again thereafter at 6 hrs post feeding with all groups. The same trend were observed by Zied and Ahmed (2004) with Zaraibi goats. Ruminal NH3-N concentration (Table, 3) tended to increase with G1 especially at 2 hrs (23.59 mg / 100 ml) compared with G2 and G3 (22.86 and 21.90 mg / 100 ml, respectively). These observations are in harmony with the findings of Zied (1998) at most hours (0, 2 and 6 hrs). Ruminal total VFA's concentrations (m Eq/ 100 ml) post-feeding were increased with increasing level of chamomile in bucks diets and the differences were significant during the 4 hours only. In this respect, ruminal TVFA's concentration at 6 hr post feeding were improved by 31.83% with chamomile treatment (11.39m Eq/ 100 ml) compared with the control diets (8.64 m Eq / 100 ml) (Allam et al., 1999). In the present study, the highest values of TVFA 's concentration was at 4 hrs post-feeding which was reflected on lowering pH values at that time. Similar results were given by Ahmed et al. (2001).

As regard to protozoa count and microbial protein, the obtained results indicated that both protozoa and microbial protein content were higher as a results to presence of chamomile in bucks rations (G2 and G3) but, without significant differences as shown in Table (3). Similar results were observed by Maged (2004) and Ibrahim et al. (2007) with using of chamomile and chufa tubers, respectively in diets of small ruminants. In addition, Tawfik et al. (2005) found that the content of microbial protein was improved by about 14.2% with chamomile supplemented group compared with their control and this may be attributed to the regulatory action of medicinal plant , chamomile, on NH3-N concentration in the rumen as reported by Zied (1998) and Mohamed et al., (2003) and consequently maintaining the optimal environmental for protozoa and other micro-organisms which gave high level of microbial protein synthesis in the rumen.

Table (3) : Rumen liquor parameters of diets Zaraibi bucks fed the experimental diets.

Items	Hours	Groups		
		G_1	G_2	G_3
pH	0	7.07 ± 0.08	7.04 ± 0.11	7.00 ± 0.12
	2	6.72 ± 0.04	6.70 ± 0.06	6.69 ± 0.03
	4	6.21 ± 0.06	6.25 ± 0.07	6.21 ± 0.09
	6	6.49 ± 0.06	6.50 ± 0.07	6.47 ± 0.09
Ammonia (mg/ 100 ml)	0	14.58 ± 0.05	15.05 ± 0.56	15.15 ± 0.46
	2	23.59 ± 0.47	22.86 ± 0.41	21.90 ± 0.17
	4	23.49 ± 0.41	23.27 ± 0.72	22.88 ± 0.47
	6	22.49 ± 0.6	21.88 ± 0.51	21.6 ± 0.47
VFA's (meq / 100 ml)	0	8.12 ± 0.09	8.06 ± 0.17	8.22 ± 0.51
	2	10.09 ± 0.30	10.26 ± 0.14	10.44 ± 0.11
	4	10.78 ± 0.09^{b}	11.6 ± 0.07^{a}	11.8 ± 0.06^{a}
	6	10.54 ± 0.09	10.94 ± 01	11.4 ± 0.15
Protozoa count ($x10^6$)	0	0.410 ± 0.03	0.423 ± 0.04	0.435 ± 0.02
	4	0.770 ± 0.03	0 . 835 ± 0.02	0.840 ± 0.03
Microbial protein (g/ 100 ml)	0	0.339 ± 0.02	0.344 ± 0.03	0.34 ± 0.01
	4	0.58 ± 0.03	0.68 ± 0.01	0.685 ± 0.02

Means in the same row with different superscripts differ significantly at < 0.05

Blood parameters :

Data of some biochemical parameters of cows fed experimental rations during pre - and post-partum periods are presented in Table (4). The obtained data indicated that most tested blood parameters were not significantly affected by the tested experimental rations. The results indicated that both total protein and globulin tended to increase with increasing level of chamomile in cow rations and the differences were significant in serum globulin during post-partum period alone. But, serum albumin was lower with using of chamomile in cows rations during the two experimental periods, but without significant differences. Serum urea and creatinine concentrations showed some fluctuations among groups. Meanwhile, the concentrations of total lipids and the activity of AST and ALT were reduced as a result of adding chamomile in cow rations during pre- and post-partum and the effect of high level of chamomile (G3) was significant during the late pregnancy as shown in Table (4). Similar results were observed by Shehata et al. (2004), Priolo et al (2007). and Shwereb et al. (2014) with lactating does, ewes and cows, respectively. Maged (2011) reported that serum protein and globulin concentration improved while, the concentration of cholesterol and the activity of ALT and AST were decreased as a result of using some medicinal herbs in rations of dairy goats.

Generally, the obtained data showed that most serum parameters were slightly affected by chamomile, however some differences were significant but, all values within the normal range as reported by Aboul-Foutoh et al. (2011), Shwereb (2012), Zeedan and Abdel-Latif (2013) and Mostafa et al. (2014) with both lactating cows and dairy buffalos.

Table (4) : The effect of experimental rations on some biochemical in blood serum of cows during pre-and post- partum periods.

Items	Groups		
	G_1	G_2	G_3
During pre- partum period :			
Total protein (g / dl)	7.14 ± 0.08	7.16 ± 1.05	7.24 ± 0.09
Albumin (g / dl)	4.38 ± 0.05	4.24 ± 0.03	4.20 ± 0.07
Globulin (g / dl)	2.67 ± 0.02	2.92 ± 0.04	3.04 ± 0.03
Creatinine (mg / dl)	0.80 ± 0.01	0.79 ± 0.02	0.81 ± 0.01
Urea (mg / dl)	35.15 ± 0.80	35.17 ± 0.90	36.25 ± 0.79
Total lipid (mg / dl)	365.0 ± 10.50	361.0 ± 11.35	347.0 ± 9.93
AST (u / l)	29.35 ± 6.30	27.81 ± 5.17	26.95 ± 7.03
ALT (u/ l)	7.68 ± 1.08 ^{a}	6.85 ± 2.05^{ab}	6.29 ± 2.30^{b}
During post- partum period :			
Total protein (g / dl)	7.25 ± 0.07	7.35 ± 0.09	7.42 ± 0.05
Albumin (g / dl)	4.40 ± 0.08	4.27 ± 0.11	4.23 ± 0.07
Globulin (g / dl)	2.85 ± 0.03 ^{b}	3.08 ± 0.05^{ab}	3.19 ± 0.06^{a}
Creatinine (mg / dl)	0.71 ± 0.02	0.71 ± 0.01	0.72 ± 0.03
Urea (mg / dl)	32.85 ± 0.75	35.03 ± 0.63	34.15 ± 0.91
Total lipid (mg / dl)	349.0 ± 9.52	331.0 ± 7.86	325.0 ± 8.95
AST (u / l)	27.03 ± 5.51	26.11 ± 8.05	25.30 ± 7.31
ALT (u/ l)	6.67 ± 2.05	6.05 ± 1.80	5.80 ± 2.30

Means in the same row with different superscripts differ significantly at (p< 0.05).

Milk production :

Yield of milk and all measured components (Table,5) tended to be increased by the addition of chamomile, with changes tending to be greater for the high than the low level of addition. Daily milk yield was increased by 5.81 and 9.42 % for G2 and G3 compared with the control. Yields of fat and protein as g/h were significantly increased ($p < 0.05$) by the high chamomile levels. Similar results were recorded by Shehata et al. (2004) who found that daily milk yield was increased by 6.0 and 8.9 % for 5 and 10g chamomile 100 kg BW / day, respectively compared with the control diets. The same study indicated a positive effect on milk components such as milk fat, protein, lactose and total solids with adding chamomile rations of dairy goats during all the experimental periods (early, mid and late lactation). Thakur et al . (2006) studied the effect of herbal feed supplementation on the performance of lactating cows and they found that daily milk and FCM yield was improved ($p< 0.01$) without affecting its composition.

In another study on milk production, Allam et al. (1999) studied the effect of using some medicinal plants and herbs as feed additives and found that daily milk yield was improved with chamomile by more than 10 % compared with either the other herbs or the unsupplemented diet. The same authors reported that chamomile treatment had highest yields of milk fat, protein and total solids. Recently, Maged (2011) and Ibrahim et al. (2013) observed a positive effect of using some medicinal herbs in goats rations on total or daily milk yield during suckling and lactation periods.

Somatic cell count (SCC) were significantly lower with G3 compared with G1 as shown in Table (5). The highest value of SCC was recorded with

G1 (357000) followed by G2 (333000) and lastly the lowest value was recorded with G3 (308000). Thus, SCC was reduced by 6.72 and 13.73 % for 5 and 10 g chamomile / 100 kg BW / day, respectively compared with the control diet. It is interesting to note a negative relationship between SCC and milk yield (Ahmed et al., 2008). In this respect, Baro et al. (1994) and Bedo et al. (1995) found that SCC was negatively correlated with milk yield.

Table (5) : Effect of level of chamomile supplementation on average daily milk yield and its constituents.

Items	Groups		
	G_1	G_2	G_3
Average daily milk yield (kg)	8.60 ± 0.75	9.10 ± 0.63	9.41 ± 0.69
Milk composition (%) :			
Fat	3.10 ± 0.18	3.17 ± 0.16	3.24 ± 0.15
Protein	3.05 ± 0.10	3.09 ± 0.13	3.19 ± 0.13
Lactose	4.26 ± 0.12	4.34 ± 0.09	4.42 ± 0.11
Solids non fat	8.02 ± 0.14	8.16 ± 0.13	8.34 ± 0.11
Total solids	11.12 ± 0.13	11.33 ± 0.15	11.58 ± 0.20
Ash	0.71 ± 0.002	0.73 ± 0.003	0.73 ± 0.005
Somatic cell count (SCC)x 10^3	357 ± 14.0	333 ± 11.0	308 ± 9.0
Av. fat yield, g/d	266.0 ±11.30^{b}	288.0 ±9.53^{ab}	304.0 ±7.91^{a}
Av. protein yield, g/d	266.0±8.15^{b}	281.0±10.20^{ab}	301.0± 6.85^{a}

Means in the same row with different superscripts differ significantly at < 0.05

Live body weight :

The live body weights of cows (Table, 6) indicated non significant LBW differences among the studied groups during the two experimental periods (late pregnancy and lactation). Similar results were observed by Shehata et al. (2007) and Mostafa et al. (2014) using chamomile and probiotics in rations of dairy animals (dairy goats and cows, respectively) during the late pregnancy and early lactation.

Table (6): Live body weight (LBW) of Baladi cows fed chamomile supplemented rations.

Items	Groups		
	G_1	G_2	G_3
Average LBW of cows (kg) :			
Two months pre-partum	401	405	397
One month pre-partum	415	417	413
At calving	461	467	459
Post-calving	405	403	397
One month post-partum	411	407	402

Feed intake :

The average daily feed intake of Baladi cows during the two experimental periods (pre and post-partum) are presented in Table (7). Cows consumed approximately similar quantity of DM intake as g/head, % of BW and g/kg w0.75 since all cows had similar body weight and produced mearly the same quality of milk. Comparing pregnancy and early lactation periods in the daily feed intake, the results indicated that DM intake decreased in late

pregnancy than in early lactation period (Table, 7). This may be attributed to the increased rumen size of the animals after parturition and being free of the growed uterus stress on the rumen. It may also be attributed to the higher requirements for milk production during early lactation period. Similar results were reported by Maged (2011) and Ahmed and El-Kholany (2012) and Mostafa et al. (2014) with lactating cows and dairy goats during the late pregnancy and early lactation periods.

Table (7) : Effect of the tested experimental rations on daily feed intake of cows during pre and post-partum periods.

Items	Groups		
	G_1	G_2	G_3
During pre-partum period :			
CFM (kg / h)	4.15	4.15	4.15
BH (kg / h)	2.10	2.10	2.10
RS (kg / h)	2.05	2.05	2.05
Total D M intake (kg / h)	8.30	8.30	8.30
DM intake (%BW)	2.03	2.02	2.05
DM intake g/kg $w^{0.75}$	91.43	90.93	91.94
Roughage : concentrate ratio (R/C)	50 : 50	50 : 50	50 : 50
During post-partum period :			
CFM (kg / h)	5.10	5.10	5.10
BH (kg / h)	2.55	2.55	2.55
RS (kg / h)	2.50	2.50	2.50
Total DM intake (kg / h)	10.15	10.15	10.15
DM intake (%BW)	2.47	2.49	2.52
DM intake (g/kg $w^{0.75}$)	111.20	112.02	113.05
Roughage : concentrate ratio (R/C)	50 : 50	50 : 50	50 : 50

Feed conversion :

The values of feed conversion (feed /milk yield) of Baladi cows fed on the experimental rations during the early lactation are presented in Table (8). The obtained results indicated that the feed conversion was better with using of two levels of chamomile in cows rations compared to the control group (unsupplementation). The feed conversion, based on DM was improved by about 6.00 and 8.50 % with the two chamomile treatments (G2 and G3, respectively) compared with G1. A similar trend was noticed when feed efficiency was based on TDN where the best was G3 (0.752) followed by G2 (0.767) and lastly the control group (0.794). Similar results were observed by El- Garhy et al. (2011) who found that the feed conversion (based on DM, TDN and DCP) was noticeably better with using some medicinal herbs (such as mint) in rations of lactation buffaloes. The positive effect of feed conversion efficiency was observed also by El-Nor et al. (2007), Abdelhamid et al. (2011) and Ibrahim et al. (2013) with using some medicinal herbs in ruminant rations.

Table (8) : Feed conversion of the experimental rations for milk production.

Items	Groups		
	G_1	G_2	G_3
Daily feed intake (kg / day) :			
DM intake	10.15	10.15	10.15
TDN intake	6.83	6.98	7.08
DCP intake	0.917	0.943	0.959
Average milk yield (kg/ day)	8.60	9.10	9.41
Feed conversion :			
Kg DM / kg milk	1.18	1.11	1.08
Kg TDN / kg milk	0.794	0.767	0.752
Kg DCP / kg milk	0.107	0.104	0.102

CONCLUSION

It could be concluded that using of chamomile flowers as a feed additive had a positive effect on improving milk yield and feed utilization efficiency by lactating cows and the improvement was better with the high level of chamomile. Moreover, feeding values and some rumen parameters were also better with chamomile additions. Moreover, no adverse effects of both 2 levels of chamomile were observed on milk composition and blood metabolic parameters.

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الأداء الإنتاجي وبعض قياسات سائل الكرش والدم للأبقار البلدية المغذاة علي عليقه مضاف اليها زهرة الكاموميل أثناء الفترة الأخيرة من الحمل وفترة الحليب.

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يهدف هذا العمل البحثي إلي دراسة تأثير إضافة الكاموميل في العلائق علي إنتاج اللبن وتركيبة وكفاءة التحويل الغذائي وبعض قياسات سائل الكرش والدم، ولتحقيق هذا الهدف البحثي تم استخدام ١٨ بقرة عشار خلال الشهريين الأخيرين من الحمل، قسمت إلي ٣ مجموعات متساوية (مج١ ، مج٢، ،مج٣) وغذيت تبعا لمقررات NRC لعام ١٩٨٨ مع إضافة صفر، ٥، ١٠ جم من الكاموميل لكل ١٠٠ كجم وزن حي للمجموعات الثلاث علي التوالي . استمرت التجربة خلال الشهرين الأخيرين من الحمل ولمدة أربعة شهور من الحليب، بالإضافة إلي استخدام ٩ تيوس ماعز زرايبي لتقييم العلائق المختبرة و دراسة بعض خصائص التخمر في الكرش.

وقد أظهرت النتائج تحسنا في معاملات الهضم والقيمة الغذائية مع زيادة مستوي الكاموميل في العلائق والاختلافات كانت معنوية في هضم المادة الجافة والبروتين والألياف وكذلك المركبات المهضومة الكلية والبروتين المهضوم، أما فيما يتعلق بقياسات سائل الكرش فقد لوحظ أن المعاملة ليس لها تأثيرت معنوية علي قيمة ال pH أو تركيز الاموتيا ، في حين كان تأثير المعاملة بالكاموميل علي تركيز الأحماض الدهنية الطيارة- أثناء الساعة الرابعة بعد الأكل- واضحا ومعنويا، أيضا وعند نفس الساعة سجلت القيمة الأفضل من عدد البروتوزوا والبروتين الميكروبي (٠,٨٤٠، ٠,٦٨٥ علي التوالي) مع المستوي الاعلي من الكاموميل (مج٣) ثم تلتها مج٢ (٠,٨٣٥، ٠,٦٨٠ علي التوالي) وأخيرا مج١(٠,٧٧٠، ٠,٥٨٠ علي التوالي).

أظهرت نتائج تجربة التغذية أن معظم قياسات سائل الدم المختبرة لم تتأثر معنويا مع استخدام المعاملة أثناء فترتي الحمل وإنتاج اللبن ، وقد كان هناك بعض التأثيرات المعنوية للمعاملة علي نشاط انزيم ALT ، الجلوبيولين أثناء فترتي التجربة الحمل ، إنتاج اللبن علي التوالي.

فيما يتعلق بإنتاج اللبن فقد أظهرت النتائج تحسنا في إنتاج اللبن بنسبة ٥,٨١، ٩,٤٢ % لمجموعتي الكاموميل (مج٢ ، مج٣ علي التوالي) مقارنة بالكنترول، في حين لم تتأثر معنويا مكونات اللبن نتيجة للمعاملة لكن حدث زيادة معنوية في كلا من محصول الدهن والبروتين مع المستوي المرتفع من الكاموميل (مج٣) مقارنة بالكنترول.

أظهرت النتائج ان كفاءة التحويل الغذائي محسوبة علي أساس المادة الجافة تحسنت تحسنا ايجابيا بمعدل ٦,٠، ٨,٥ % مع استخدام ٥، ١٠ جم كاموميل / ١٠٠ كجم وزن حي علي التوالي مقارنة بالكنترول (بدون إضافة). أيضا سجلت أفضل قيمة لكفاءة التحويل الغذائي مع مج٣ (٠,٧٥٢) ثم مج٢(٠,٧٦٧) في حين سجلت مج١ القيمة الأقل (٠,٧٩٤) وذلك عندما حسبت علي أساس المركبات الكلية المهضومة.

من هذه الدراسة يتضح أن استخدام الكاموميل في علائق الأبقار أثناء الفترة الأخيرة من الحمل و فترة الحليب له تأثير إيجابي علي إنتاج اللبن ومعدل التحويل الغذائي بدون أي تأثير سلبي علي تركيب اللبن أوميتابوليزم الحيوان.