EFFECT OF FEEDING RATIONS SUPPLEMENTED WITH TRI-MIC (MICROBES AND VITAMINS) ON DIGESTIBILITY AND PERFORMANCE OF GROWING BUFFALO CALVES.

M.M. Khorshed and E.B. Abdalla

Animal Production Department, Faculty of Agriculture, Ain Shams University, Cairo, Egypt.

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SUMMARY

Effect of dietary Tri-Mic (Microbes and Vitamins) supplementation on nutrient digestibility coefficients, blood constituents, growth performance and economic efficiency of growing Egyptian buffalo calves was investigated. A total of 15 growing buffalo calves were randomly assigned to three groups of 5 animals each. Calves in the control group (T_1) were given a basal ration which consisted of a concentrate feed mixture (CFM) and rice straw without additives while the other two groups received the basal ration with added Tri-Mic (TM), at 7.5 g/h/d (T_2) or at 15 g/h/d (T_3). The experimental period lasted 6 months. Results showed that DM, TDN and DCP intakes from rations supplemented with TM (T_2 and T_3) significantly ($P<0.05$) increased when compared with the control calves (T_1). Values for digestibility coefficients of DM, OM, CP, CF and EE and feeding values (TDN and DCP) were significantly ($P<0.05$) improved for rations of the supplemented groups (T_2 and T_3). However, NFE values did not differ significantly among the three groups. Live body weight (LBW) significantly ($P<0.05$) increased in the supplemented groups as compared with the control group. Total weight gain and average daily gain were also significantly ($P<0.05$) higher in the supplemented groups than in the control group. A significant increase in total protein and ($P<0.05$) albumin as well as a significant decrease in urea and creatinine concentrations and activity of GOT and GPT ($P<0.05$) were observed in the blood serum of the supplemented groups (T_2 and T_3) when compared with the control group (T_1). Meanwhile, level of serum globulin and A/G ratio did not differ significantly among the three groups. Cost per Kg gain of the supplemented groups decreased when compared with the control group, which indicated better economic efficiency of calves fed the supplemented rations (T_2 and T_3). It could be concluded that feeding growing buffalo calves on rations supplemented with TM (specially, 7.5 g/h/d) has beneficial effects on growth performance, digestibility coefficients, blood parameters and economic efficiency of growing buffalo calves.

Keywords: *buffalo calves, Tri-Mic, growth performance, blood constituents, feed efficiency.*

INTRODUCTION

The lack of sufficient feeds to meet the nutritional requirements of the existing animal population is one of the most critical problems of animal production in Egypt (Youssef and Fayed, 2001).

Many attempts have been made to improve animal productivity, one of which was the use of feed additives and growth promoters including antibiotics and biological additives. Growth promotion comes from anabolic, antibacterial (antibiotics), non-specific chemicals and rumen fermentation modifiers. On the other hand, direct-fed microbes are among feed additives that offer potential as modifiers of ruminal fermentation (Chiquette, 1995). During the past decade, many studies have been conducted to examine the effects of direct-fed microbes on ruminant performance (Martin, 1998; El-Basiony *et al.*, 2003; Gaafar *et al.*, 2005 and Mohi-Eldin *et al.*, 2008).

Tri-Mic, as a commercial product, is a direct-fed microbial (DFM) for dairy and beef cattle. It contains a source of live (viable) natural occurring microorganisms, guaranteed to provide on analysis a live cell count of (1.02×10^9 CFU/gram). Thus CFU is colony forming units (460 million CFU/pound). Tri-Mic also contains some biological components such as choline, niacin, pyridoxine, thiamine, riboflavin, biotin, vitamin B_{12} and other components. Accordingly, TM can be considered a source of microbial cultures.

The concept of using products containing live microorganisms (probiotics or microflora) for feed application is not new, but interest in the concept has dramatically increased in the past twenty years. A directly fed microbial is defined as live (viable), naturally occurring microorganisms administered orally to establish favorable microflora and activate the host's microorganisms (Engberg *et al.*, 2000).

Previous work on buffalo heifers (El-Ashry *et al.*, 1993) using lactobacillus concentrate, and on buffalo calves (El-Basiony *et al.*, 2003) using flavomycin, pronifer and pancur as supplements in ration for growing buffaloes and proved that all had positive effects on growth performance.

Accordingly, the current study was carried out to investigate the effects of dietary supplementation of TM on growth performance, digestibility coefficients, blood parameters and economic feed efficiency of growing buffalo calves.

MATERIALS AND METHODS

The present study was carried out at the experimental research station located in Shalakan, El-Kanater El-Khairia, Qalubia Governorate, and at the Animal Nutrition Research, Laboratory, Animal Production Department, Faculty of Agriculture, Ain Shams University.

Experimental animals:

Fifteen growing buffalo calves with an average live body weight (LBW) of 95.8 Kg and about 4 months old were divided into three equal and similar groups according to their age and weaning weights. They were assigned at random to the three dietary treatments. Animals were fed individual on rice straw (*ad libitum*) in addition to a concentrate feed mixture (CFM) at the level of 2% of their body weight with no supplement (control group, T_1) or with either 7.5 g/h/d of TM [T_2] or 15 g/h/d of TM (T_3) respectively. Chemical composition of CFM, rice straw as well as the calculated experimental rations is presented in Table (1).

Table (1): Chemical composition (% DM basis) of ingredients and the experimental rations.

Item	Ingredient analysis		Experimental rations		
	* CFM	Rice straw	T_1	T_2	T_3
DM	90.28	89.03	89.84	90.73	90.72
OM	94.40	83.17	90.41	90.27	90.21
CP	15.11	03.89	11.12	11.19	11.13
CF	13.67	38.10	22.34	22.67	22.79
EE	02.52	01.07	02.00	02.02	02.01
NFE	63.10	40.11	54.95	54.39	54.28
Ash	05.60	16.83	09.59	09.73	09.79

**CFM= Concentrate feed mixture, consists of 37.5% undecorticated cotton seed cake, 37% wheat bran, 9% rice bran, 8% corn grain, 1.5% soybean meal, 3% molasses, 3% limestone and 1% salt.*

The amount of the concentrate feed mixture was adjusted biweekly according to body weight changes and offered twice daily at 8 a.m. and 4 p.m. Rice straw however was offered ad lib., and fresh water was available all day.

Individual live body weights (LBW) were recorded biweekly, throughout the experimental period (6 months) and then total gain and average daily gain (ADG) were calculated.

Digestibility trials and blood sampling:

At the end of the experimental period, digestibility trials and blood sampling were conducted. Fecal samples were collected from the rectum twice daily from all animals representing each treatment for 10 days to determine the digestibility of the nutrients by the acid insoluble ash (AIA) method according to Van Keulen and Young (1977). Samples were also used for proximate analysis (DM, CP, CF, EE and ash) according to A.O.A.C. (1990) while Nitrogen Free Extract (NFE) values were calculated by difference.

Blood samples were withdrawn from the jugular vein of each animal pre-feeding (7.0 a.m.). The collected blood samples were centrifuged at 4000 r.p.m. for 20 min. to separate the serum. The obtained serum was stored at -20°C till analysis. Total protein and albumin were determined as described by Armstrong and Carr (1964) and Doumas *et al.* (1971), respectively. Globulin concentration and albumin / globulin ratio (A/G ratio) were calculated. Serum urea according to Siest *et al.* (1981), serum creatinine according to Folin (1994) and serum transaminases (GOT and GPT) as described by Reitman and Frankel (1957) were determined.

Statistical analysis:

Statistical analysis for the obtained data was carried out using the general linear model producers of SAS (1998). Comparison between means was carried out using Duncan's Multiple Range test (Duncan, 1955).

RESULTS AND DISCUSSION

Feed intake, digestibility coefficients and feeding values:

The results of feed intake, digestibility coefficients and feeding values of the experimental rations are presented in Table (2). Values for daily feed intake expressed as DM, TDN and DCP were significantly higher (P<0.05) for the supplemented calves (T_2 and T_3) than for the control calves (T_1). This was mainly due to the increase in roughage intake since the amount of concentrate offered was restricted (2% of LBW). Supplementation of TM may enhance roughage fermentation and / or promote the emptying of the rumen, which may lead to increased roughage intake. These results are in agreement with those of El-Basiony *et al.* (2003), Salama *et al.* (2005) and El-Sharkawy (2006).

Table (2): Feed intake, nutrient digestibilities and feeding value of growing buffalo calves fed the experimental rations.

Item	Treatments		
	T_1	T_2	T_3
Daily feed intake (Kg/h/d):			
DM	$4.23^b \pm 0.51$	$4.54^a \pm 0.48$	$4.75^a \pm 0.39$
TDN	$2.68^b \pm 0.06$	$2.96^a \pm 0.04$	$3.10^a \pm 0.04$
DCP	$0.31^b \pm 0.04$	$0.36^a \pm 0.04$	$0.37^a \pm 0.05$
Apparent digestibility (%):			
DM	$68.81^b \pm 0.52$	$72.32^a \pm 0.51$	$71.98^a \pm 0.47$
OM	$71.54^b \pm 0.88$	$76.14^a \pm 0.83$	$76.81^a \pm 0.78$
CP	$66.84^b \pm 0.63$	$70.73^a \pm 0.70$	$71.16^a \pm 0.65$
CF	$52.77^b \pm 0.41$	$57.93^a \pm 0.52$	$58.52^a \pm 0.57$
EE	$72.17^b \pm 0.53$	$73.94^a \pm 0.58$	$74.13^a \pm 0.55$
NFE	$74.41^a \pm 0.81$	$75.12^a \pm 0.79$	$75.07^a \pm 0.65$
Feeding values (%):			
TDN	$63.35^b \pm 0.61$	$65.26^a \pm 0.55$	$65.36^a \pm 0.59$
DCP	$07.43^b \pm 0.09$	$07.91^a \pm 0.08$	$07.92^a \pm 0.08$

a and b: Means in the same row with different superscripts are significantly (P<0.05) different.

Digestibilities of DM, OM, CP, CF and EE were significantly improved (P<0.05) by supplementation with TM by 5.10, 6.43, 5.82, 9.78 and 2.45% in T_2 and 4.61, 7.37, 6.46, 10.89 and 2.71% in T_3, respectively when compared with the control group (T_1). However, supplementation with different doses of TM (T_2 and T_3) slightly improved (P>0.05) the digestibility of NFE (Table 2). The same trend was noticed by El-Basiony *et al.* (2003) who reported that, supplementation with different types of growth promoters had no effect on the digestibility of NFE. It was observed that values for digestibility coefficients of all nutrients for T_3 were slightly higher (P>0.05) than for T_2 except for DM and NFE values.

It is of interest to observe that improvements of DM, CP, CF and EE digestibilities were associated with higher feeding intake by calves in the supplemented groups (Table, 2). The observed increase in nutrients digestion of calves fed the supplemented diet as compared to the control diet may be due to the enhanced initial rate of ruminal digestibility of the diet by supplemented TM. The present results are in agreement with those reported by El-Basiony *et al.* (2001 and 2003). The beneficial productive responses associated with the use of TM supplements can be directly related to their effects on the microbial population in the digestive tract. These results are in agreement with those obtained by McCormick (1984), Nahshon *et al.* (1992), Dawson (1995), Gaafar *et al.* (2005) and Mohi-Eldin *et al.* (2008).

Crude protein digestibility coefficients for the supplemented rations (T_2 and T_3) were significantly higher (P<0.05) than those for the control ration (T_1), which may be due to TM supplementation that led to increased microbial protein flow from the rumen. In agreement with the present results, Yoon and Stern (1996) reported that digestibility of CP in rations supplemented with direct-fed microbial (baker's yeast) was higher than that in the control ration. A similar trend was also obtained by El-Ashry *et al.* (2001) and Marghany *et al.* (2005) for buffaloes. They showed that the digestibility of most nutrients were clearly enhanced with direct-fed microbial (Baker's yeast) supplemented rations as compared with the control.

Regarding the effect of TM on nutritive values (expressed as TDN % and DCP %) of the tested rations (Table, 2), it was noticed that, TDN and DCP were significantly higher (P<0.05) for TM supplemented rations when compared with the control ration. Accordingly values for TDN and DCP were improved by 3.01 and 6.46 for T_2 and 3.17 and 6.59 for T_3, respectively when compared with the control group (T_1). This might be due to the increase in the proportion of dietary protein escaping from ruminal digestion. Similar observation were reported by Surber and Bowman (1998), El-Ashry *et al.* (2001), Marghany *et al.* (2005) and Mohi-Eldin *et al.* (2008).

Growth performance and feed efficiency:

Data of body weight and daily gain of buffalo calves fed a probiotic (TM) are presented in Table (3). Probiotic supplementation led to significant increase in final body weight and average daily weight gain. Calves of T_3 recorded significantly (P<0.05) the highest final body weight improvement followed by those of T_2, while calves of the control group (T_1) had the lowest values. These results may be attributed to the fact that TM supplementation increased microbial count in the rumen, which led to improvement of nutrients digestion and subsequently nutritive values (Table, 2). It may also be due to increasing DM, TDN and DCP intake by TM supplementation (Table, 2). Similar results were obtained by Abo-Donia *et al.* (2003), El-Basiony *et al.* (2003) and Gaffar et al. (2005). They stated that probiotic had useful effects, including improved body weight gain of Friesian calves. Improvement of growth rate caused by adding probiotic may be due to its effect on rumen microbial activity and organic matter digestibility (Table, 2) [El-Ashry *et al.*, 2003]. Furthermore, growth promoters activity may be related to increased propionate formation which provides more energy to the animal and has protein sparing effect (Leng *et al.*, 1967). Or, it may be due to the ability of propionate to stimulate body protein synthesis (Potter *et al.*, 1968).

Table (3): Growth performance and feed conversion of growing buffalo calves fed the experimental rations.

Item	Treatments		
	T_1	T_2	T_3
Growth performance:			
Initial weight (kg)	$095.80^a \pm 1.63$	$095.50^a \pm 1.70$	$096.30^a \pm 1.58$
Final weight (Kg)	$207.58^b \pm 4.15$	$230.50^a \pm 2.83$	$235.44^a \pm 4.11$
Total gain (Kg)	$111.78^b \pm 5.22$	$135.00^a \pm 7.31$	$139.14^a \pm 3.14$
Weight gain improvement (%)*	100.00	120.77	124.47
Average daily gain(%)	$621.00^b \pm 18.0$	$750.00^a \pm 22.0$	$773.00^a \pm 31.0$
Feed conversion (Kg/Kg gain):			
DM	$6.81^a \pm 0.31$	$6.05^b \pm 0.31$	$6.14^b \pm 0.31$
TDN	$4.31^a \pm 0.24$	$3.95^b \pm 0.24$	$4.01^b \pm 0.24$
DCP	$0.50^a \pm 0.13$	$0.48^a \pm 0.13$	$0.48^a \pm 0.13$

a and b: Means in the same row with different superscripts are significantly (P<0.05) different.
**Assuming that weight gain of the control equals 100.*

Mean ambient temperature during day was 33.8±1.27 °C and ranged from 25 to 39°C, and mean relative humidity was 50±4.77 % and ranged from 30 to 78%.

In the present study, values for average daily gain of supplemented buffalo calves groups are higher than those reported by Baraghit *et al.* (1999) which averaged 700 g/h/d. However, they were lower than those reported by some investigators in Egypt when buffalo calves were fed probiotics supplemented rations, being 1.054 g/h/d (Abo-Donia *et al.*, 2003) and 969 g/h/d (El-Basiony *et al.*, 2003). These differences in ADG reported by different investigators may be due to different planes of nutrition used.

Generally, the improvement of digestibility coefficients of calves fed supplemented diets led to an increase in the feeding values as TDN and DCP (Table, 2), which were reflected on faster growth and higher gain of calves in the supplemented group (Al-Dabeeb and Ahmed, 2002).

The efficiency of feed utilization calculated as either DM, TDN or DCP consumed per the amount of live body gain are presented in Table (3). Results showed that TM supplementation improved feed efficiency, since the amounts of DM, TDN and DCP required to produce 1 Kg gain for groups supplemented with TM (T_2 and T_3) were significantly (P<0.05) lower than the control group (T_1). This may be due to the positive response of rumen fermentation to the used additive. Bohnand and Srour (1995) recorded an increase in growth rate and utilization of feed when animals were fed ration supplemented with probiotic. They attributed that to the increased digestion, retention of ıe nutrients or a result of the improvement in the balance of intestinal microflora. loreover, reduction in incidence of digestive disorders in young calves was recorded by :opency *et al.* (1989). These results are in accordance with those obtained by Brashears *et* :*l.* (2003) who reported that gain/feed ratios tended to be better for animals receiving the ırobiotics than for control animals. Also, El-Ashry *et al.* (2004) and Gaafar *et al.* (2005) ,tated that the probiotic had useful effects, including improving feed efficiency of newborn :alves.

Rectal temperature and some blood serum parameters:

Calves fed rations supplemented with TM (T_2 and T_3) had significantly ($P<0.05$) lower rectal temperatures (RT) compared to those fed the control ration (T_1) as shown in Table (4). This may be attributed to probiotics, which could reduce heat stress effect on treated buffalo calves, since mean ambient temperature during the experiment was 33.8±1.27 °C during day and 20.8±0.49°C during night. These results are in harmony with findings of Gomez-Alarcon *et al.* (1988) using cattle and Yousef *et al.* (1996) using buffaloes. They found that feeding rations supplemented with a*spergillus oryzae* or Yeast culture reduced heat stress effect as shown by a decline in RT of these animals under hot summer conditions. These results are also agreement with the findings of Habeeb *et al.* (1995) and Saleh *et al.* (2005).

Table (4): Rectal temperature and some blood serum parameters of growing buffalo calves fed the experimental rations.

Item	Treatments		
	T_1	T_2	T_3
Rectal temperature (°C)	38.6^a±0.17	38.3^b±0.11	38.2^b±0.13
Blood serum parameters:			
Total protein (g/dl)	6.37^b±0.48	6.65^a±0.32	6.67^a±.0.38
Albumin (g/dl)	3.75^b±0.21	3.98^a±0.18	3.99^a±0.24
Globulin (g/dl)	2.62^a±0.25	2.67^a±0.28	2.68^a±0.19
A/G ratio	1.43^a±0.20	1.49^a±0.17	1.48^a±0.16
Urea (mg/dl)	35.4^a±1.75	31.6^b±1.41	32.3^b±2.02
Creatinine (mg/dl)	1.49^a±0.05	1.31^b±0.08	1.34^b±0.11
GOT (U/I)	33.7^a±0.29	31.4^b±0.67	31.8^b±1.17
GPT (U/I)	24.4^a±1.12	21.7^b±1.19	21.2^b±1.14

a and b: Means in the same row with different superscripts are significantly (P<0.05) different.

Serum total protein and its fractions are considered indicies reflecting health and performance of an animal (O'Kelly, 1973). Blood serum parameters, as affected by TM supplemented rations of buffalo calves, are shown in Table (4). Results obtained revealed that total protein and albumin (A) in blood serum of calves of T_2 and T_3 were significantly ($P<0.05$) higher than those for T_1 (control). The present results could be related to the beneficial effect of TM supplementation on increasing protein digestibility (Table, 2) and through increasing microbial protein synthesis. These results agree with those of Abdel-Samee *et al.* (1996) and Ibrahim *et al.* (2005) on Friesian calves. They found significant increases in both serum total protein and albumin concentrations for the probiotic supplemented group as compared with the control. However, there were no significant differences in globulin (G) concentration and A/G ratio in blood serum in all treatments. El-Maghawry *et al.* (1993) observed that serum globulin was not affected by probiotic supplementation. Also, Ibrahim *et al.* (2005) and Khattab *et al.* (2009) and (1997) found similar results when probiotic was added to buffalo calves diets.

In contrast, supplementation with TM decreased ($P<0.05$) urea and creatinine concentrations in the blood of buffalo calves. The present results are in agreement with those reported by many investigators: Ibrahim *et al.* (1997), Abdel-Khalek *et al.* (2000), Ragheb *et al.* (2003) and Mohi-Eldin *et al.* (2008) on Friesian calves and El-Ashry *et al.* (2002) on Egyptian buffalo calves.

Supplementation of probiotic (Lacto-Sacc) did not affect activity of GOT and GPT in the serum of calves during the suckling period (Abdel-Khalek *et al.*, 2000). The current study showed that activity of both GOT and GPT was significantly ($P<0.05$) decreased with supplemented TM compared with that of the control. These results are similar to the values reported on Egyptian buffalo calves fed a Lacto-Sacc diet (El-Ashry *et al.*, 2002). Such a trend reflects the normal physiological status and normal liver function of TM treated calves (Streov and Makarova, 1989).

The present results agree with those reported by Abo El-Nor and Kholif (1998) who reported an increase in total protein and globulin concentrations with a decrease in both GOT and GPT activities in the serum of buffaloes due to probiotic supplementation.

Generally, the present values of blood serum constituents are within the normal range reported by Metwally *et al.* (1999) on growing Friesian calves and El-Ashry *et al.* (2001) on growing buffalo calves. The present results of calves fed TM rations as compared to the control calves may indicate the beneficial effects of TM by improving protein, fat and carbohydrate metabolism without any adverse effects either on kidney or liver function of TM supplemented calves.

Table (5): Economic efficiency of feeding growing buffalo calves on the experimental rations.

Item	Treatments		
	T_1	T_2	T_3
Average daily gain (Kg)	0.621	0.750	0.773
Average daily feed cost (L.E.)	2.650	3.170	3.830
Price of average gain (L.E.)	6.520	7.870	8.110
Return (L.E.)	3.87	4.700	4.280
Cost of each Kg gain (L.E.)	4.267	4.226	4.955
Economic efficiency	246.1	248.4	211.9

Price of CFM and rice straw was 840 and 65 L.E./ton, respectively.
Price of Tri-MicC was 80 L.E./Kg.
Price of gain was 10.50 L.E./Kg.

$$\text{Economic efficiency} = \frac{\text{Price of 1Kg gain}}{\text{Cost of 1 Kg gain}} \times 100$$

Economic efficiency:

Results of the economics of feeding calves on the TM supplemented rations as compared to the control rations (Table, 5) revealed that the average daily feed cost of supplemented groups increased by about 19.62% and 44.52% for T_2 and T_3, respectively above that of the control group (T_1). This was mainly attributed to higher feed intake in the supplemented groups (Table, 2) than in the control calves and the expensive price of the supplemented rations, while the return of feeding TM rations were 4.7 and 4.28 LE for T_2 and T_3 respectively, as compared to 3.87 LE in the control group. In general the economic efficiency of feeding TM rations were 248.4% and 211.9% for T_2 and T_3 respectively, as compared to 246.1% in the control group (Table, 5) Our results are in agreement with Mohi-Eldin *et al.* (2008) and El-Mahdy et al. (2009) who showed the best economical was achieved by Friesian calves fed Pro-Bio-Fair supplemented ration.

CONCLUSION

On the basis of the foregoing results, feeding growing Egyptian buffalo calves on rations supplemented with TM (specially, 7.5 g/h/d) has beneficial effects on growth performance, digestibility coefficients, blood parameters of growing buffalo calves. In the other hand, cost of the Kg of gain produced at a very similar value (4,267 versus 4,226 LE) between treatment and control. So, it could be concluded that feeding calves could be received the TM supplemented rations less than 7.5 g/h/d.

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تأثير تغذية العلائق المدعمة بالتراى ميك (كائنات حية + فيتامينات) على الهضم وكفاءة النمو فى العجول الجاموسى النامية

محمود محمد خورشيد وعصمت بكرى عبد الله

قسم الإنتاج الحيوانى – كلية الزراعة- جامعة عين شمس – القاهرة – مصر.

استخدم فى هذه الدراسة عدد ١٥ عجل جاموسى نامى قسمت لثلاث مجموعات كل منها احتوت على عدد ٥ عجول لدراسة تأثير إضافة منشط النمو تراى ميك على معاملات الهضم والنمو وبعض خصائص سيرم الدم. تم تغذية العجول فى مجموعة المقارنة (T_1) على العليقة الأساسية (مخلوط علف مركز وقش الأرز) بدون أى إضافة بينما غذيت المجموعة الثانية (T_2) على العليقة الأساسية مضاف لها ٧,٥ جم تراى ميك/رأس/يوم والمجموعة الثالثة (T_3) غذيت على العليقة الأساسية مضاف لها ١٥ جم منشط تراى ميك/رأس/يوم. وخلال الفترة التجريبية (٦ شهور) تم تسجيل وزن الجسم والغذاء المأكول دورياً وحساب الزيادة الكلية واليومية فى الوزن وكذلك الكفاءة الغذائية والكفاءة الاقتصادية فى نهاية التجربة لكل مجموعة. كما تم جمع عينات دم من كل العجول عند نهاية الفترة التجريبية.

وأظهرت النتائج زيادة معنوية للمأكول فى صورة مادة جافة ومجموع المركبات الغذائية الكلية المهضومة والبروتين الخام المهضوم بالنسبة للعلائق المضاف لها المنشط (المجموعات الثانية والثالثة) عنها بالنسبة لمجموعة المقارنة (المجموعة الأولى). كما حدث تحسن معنوى فى معاملات هضم كل من المادة الجافة، المادة العضوية، البروتين الخام، الألياف الخام والدهن الخام وكذلك القيمة الغذائية فى صورة مجموع المركبات الغذائية الكلية المهضومة والبروتين الخام المهضوم بالنسبة للمجموعات المضاف لها المنشط (المجموعات الثانية والثالثة) مقارنة بالمجموعة المقارنة (الأولى) بينما لم يوجد فرق معنوى بين المجموعات بالنسبة لمعامل هضم الكربوهيدرات الخالية من الأزوت. وظهرت زيادة معنوية فى كل من الوزن الحى ومعدل النمو اليومى ومتوسط النمو الكلى للعجول المغذاة على علائق مضاف لها المنشط عنها فى المجموعة المقارنة (المجموعة الأولى) كما ظهر ارتفاع معنوى فى مستوى البروتين الكلى والألبيومين وانخفاض مستوى اليوريا والكرياتينين ونشاط إنزيمات الكبد GOT و GPT فى سيرم دم العجول النامية المضاف لعلائقها المنشط عنها فى المجموعة المقارنة بينما لم يتغير معنوياً مستوى كل من الجلوبيولين والنسبة بين الألبيومين والجلوبيولين بين المجموعات. كما حدث تحسن فى الكفاءة الغذائية للعجول المغذاة على علائق مضاف لها المنشط عنها فى المجموعة المقارنة خلال فترة التجربة. بينما تحسنت الكفاءة الاقتصادية والعائد للعجول المغذاة على علائق مضاف لها المنشط (T2) عنها فى المجموعة المقارنة(T1) بشكل غير معنوى.

مما سبق يوصى بدراسة اضافة منشط النمو تراى ميك (كأحد منشطات النمو الطبيعية) لعلائق العجول الجاموسى النامية بمعدل أقل من ٧,٥ جم / رأس / يوم و رصد مدى تأثيرذلك على معدل النمو والكفاءة الغذائية والعائد الاقتصادى.