EFFECT OF RUCHAMAX ON THE BIOCHEMICAL PARAMETERS OF RUMEN LIQUOR IN EWES

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ABSTRACT

The present study was conducted to explain the efficacy of Ruchamax on rumen biochemical parameters in sheep. A total twenty healthy ewes were selected randomly, then divided into two groups . The first group consider as control while the second group was treated with Ruchamax 1.5 kg per ton of feed for 45 days. The physical examination of the rumen liquor was done weekly at zero , 7 , 14 ,21 , 28, 35 , and 42 days , while rumen liquor biochemical parameters were done at zero , 15, 30, and 45^{th} days after treatment . It was observed that supplementation of Ruchamax significantly improved rumen liquor profile, physical properties and biochemical parameters of rumen liquor.

In a concluded that can use ruchmax to improve rumen ecosystem safely for 45 days in sheep.

INTRODUCTION

The rumen is an open, self contained ecosystem in which feed consumed by the ruminant is fermented to volatile fatty acids and microbial biomass that serve the animal as source of energy and protein (1) . The rumen has an important role and function in preparing fermentation end products for biosynthetic process in ruminants (2) . It is therefore essential that the rumen is healthy and be able to establish an optimum ecology in order to perform well in regards to rumen microorganisms , pH , substrates , fermentation end products and microbial synthesis of volatile fatty acids (3). Rumen function modulator optimizes the population and activity of ruminal microflora and facilitate maintenance of normal rumino – reticular and intestinal movement for proper maceration as well as the mixing and passage of ingesta and normal expulsion of gases (4) .

Ruchamax is a potent herbal formulation , which contain 28 different herbs and some minerals . It is used as an appetizer , restorative , carminative , stomachic , and tonic (5&6) . It is also facilitate optimal absorption and utilization of nutrients and thus improves feed conversion ratio , productivity and weight gain (4).

MATERIALS AND METHODS

Total of twenty healthy ewes (aged 1.5- 2.5 year)were selected randomly and divided into two groups. The first group served as control while the second group received Ruchamax (Dabur-India) 1.5 kg per ton of feed for 45 days. The physical examination of the rumen liquor was done weekly at zero , 7 , 14 ,21 , 28, 35 , and 45 days , while rumen liquor biochemical parameters were done at zero , 15, 30, and 45 days post treatment . Physical examination of rumen liquor was done by the method described by (7). Biochemical examination of rumen liquor includes pH, total titrible acidity; total volatile fatty acids and lactic acid were done according to (7). The scientific data collected during the experiment was analyzed statistically according to method described by (8).

RESULTS

The physical examination of rumen liquor profile includes color, consistency, and odor of the rumen fluid. The color, consistency and odor in control and treated groups on zero day was greenish–brown with watery consistency, slightly viscous and odor was slightly ammoniac , which changed in treated group to greenish–brown with viscous consistency and aromatic odor from 14^{th} day and remain up to 45^{th} day post treatment .

The results of rumen liquor pH of both groups illustrated in table (1) . There was no significant differences in pH of rumen liquor between treated and control groups at zero and 15^{th} days post treatment (7.02 ± 0.7 Vs 7.01 ± 0.65) and (7.03 ± 0.63 Vs 7.02 ± 0.5) respectively ($P > 0.05$) . There is significant decrease ($P < 0.05$) in rumen liquor pH in treated group at 30^{th} day post treatment (6.6 ± 0.4 Vs 7.01 ± 0.42) for treated and control groups respectively . The same result was reported in the 45^{th} day post treatment (6.5 ± 0.43 Vs 7.02 ± 0.3) .

The results of rumen liquor total titrable acidity in both groups were illustrated in table (2) . There were no significant differences ($P > 0.05$) the mean of rumen liquor TTA between control and treated groups at zero and 15^{th} post treatment (9.32 ±

0.9 Vs 9.33 ± 0.8) and (9.43 ± 0.42 Vs 9.65 ± 0.4) for control and treated groups at zero and 15th day post treatment respectively . There was significant increase (P < 0.05) in the rumen liquor TTA in the treated group compared with control group at 30th day post treatment (10.45 ±0.3 Vs 9.35 ± 0.34) for treated and control groups respectively . The similar result was obtained at 45th day post treatment (10.86 ± 0.8 Vs 9.31 ± 0.5) for treated and control groups respectively.

The mean values of rumen liquor lactic acid in both groups were illustrated in table (3). There were no significant differences (P > 0.0 5) the mean of lactic acid concentration in rumen liquor between treated and control groups at zero day (4.63 ± 0.5 Vs 4.62 ± 0.61) and 15th day post treatment (4.81 ± 0.42 Vs 4.61 ± 0.54) for treated and control groups respectively . At 30th day post treatment , the mean of lactic acid concentration in rumen liquor was increased significantly (P <0.05) in treated group compared with control group (6.63 ± 0.51 Vs 4.63 ± 0.4) and similar observation was reported at 45th day post treatment (7.32 ± 0.32 Vs 4.65 ±0.32) for treated and control groups respectively.

The means values of rumen liquor of total volatile fatty acids in both groups was illustrated in table (4) . At zero and 15th days post treatment there were no significant differences (P > 0.05) in the mean of rumen liquor volatile fatty acids between treated and control groups (6.11 ± 0.34 Vs 6.1 ± 0.34) and (6.14 ± 0.34 Vs 6.12 ± 0.42) for treated and control group respectively. At 30th day post treatment there is significant increasing (P < 0.05) in rumen liquor volatile fatty acids in treated group compared with control group (7.22 ± 0.45 Vs 6.21 ± 0.52) respectively and the similar result was observed at 45th day post treatment (8.34 ± 0.52 Vs 6.22 ± 0.51) for treated and control groups respectively .

Table (1): Mean values of rumen liquor pH in treated and control groups pre and post treatment.

	Control group	**Treated group**	**P value**
Zero day	7.02 ± 0.7	7.01± 0.65	P > 0.05
15th day	7.03 ± 0.63	7.02 ± 0.5	P > 0.05
30th day	7.01± 0.42	6.6± 0.4	P < 0.05
45th day	7.02 ± 0.3	6.5 ± 0.43	P < 0.05

Table (2): Mean values of rumen liquor total titrable acidity (mg \ dL) in treated and control groups pre and post treatment .

	Control group	Treated group	P value
Zero day	9.32 ± 0.9	9.33± 0.8	P > 0.05
15th day	9.43 ± 0.42	9.65 ± 0.4	P > 0.05
30th day	9.35± 0.34	10.45± 0.3	P <0.05
45th day	9.31 ± 0.5	10.86 ± 0.8	P < 0.05

Table (3): Mean values of rumen liquor lactic acid (mg \ dL) in treated and control groups pre and post treatment .

	Control group	Treated group	P value
Zero day	4.62 ± 0.61	4.63 ± 0.51	P > 0.05
15th day	4.61 ± 0.54	4.81 ± 0.42	P > 0.05
30th day	4.63± 0.41	6.63± 0.51	P < 0.05
45th day	4.65 ± 0.32	7.23± 0.32	P < 0.05

Table (4): Mean values of rumen liquor total volatile acid (mg \ dL) in treated and control groups pre and post treatment .

	Control group	Treated group	P value
Zero day	6.1 ± 0.34	6.11 ± 0.32	P > 0.05
15th day	6.12 ± 0.42	6.14± 0.34	P > 0.05
30th day	6.21± 0.52	7.22± 0.45	P < 0.05
45th day	6.22 ± 0.5	8.34± 0.52	P < 0.05

DESCUTION

The normal healthy animals rumen liquor was brown in color , viscous in consistency and aromatic in odor (9 & 10) . Ruchamax play an important role to restore normal color , consistency and odor of rumen liquor (11, 12 and 13) .

Ruchamax helped in normal restoration of ruminal pH (14 ,15 & 16) which indicate the effect of treatment . The decrease in ruminal liquor pH may be due to the increase lactic acid fermenting bacteria that cause increase in the production lactic acid in rumen and regeneration of normal ruminal microflora by Ruchamax (13 &17).

Total titrable acidity (TTA) in treated group observed to be increased on 15th days suggesting the stomachic activity of Ruchamax that stimulate the population of propionate producing organisms which enhance the TTA of rumen (13) .

The post treatment values of rumen liquor lactic acid in treated group was significantly higher than those of control group. Administration of polyherbal digestive tonics, stomachic and rumen function modulator formulations may have accelerated the starch fermentation by modulating the amylolytic bacteria that lead to increase the lactic acid in rumen as a result there is increase of TTA and TVFA concentration was also evident. The result of this study was in agreement with those reported (9 & 12) in goats and (4 & 13) in calves.

The total volatile fatty acids concentration of rumen liquor range between 6.11±0.32 – 8.34±0.5212 mg/ dL which also described within normal concentration by (5) . TVFA values in treated group was found to be significantly higher than untreated control group ($p \leq 0.05$) indicating the efficacy of Ruchamax to improve the rate of digestion . The level of volatile fatty acids in case of indigestion remain significantly low might be due to suppression of microbial fermentation in rumen . Similar result reported by (1 , 10 & 14) in calves. Overall observation in this study indicated that , Ruchamax play an important role in improving the physiological and biochemical parameters of rumen liquor in sheep.

تأثير الراتشماكس على المعايير البايوكيميائية لسائل الكرش في النعاج

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الخلاصة

اجريت الدراسة الحالية لتوضيح تاثير الراتشماكس على بايوكيميائية الكرش في الاغنام ، حيث اختير عشوائيا 20 نعجة وقسمت الى مجموعتين : الاولى اعتبرت مجموعة سيطرة والمجموعة الثانية عولجت بـ 1,5 كياوغرام من الراتشماكس لكل طن من العلف لمدة 45 يوما . واجري الاختبار الفيزياوي لسوائل الكرش اسبوعيا اعتبارا من يوم صفر و 7 و 14 و 21 و 28 و 35 و 42 , بينما اجريت معايير سوائل الكرش البايوكيميائية كل 15 يوما اعتبارا من يوم الصفر قبل العلاج و 15 و 30 و 45 يوما بعد العلاج ولوحظ ان تزويد العليقة بالراتشماكس قد حسن معنويا من مظهر سوائل الكرش والخواص الفيزياوية والمعايير البايوكيميائية لسائل الكرش.

يستنتج من ذلك بان يمكن استخدام الراتشماكس لتحسين البيئة الداخلية لكرش الاغنام لمدة 45 يوما

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