



ISSN (E): 2277-7695

ISSN (P): 2349-8242

NAAS Rating: 5.23

TPI 2023; SP-12(8): 27-30

© 2023 TPI

[www.thepharmajournal.com](http://www.thepharmajournal.com)

Received: 26-06-2023

Accepted: 29-07-2023

**Anupam Kumar Azad**

Ph.D. Scholar, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**Sanjay Kumar**

Professor, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**RK Sharma**

Professor, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**SK Singh**

Professor, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**Anshu Rahal**

Professor, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**Shashikant**

Ph.D. Scholar, Department of Animal Genetics and Breeding, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture &amp; Technology, Pantnagar, Uttarakhand, India

**Ankit Sharma**

Ph.D. Scholar, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**Diksha Bharti**

Ph.D. Scholar, Department of Microbiology, College of Basic sciences &amp; Humanities, G B Pant University of Agriculture &amp; Technology, Pantnagar, Uttarakhand, India

**Jyoti Srivastva**

Ph.D. Scholar, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

**Corresponding Author:****Anupam Kumar Azad**

Ph.D. Scholar, Department of Livestock Production Management, College of Veterinary and Animal, Sciences, G B Pant University of Agriculture, Technology, Pantnagar, Uttarakhand, India

## Effect of herbals on growth performance of Pantja goats

**Anupam Kumar Azad, Sanjay Kumar, RK Sharma, SK Singh, Anshu Rahal, Shashikant, Ankit Sharma, Diksha Bharti and Jyoti Srivastva**

### Abstract

In an attempt to assess the effect of Moringa (*Moringa oleifera*), Giloy (*Tinospora cordifolia*) and Fenugreek (*Trigonella foenum – graecum*) in combination on growth performance, an experiment was conducted for 120 days on 16 Pantja goat kids which were divided into four groups with four kids in each group in a randomized block design. The kids of T1 group (control) were provided only basal diet (grazing + *ad lib.* fodder + 200 g concentrate per kids per day) while kids of all other treatment groups were provided basal diet with herbal supplementation i.e., 12.5 percent moringa leaf powder + 12.5 percent fenugreek seed powder in group T2, 12.5 percent moringa leaf powder + 12.5 percent Giloy stem powder in group T3, and 12.5 percent Giloy stem powder + 12.5 percent Fenugreek seed powder in group T4. At the end of experiment, the highest growth was recorded in kids of group T3 among all treatment groups. The results obtained revealed that ADG was significantly improved ( $p < 0.05$ ) in T4 treatment groups during 30 days where as ADG was highly in T3 treatment groups during 120 days during growth trail. It can be concluded that, incorporation of 12.5 percent moringa + 12.5 percent Giloy stem powder along with 12.5 percent fenugreek leaves powder can be used as a part of strategy to be adopted to improve growth performance of kids in Tarai region of Uttarakhand.

**Keywords:** Daily gain, fenugreek, giloy, growth, moringa

### Introduction

Goat farming for meat is important for the agro economy in India, and other India subcontinents since almost everyone in India prefers goat meat and milk over all other animal products. According to the 20th livestock census, there are 148.8 million goats worldwide, an increase of around 10.1% over the previous livestock census (DAHD, GOI, 2019). Rajasthan has the highest goat population in the world, while India is rated second. They are a kind of goat that is indigenous to Tarai region of Uttarakhand in India and is used for both milk and meat. A recently recognised medium-sized goat breed is called Pantja.

A member of the Leguminosae family, fenugreek (*Trigonella foenum graecum*) is mostly grown in India. According to Yadav and Baquer (2014) [32], it is the most widely used herbal galactagogue in both people and animals. Fenugreek seeds have anti-diabetic, carminative, and antioxidant effects in addition to decreasing plasma cholesterol and triglyceride levels, promoting digestion, treating liver problems, and other health benefits..

The Menispermaceae family includes the big deciduous climbing shrub known as giloy (*Tinospora cordifolia*). It is also referred to as "Guduchi" and "Amrit" and is a highly revered plant in Ayurvedic medicine. By reducing the raised body temperature and alleviating the thrombocytopenis state, it is used to treat dengue fever in ethnoveterinary medicine. With its lactogenic qualities and other health advantages, giloy has been cited as a crucial plant in the Indian medical system (Prajwala *et al.* 2019) [27].

*Moringa oleifera* is a member of the Moringaceae family and is indigenous to the Indian subcontinent. Omega-3 and omega-6 fatty acids, palmitic acid, glycosides, saponins, stearic acid, gum, and significant vitamins like vitamin A, B1, B2, and C all contribute to the high nutritional value of moringa. Additionally, it contains lot of protein and variety of minerals, including calcium, iron, phosphorus, and magnesium (Kasolo *et al.*, 2010) [21]. Keeping the aforesaid facts in view, the present investigation was planned to study the effect of Moringa (*Moringa oleifera*) Giloy (*Tinospora cordifolia*) and fenugreek (*Trigonella foenum-graecum*) combination on growth performance of pantja goat kids under tarai region of Uttarakhand.

## Materials and Methods

The present experiment was conducted at the Sheep and Goat production unit of the Department of Livestock Production Management, G. B. Pant University of Agriculture and Technology, Pantnagar, which is located in Uttarakhand at a latitude of 29 degree North and longitude of 79.30-degree East, at an elevation of 243.84 meters above mean sea level. Pantnagar climate is extremely hot and humid. Summer brings scorching heat, with temperatures ranging from 29 to 42 degree Celsius. The south west monsoon often begins in the third week of June and continues until the end of September, peaking in July. The average rainfall is roughly 1400 mm, with 80 to 90% of that falling between June and September. The winters are brutally chilly. The average temperature in the winter are between 0 to 8 °C.

Sixteen growing Pantja goat kids (1-3 months old) were divided into four groups T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, and T<sub>4</sub> having kids four in each group on body weight basis. The kid of T<sub>1</sub> group were provided only basal diet (grazing for a period of 8 hours + *ad lib.* fodder + 200 g concentrate per kid per day) and were kept as control group. The kids of T<sub>2</sub> group were provided basal diet supplemented with 12.5 percent moringa leaf powder + 12.5 percent fenugreek seed powder. The kids of T<sub>3</sub> group were provided basal diet supplemented with 12.5 moringa leaf powder + 12.5 percent Giloy stem powder. The kids of T<sub>4</sub> group were provided basal diet supplemented with 12.5 percent Giloy stem powder + 12.5 percent fenugreek seed powder. Individual body weight of all the kids were recorded by digital balance on the first day of the experiment and thereafter, regularly at fortnight interval up to the end of the experiment. The fortnightly body weight gain was calculated by difference between weight recorded during the present and previous fortnightly. The data obtained in the study was analyzed in one-way ANOVA using SPSS 2.0 statistical analysis software.

## Results and Discussion

### Growth performance in Pantja goat kids

The present study was conducted on growth performance in Pantja goat kids which is presented in table 1. All groups exhibited similar trend of fortnightly increase in average live body weight throughout the experimental period which

revealed linear growth in control and experimental groups. In present study growth performance showed non-significant effect from experiment start days to 75 days and 105 days. Whereas, significant effect ( $p < 0.05$ ) was reported at 90 days as well as highly-significant effect ( $p < 0.01$ ) at 120 days of experiment. In reference to 90 days, compared to control group T<sub>2</sub> and T<sub>3</sub> groups had more significant body growth of Pantja goat kids. In addition, at 120 days of experiment more significant growth of body weight was also listed in T<sub>2</sub> and T<sub>3</sub> groups from other groups of Pantja goat kids. In both treatment group T<sub>2</sub> and T<sub>3</sub>, have a common supplement was Moringa leaves powder. So, in present study high growth performance due to moringa leaves powder effect as compare to other supplement. In moringa leaves lysine enzyme presence aids in calcium absorption as well as antibody synthesis. In addition, tryptophane and valine improve the muscular coordination. Fenugreek improve rumen activity and nutrient digestibility which help in improving early age body growth (El-Saadany *et al.*, 1996) [15] and Giloy (*Tinospora cordifolia*) used as medicine for digestive problems such as hyperacidity, colitis, worm infestation, and loss of appetite.

The results obtained in present study agree with results of Melesse (2015) [23], Oyedele *et al.* (2016) [25], Damor *et al.* (2017) [12], Padma *et al.* (2018) [26], and Choudhary *et al.* (2018) [11], who reported that feeding of Moringa leaves powder significantly increased body weight in goat kids. In Addition, Abbas *et al.* (2012) [1], Saleh (2004) [30], Hassan *et al.* (2012) [16], Al-Rawi and Salh (2014) [6], and Salama *et al.* (2015) [29] found that the growth performance (body weight) significantly affected on the feeding of fenugreek seeds supplementation in different ratio. Whereas, similar result for supplementation of Giloy (*Tinospora cordifolia*) also has been presented by Ahmed (2009) [3], Deka (2009) [13], Jibrin *et al.* (2018) [18], Karami (2010) [20]. Contradictory result has been recorded by Mahgoub *et al.*, (2005) [22], Jiwuba *et al.*, (2016) [19], and Ali, (2017) [4] on feeding of Moringa leaves powder as well as Sahin *et al.* (2003) [28], Al-Isawi (2012) [5], Dosky and Taher (2015) [14], and Anmar and Majeed (2017) [8] also studied effect of fenugreek seeds supplementation. and, Al-Wazeer (2017) [7] for supplementation of Giloy.

**Table 1:** Growth performance (Least-square mean) in Pantja goat kids.

Treatments/Days	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	P value
Zero days	6.02±0.92	6.22±1.06	6.12±0.81	6.25±1.00	0.998
15 days	6.33±0.93	6.54±0.96	6.88±0.95	6.74±1.08	0.981
30 days	7.02±0.54	8.16±0.87	8.53±1.20	8.38±2.27	0.575
45 days	7.89±0.74	9.37±1.59	9.30±1.12	9.04±2.39	0.438
60 days	8.80±0.39	10.62±0.57	10.94±0.65	10.56±0.97	0.165
75 days	9.95±0.37	11.82±0.66	11.80±0.64	11.38±0.80	0.186
90 days	10.74±0.48 <sup>a</sup>	13.20±0.70 <sup>b</sup>	13.24±0.38 <sup>b</sup>	12.23±0.60 <sup>ab</sup>	0.025
105 days	8.42±2.83	13.91±0.75	13.85±0.46	12.79±0.89	0.077
120 Days	12.36±0.24 <sup>a</sup>	14.84±0.75 <sup>b</sup>	15.11±0.41 <sup>b</sup>	13.94±0.54 <sup>ab</sup>	0.10

\* $p < 0.05$ ; \*\* $p < 0.01$

### Average daily gain (gm) of Pantja goat kids

In present study average daily gain of Pantja goat kids recorded on fortnightly basis has been presented in Table 2.

In present study average daily gain showed non-significant effect at 15 days and 45-75 days to and 105 days. Whereas, significant effect ( $p < 0.05$ ) was reported at 120 days as well as highly. Significant effect ( $p < 0.01$ ) at 30 days of experiment. In reference to 30 days, T<sub>4</sub> group had more significant average

daily gain as compare to T<sub>2</sub> groups of Pantja goat kids. In addition, at 120 days of experiment high significant difference ( $p < 0.01$ ) average daily gain also estimated in T<sub>3</sub> group as compare to T<sub>4</sub> group of Pantja goat kids. Similar result has been also reported by Melesse *et al.* (2015) [23], Damor *et al.* (2017) [12], and Padma *et al.* (2018) [26] on feeding of Moringa leaves powder. In addition, Abbas *et al.* (2012) [1], and Salama *et al.* (2015) [29] also found similar result with the feeding of

fenugreek seeds supplementation. Whereas, Attia-Ismail (2000), Sharma and Mamta (2007), and Naser (2014) have been reported with Giloy (*Tinospora cordifolia*) supplementation. However, perverse result has been reported

by Jiwuba *et al.*, (2016) [19] on feeding of Moringa leaves powder as well as Anmar and Majeed (2017) [8] for fenugreek seeds supplementation. And Abdoun *et al.*, (2014) [2] for supplementation of Giloy.

**Table 2:** Average daily gain (gm) of Pantja goat kids

Treatments/Days	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	P value
15 days	30.00±4.30	20.99±6.98	50.50±10.1	31.33±8.41	0.104
30 days	23.16±1.85 <sup>ab</sup>	41.74±11.8 <sup>b</sup>	62.49±11.64 <sup>ab</sup>	112.0±24.52 <sup>a</sup>	0.007
45 days	58.07±26.75	81.00±7.56	68.66±9.99	58.49±10.21	0.402
60 days	75.66±18.82	82.91±11.28	85.50±12.84	79.64±5.22	0.877
75 days	55.16±6.92	79.64±3.31	76.00±15.35	66.70±4.44	0.077
90 days	56.99±12.50 <sup>b</sup>	92.33±11.59 <sup>a</sup>	73.16±8.43 <sup>ab</sup>	95.66±6.34 <sup>a</sup>	0.061
105 days	63.46±13.18	72.42±14.09	41.66±5.53	44.66±5.50	0.151
120 Days	62.00±15.08 <sup>ab</sup>	61.95±3.41 <sup>ab</sup>	84.83±4.04 <sup>a</sup>	43.66±5.62 <sup>b</sup>	0.036

\*<0.05; \*\*<0.01

## Conclusion

Based on the results of the present study, it is concluded that feeding of Moringa oleifera leaves and fenugreek seeds mixture replacing concentrate feed improves body weights and average daily body weight gain in Pantja goat kids. It is recommended that replacing Moringa oleifera leaves and fenugreek seeds mixture at 25% (12.5% & 12.5%) (T<sub>2</sub>) with concentrate feed could be used as a cheap protein supplement for goat kids.

## Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Abbas SF, Abd MN, Allam FM, Daghash MWH. Effect of dietary fenugreek seeds on growth and carcass characteristics of Saidi lambs. *Egypt Journal of Nutrition Feeds*.2012;15(1):91-101.
- Abdoun K.A, Okab, AB, El-Waziry, AM, Samara, EM.Al. HAA. Dietary supplementation of seaweed (*Ulva lactuca*) to alleviate the impact of heat stress in growing lambs. *Pakistan Veterinary Journal*.2014;34(1):108-111.
- Ahmed MB, Effect of fenugreek (*Trigonella foenum-graecum*) seeds as feed additive on production performance of dairy goats.2009. Thesis submitted to the National Dairy Research Institute, Karnal (deemed university) for the degree of doctor of philosophy in dairying (Livestock Production and Management).
- Ali SB. Growth performance of goats fed Moringa oleifera leaf meal incorporated in concentrate mixture. MVSC thesis submitted to Maharashtra Animal and Fishery Sciences University, Nagpur, 2017.
- Al-Isawi AJO. Effect of addition fenugreek seeds and probiotic on some of body measurements and blood trails of Hamadani lambs. *Al Qadisiy J Vet. Med. Sci*. 2012;11(2):6-9.
- Al-Rawi EA, Salh MN. Effect of feeding some medical plants in the ration on productive of dairy and some blood parameters of Awassi ewes. *Dayala J Agric. Sci*. 2014;6(1):11-21.
- Al-Wazeer AAM. Effect of fenugreek seeds supplementation on growth performance, digestion coefficient, rumen fermentation and some blood metabolites of Awassi lambs. *Kufa Journal for Veterinary Medical Sciences*. 2017;8(1):8-18.
- Anmar A, Majeed Al-W. Effect of fenugreek seeds supplementation on growth performance, digestion coefficient, rumen fermentation and some blood metabolites of Awassi lambs. *Kufa Journal of Veterinary Medical Sciences*. 2017;8(1):8-18.
- Attia-Ismail SA. Effect of fenugreek seeds (*Trigonella foenum-graecum* L.) as feed additives on sheep performance in the North Western Coast of Egypt. *Proc. 3 rd All Africa Conference on Animal Agriculture and 11th Conference of the Egyptian Society of Animal Production*. 2000;6(9):275-279.
- Babekr EA, Bdalbagl YMA. Effect of feeding different levels of Moringa oleifera leaves on performance, hematological, biochemical and some physiological parameters of Sudan Nubian goats. *Online Journal of Animal and Feed Research*. 2015;5(2):50-61.
- Choudhary RK, Roy A, Roy PS, Singh KM, Kumar P. Effect of replacing concentrate mixture with Moringa leaves on performance of lactating Bengal goats in kishanganj district of Bihar, India. *International Journal of current Microbiology Applied Science*. 2018;7:2895-2900.
- Damor SV, Pawar MM, Ankuya KJ, Gami YM, Srivastava AK, Chauhan HD *et al*. Effect of feeding different levels of Moringa (*Moringa oleifera*) leaves on growth performance of Mehsana goat kids. *Trends in Biosciences*. 2017;10(18):3190-3193.
- Deka RS. Effect of probiotic bio bloom as a growth promoter in kids. *Indian Veterinary Journal*.2009; 86:1192-1193.
- Dosky KM, Taher AMS. The combined effect of black and fenugreek seed supplementation on growth performance and some blood biochemical attributes in Karadi lambs. *J Duhok Univ. Agri. and Vet. Sciences*, 2015;18(1):108- 114.
- El-Saadany SA, Abdel-mommin, M, Abo-ammou FF, Shehata E. Effect of using medicinal herbs as milk stimulant feed supplementation on ewes and lambs' performance Egypt. *J Applied Sci*. 1996;11:41-41.
- Hassan SAA, Shaddad SAI, Salih K, Muddither A, Kheder SIand Barsham MA. Effects of oral administration of *Trigonella foenum-graecum* L. (*Fenugreek seeds*) on galactagogue, body weight and hormonal levels in Sudanese desert sheep. *J. Pham. Biomed. Sci*. 2012;22:1-4.
- India. Department of Animal Husbandry, Dairying and Fisheries. Annual report, 2018-19, published by Ministry

- of Agriculture and Farmers Welfare, New Delhi, 2019, 218p.
18. Jibrin TA, Maigandi SA, Makinta AA, Husa H. Performance of Borno White goat fed graded levels of Alkali Treated Neem Kernel Cake (ATNKC) in a Semi-Arid Zone of Nigeria. *Nigerian Journal of Animal Science and Technology*. 2018;1(2):112-117.
  19. Jiwuba PDC, Ahamefule FO, Okechukwu OS, Ikwunze K. Feed intake, body weight changes and haematology of west African dwarf goats fed dietary levels of Moringa oleifera leaf meal. *Agricultural*. 2016;13(1, 2):71-77.
  20. Karami M, Alimon AR, Goh YM, Sazili AQ, Ivan M. Effects of dietary herbal antioxidants supplemented on feedlot growth performance and carcass composition of male goats. *American Journal of Animal and Veterinary Sciences*. 2010;5(1):33-39.
  21. Kasolo JN, Bimenya. GS, Ojok L, Ochieng J, Ogwal-Okeng JW. Phytochemicals and uses of Moringa oleifera leaves in Ugandan rural communities. *J Med, Plants Res.*, 2010;4(9):753-775.
  22. Mahgoub O, Lu CD, Hameed MS, Richie A, Al-Halhali AS, Annamalai K. Performance of sOmani goats fed diets containing various metabolizable energy densities. *Small Ruminant Research*. 2005;58(2):175-180.
  23. Melesse A, Meskel DH, Banerjee S, Abebe A, Sisay A. The effect of supplementing air-dried Moringa stenopetala leaf to natural grass hay on feed intake and growth performances of Arsi-Bale Goats. *Agriculture*. 2015;5:1183-1194.
  24. Naser A, Hamid P, Abdullah S. Kasim K. The effect of *Tinosporacrispa* (L) on performance, rectal Temperature, pulse and respiratory frequency of local sheep kept in different type of house. *Journal of Biology, Agriculture and Healthcare*. 2014;4(16):117-121
  25. Oyedele OJ, Asalou VO, Odeyinka SM. Nutrient digestibility and growth performance of west African dwarf (WAD) goats fed foliage combinations of Moringa oleifera and *Gliricidia sepium* with equal proportions of a low – cost concentrate. *Journal of Natural Sciences Research*. 2016;6:18
  26. Padma M, ML Gurjar, RK Nagda, MC Sharma, Lokesh Gautam Manju. Growth performance of sirohi goat kids fed different levels of Moringa oleifera leaves. *Journal of Entomology and Zoology Studies*,2018;6(4):786-791.
  27. Prajwala B, Raghu N, Gopenath TS, Basalingappa KM. Guduchi: its medicinal properties. *J. Plant. Physiol. Pathol*. 2019;7:3- 2.
  28. Sahin A, Keskin M, Bicer O. Response of lambs to the dietary inclusion of *Trigonella foenum-graecum* L. *J Anim. Vet. Adv*. 2003; 2:74-75
  29. Salama R, Fouda SM, El-Sysy MAI, Gomaa AS. Effect of adding fenugreek seeds to goat rations and age at weaning on the fattening performance and carcass characteristics of Baladi male kids. *Egypt. J. Nut. Feeds*, 2015;18(2):55-63.
  30. Saleh HM. Effect of supplementing Fenugreek seeds as galactagogue on performance of lactating ewes. *Egypt. J. Nutr. Feed*. 2004;7(2):155-165.
  31. Sharma P and Mamta. Comparative study of effect of probiotic and herbal supplementation on body weight gain and FCR in goat kids. *Veterinary Practitioner*. 2007;8(2):172-174.
  32. Yadav UC. Baquer NZ. Pharmacological effects of *Trigonella foenum-graecum* L. in health and disease. *Pharmacological. Biology*. 2014;52(2):243-254.