The Pharma Innovation Journal 2023; SP-12(11): 1238-1239

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(11): 1238-1239

www.thepharmajournal.com
Received: 13-08-2023
Accepted: 18-09-2023

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Assessment of feeding of Moringa leaves on growth performance of goat kids

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Abstract
The field assessment of feeding Moringa leaves was conducted in the Dhule district of Maharashtra State, to perceive the influence of Moringa leaves feeding on weight gain in goat kids. Goat kids were selected randomly from two villages of Dhule District, one is from Dhule Tahsil (Chaugaon) and the second one is from Sindkheda Tahasil (Tavkheda), respectively. 26 local goat kids were selected from similar age groups and divided into two groups of 13 animals in each village. First group treatment T_1 not fed Moringa leaf, which is farmers' practice i.e grazing in that particular area. Second group treatment T_2 fed Moringa leaves 12.5 parts of concentrate or 50 percent of concentrate feed with farmer practice for 90 days (3rd month to 6th Month). This assessment was conducted during the years 2021-22 and 2022-23, respectively. The total body weight increased percentage during the assessment period in treatment T_2 (8.62%) is slightly higher than the treatment T_1. In conclusion, it is sought to make the farmers supplement the Moringa leaves to goat kids in their feed to hasten the weight gain.

Keywords: Moringa leaf, goat, kid, weight etc.

Introduction
In Maharashtra, more than three-fourths of the agriculture is rain-fed. Moreover, uneven distribution of rainfall across various regions of the state and with erratic patterns, dairying is gaining importance as a source of livelihood for the small and marginal farmers of the state. According to the 20th census, Maharashtra state stands in 7th position (approx.33 million) in livestock population, among those 13.9 million livestock population belongs to the cattle group. Dhule is located in the northern side of Maharashtra state bounded by district Nandurbar in the North West, District Nashik in the south, and district Jalgaon in the East. Dhule district has a major contribution to the goat population which is near about 379602 which is higher as compared with the cattle, buffalo, sheep, etc. balanced nutrition is one of the important factors, but most of the farmer managing their livestock in particular goat on crop residue, tree leaves, etc. this is one of the reasons which affect the productivity of the animal. In Dhule district most raised livestock species is goat. Which is the most effective animal, and it is the ultimate to kick the bucket in times of dry season and starvation. Goats are versatile and flexible animals. They can survive on a wide extent of grasses and tree clears out. It is additionally for the most part known that goats beat other ruminants in terms of supplement utilization capability.
Moringa leaf meal contains from 17.9 to 26.8% crude protein (Sultana *et al*., 2015) [7], with about 47% of bypass protein and with adequate amino acid profile (Nouman *et al*., 2014) [5]. Recently, the focus has been given to the use of Moringa leaf meal as a protein source and feed component in animal production especially in goats (Sarwatt *et al*., 2002; Asaolu *et al*.,2012; Moyo *et al*., 2012; Sultana *et al*., 2015) [6, 2, 4, 7]. Accordingly, to overcome the nutrition balance in the animal diet we planned the addition of Moringa leaf in their diet as their importance in diet.

Materials and Methods
The field assessment of feeding Moringa leaves was conducted in the Dhule district of Maharashtra State, to perceive the influence of Moringa leaves feeding on weight gain in goat kids. Goat kids were selected randomly from two villages of Dhule District, one is from Dhule Tahsil (Chaugaon) and the second one is from Sindkheda Tahasil (Tavkheda), respectively. 26 local goat kids were selected from similar age groups and divided into two groups of 13 animals in each village. First group treatment T_1 not fed Moringa leaf, which is farmers' practice in that particular area i.e grazing. Second group treatment T_2 fed Moringa leaves 12.5

parts of concentrate or 50% of concentrate feed with farmer practice i.e. grazing up to 90 days (3rd Month to 6th Month). This assessment was conducted during the years 2021-22 and 2022-23, respectively. Fortnightly weight is measured during the assessment period of the experiment. Average daily weight gain can be calculated by taking the amount of weight an animal has gained since the last weight and dividing the weight by the number of days since that last weight. The average chemical composition of Moringa leaves is below.

Table 1: Chemical composition of Moringa leaves (on % DM basis) (The values are on moisture free basis)

Chemical composition %	Moringa leaves	
Dry Matter	77.4	85.61
Crude Protein	26.3	25.61
Crude Fiber	8.8	9.16
Ether Extract	5.7	5.7
Total Ash	14.10	10.23
Source:	DAMOR *et al.* 2017 [3]	Meena *et al.* 2023 [1]

Results and Discussion

The results of the assessment with relevant discussions have been presented as herewith. The assessment of feeding of Moringa leaves on weight gain of goat kids is presented in Table 2.

Table 2: Growth performance of goat kids during assessment period

Treatments	Initial body weight (Kg)	Final body weight (Kg)	Total body weight increased during Experiment (Kg)	Average Daily body weight gain (gm)
T_1	9.55	14.50	4.95	55
T_2	9.61	15.75	6.14	67.77

*Table values are mean of two year data.

It observed that in table values 2, the average initial weight of kids was 9.55 Kg in treatment T_1 and 9.61 kg in treatment T_2, respectively. Moreover, treatment T_2 (67.77 gm) saw a higher average daily weight gain than treatment T_1 (55 gm), respectively. The total body weight increased percentage during the assessment period in treatment T_2 (8.62%) is slightly higher than the treatment T_1. This finding was comparable with results obtained by Moyo *et al*. (2012) [4], and Demor *et al*. (2017) [3] who found that feeding Moringa leaves boosted body weight gain in goat kids.

Conclusion

In conclusion, it is looked-for to aware the farmers to supplement the Moringa leaves to goat kids in their feed to hasten the weight gain. Also, during the assessment of the feeding of Moringa leaves, there were no negative health effects when standard concentrate was replaced with dried Moringa leaves during the assessment period.

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