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## Effect of feeding spirulina (*Spirulina platensis*) on body weight of Konkan Kanyal kids

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### Abstract

An experimental trial was conducted to evaluate the effect of feeding spirulina (*Spirulina platensis*) on body weight of Konkan Kanyal kids. Sixteen Konkan Kanyal kids were selected and classified in four treatments by using Complete Randomized Design (CRD). Each treatment was subdivided into four replications. All the animals were fed with complete feed having mulato grass, jowar kadabi and concentrate mixture. In treatment T<sub>1</sub> no spirulina was supplemented while in treatment T<sub>2</sub> 1 g spirulina, in treatment T<sub>3</sub> 1.5 g spirulina and in treatment T<sub>4</sub>, 2 g spirulina was supplemented. The duration of experimental trial was 90 days. There was significant ( $p < 0.05$ ) increase in body weight in treatment T<sub>4</sub> which was supplemented with 2 g spirulina than T<sub>3</sub>, T<sub>2</sub> and T<sub>1</sub>, after 90 days of spirulina feeding. From present study it can be concluded that feeding of spirulina @ 2 gm improved body weight of Konkan Kanyal kids.

**Keywords:** Spirulina, Konkan Kanyal kids and body weight

### Introduction

In livestock farming, feed is a crucial element that has attracted particular focus to the animals in order to improve animal performance. Numerous studies have been done to determine how adding various feed enhancers can increase feed utilization. Antibiotics were frequently used in animal diets to promote growth. Due to the increased search for substitute feed additives, the use of antibiotics as a feed additive to increase the feed value is prohibited in many nations. A significant amount of the entire cost of producing goat is spent on feeding costs. The two main goals to raise the profitability of any goat farm are to lower the cost of feed and maximize the quality of animal products. Finding and utilizing new feed sources is essential for future viability and sustainable animal production. As a result, the new feed resource needs to be highly nutrient-dense and capable of optimizing the quality of animal products. Numerous feed additives have been utilized to increase animal performance and output, but they pose a health risk to the consumer. Spirulina (*Spirulina platensis*), one of these brand-new feed sources, is gaining popularity because to its excellent nutritional content. Spirulina contains all essential amino acids, vitamins and minerals. It is also a rich source of carotenoids and fatty acids, especially gamma linoleic acid (GLA) that infers health benefits (Howe et al., 2006) [2]. It is edible filamentous, spiral shaped cyanobacterium (Becker, 2007) [1]. According to numerous studies, Spirulina's active ingredients, which include its high protein content and antibacterial characteristics, have the potential to enhance animal performance.

### Methodology

A growth trial of 90 days was conducted on 16 Konkan Kanyal goat kids of same age and average body weight and divided in four groups of four kids in each treatment which were selected randomly from the goat unit of the Instructional Livestock Farm of Department of Animal Husbandry and Dairy Science, College of Agriculture, Dapoli, to conduct the experiment. The goats were randomly assigned to four treatments comprising of four replications and each replication has one animal per replicate. The animals were raised in individual compartment under confinement. The live body weight (kg) of all experimental kids was recorded at weekly intervals. The experimental design used was the Complete Randomized Design (CRD) with four goats per treatment.

### Treatment details

T<sub>1</sub> (control): Basal diet without Spirulina, T<sub>2</sub>: Basal diet + 1.0 g Spirulina in 10 ml of water, T<sub>3</sub>: Basal diet + 1.5 g Spirulina in 15 ml of water, T<sub>4</sub>: Basal diet + 2.0 g Spirulina in 20 ml of

water. Spirulina solution was given daily to kids before feeding. Spirulina was given by drenching with the help of 10 ml, 15 ml and 20 ml syringe to the kids

**Results and Discussion**

**Table 1:** Average weekly body weight in kids during experimental period (kg/week)

Week	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	8.410	8.510	8.592	8.687
2	8.591	8.722	9.002	9.137
3	8.790	9.052	9.282	9.467
4	8.980	9.270	9.597	9.820
5	9.283	9.560	9.862	10.095
6	9.585	9.905	10.217	10.362
7	9.787	10.182	10.572	10.702
8	10.085	10.420	10.970	11.057
9	10.395	10.795	11.212	11.345
10	10.665	11.142	11.467	11.645
11	10.892	11.166	11.702	12.047
12	11.097	11.431	11.920	12.340
13	11.272	11.660	12.150	12.722
14	11.430	11.815	12.310	12.897

**Table 2:** Average weekly body weight gain in kids during experimental period (kg/week)

Week	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	0.181	0.213	0.410	0.450
2	0.199	0.330	0.280	0.330
3	0.190	0.218	0.315	0.353
4	0.303	0.29	0.265	0.275
5	0.303	0.345	0.355	0.268
6	0.203	0.278	0.355	0.340
7	0.298	0.238	0.398	0.355
8	0.310	0.375	0.243	0.288
9	0.270	0.348	0.255	0.300
10	0.228	0.024	0.235	0.403
11	0.205	0.265	0.218	0.293
12	0.175	0.228	0.230	0.383
13	0.158	0.155	0.160	0.175

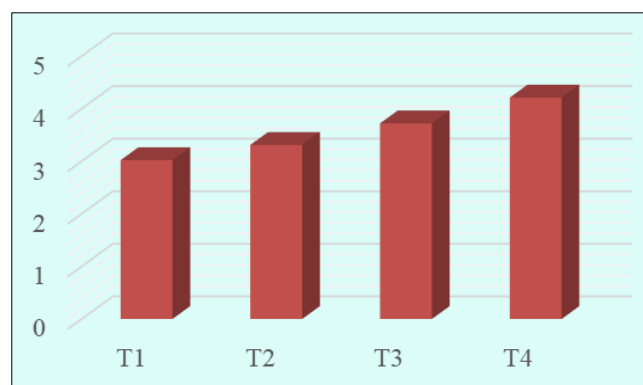
**Table 3:** Total gain in body weight of experimental kids

Treatments	Initial BW (kg)	Final BW (kg)	Gain in total BW (kg)	Av. Gain in BW (g/day)
T <sub>1</sub>	8.41	11.43 <sup>d</sup>	3.02 <sup>d</sup>	33.55 <sup>d</sup>
T <sub>2</sub>	8.51	11.81 <sup>c</sup>	3.31 <sup>c</sup>	36.72 <sup>c</sup>
T <sub>3</sub>	8.59	12.35 <sup>b</sup>	3.72 <sup>b</sup>	41.35 <sup>b</sup>
T <sub>4</sub>	8.68	12.87 <sup>a</sup>	4.21 <sup>a</sup>	46.77 <sup>a</sup>
SE ±	1198.3	0.049	0.005	0.075
CD (5%)	NS	0.0153	0.017	0.234
CV	280.3	0.809	0.305	0.381

Numbers having different superscripts differed from each other

The average initial body weights for the selected Konkan Kanyal kids in the current investigation were 8.41 (T<sub>1</sub>), 8.51 (T<sub>2</sub>), 8.59 (T<sub>3</sub>) and 8.68 (T<sub>4</sub>) kg, while the final body weights were 11.43 (T<sub>1</sub>), 11.81 (T<sub>2</sub>), 12.35 (T<sub>3</sub>) and 12.87 (T<sub>4</sub>) kg. Gain in body weight (g/day) was 33.55, 36.72, 41.35 and 46.77 g/day for treatment groups T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>, respectively. Treatment group T<sub>4</sub> noticed a considerable increase in body weight compared to the other treatment groups. In the current study, there was significant variation between the various treatments for overall weight increase. Higher amount of protein, minerals, vitamins and various growth promoting factors were responsible for higher weight

gain in treatment T<sub>4</sub>, which was supplemented with 2 g/day spirulina. The results of the present investigation are in accordance with Jadhav *et al.* (2021) [4] who fed spirulina to Osmanabadi goats and recorded total body gain as 2.69, 3.07, 3.60 and 2.75 kg for treatment group T<sub>1</sub> (control), T<sub>2</sub> (0.5 g spirulina), T<sub>3</sub> (1 g spirulina), and T<sub>4</sub> (1.5 g spirulina), respectively. In present investigation it was observed that with increase in level of spirulina there was increase in body weight gain. Similar results were reported by Quigley and Poppi (2009) [3] and Panjaitan *et al.* (2010) [4] who observed, with increasing the amount of spirulina proportional increase in lamb body weight. It may be due to increased rumen microbial crude protein production.



**Fig 7:** Total gain in body weight of experimental kids

**Conclusion**

On the basis of the present investigation it may be concluded that, the significant increase in body weight was noticed in treatment T<sub>4</sub> kids supplemented with 2 g spirulina powder for 90 days trial duration.

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