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## Energy and protein requirements for maintenance and lactation of Jaunpuri breed of goats

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### Abstract

Jaunpuri breed of goats are prominent breed prevailing in eastern Uttar Pradesh, therefore it is essential to know their nutrients need. The objective of this study was to investigate both protein and energy requirements of Jaunpuri Goats. For this purpose three sets of metabolic trials were conducted separately dry and lactating does. For maintenance, Jaunpuri goat required 170.16cal DE and 3.63gmDP/W<sup>kg<sup>0.75</sup></sup> while 1738.41 Kcal DE and 43.46gm DP was required to produce one Kg milk of 4% fat. Goats having low body weight required more DM and DE as compared to goats having large body weight for their maintenance.

**Keywords:** Jaunpuri goats, nutrient requirements, energy requirement

### Introduction

Dairy goats have long been considered an important source of income for rural populations, providing the opportunity for profitable and sustainable diversity for small farms. Their importance is also increasing in intensive feeding systems and in large farms. They are highly adaptable due to their unique feeding habits and have become popular livestock animals in a range of environments, from temperate grasslands to subtropical, semi-arid and mountainous areas. Moreover, goat milk products are finding a growing acceptance in the world market and research has increased in feeding strategies for improved productivity and quality. India has the largest population in the world. Goats have a cost benefit ratio of 1:11.7 and an investment return rate (IRR), value of over 30% (Sengar 1980) <sup>[12]</sup>, which by far exceeds any bank interest. Goat milk has various effects on human health considering the total solid, fat, protein, lactose, mineral, and vitamin contents (2017). The accurate information regarding the protein requirements of dairy goats and the factors that affect them is pivotal to accomplish efficient diet formulation from a sustainable standpoint (2021, 2015). Jaunpuri breed of goat is a dual purpose and twins/kidding is common. The energy and protein requirements are greatly variable depending upon size, season and production. The work on the nutrient requirements of goats of other breeds have been completed up to the mark but Jaunpuri breed was not taken up so far, therefore present study was planned.

### Materials and Methods

Two groups (6 milchand 6 dry) of Jaunpuri does were selected from the flock maintained at college livestock farm for experimental purpose. At the beginning of trial, animals were weighted and transferred to separate cages. Metabolic trials were conducted with the animals after preliminary feeding of 20 days, followed by 7 days collection period during which precise quantitative records of feed offered, feed residue left and the faeces and urine voided were maintained daily. The experimental animals were allowed to feed on balanced ration including concentrate mixture (gram chuni, wheat bran, G.N. Cake), 40gm mineral mixture and 20gm common salt/d/goat. The Samples of feed, residue, faeces, urine and milk were analyzed for their constituents using the procedures recommended by A.O.A.C (1980). Digestible energy (D.E) and metabolizable energy (M.E) in feed was calculated using the

formula suggested by N.R.C (1975). For converting one form of energy to another the recommendation  $100\text{GE} = 76\text{DE} = 62\text{ME} = 35\text{NE}$  of Garrett *et al* (1969) [6] was employed.

### Requirements for maintenance

In present study voluntary dry matter intake (DMI) in Jaunpuri goats was  $64.45 \pm 3.84 \text{ gm/d/Kg W}^{0.75}$ . However weight gain per day varied from 28.57 to 71.43 gm with an average of  $54.05 \pm 6.19 \text{ gm}$  (Table.1) A goat required  $170.16 \pm 10.13 \text{ Kcal DE}$  or  $138.77 \pm 13.18 \text{ Kcal ME}$  or  $78.32 \pm 7.43 \text{ Kcal NE}$  per metabolic body size ( $\text{Kg W}^{0.75}$ ) for maintenance. The protein requirement for a goat on an average worked out to be  $3.54 \pm 0.28 \text{ gm DP/d/Kg W}^{0.75}$  for maintenance.

**Table 1:** DM, Energy and DP requirement of Jaunpuri Goat

Parameters	For maintenance (perKgW <sup>0.75</sup> )	
	Average	Range
Body Weight	$29.25 \pm 3.82$	27.90 - 31.40
Metabolic Body Size(Kg W <sup>0.75</sup> )	$12.58 \pm 1.75$	12.14 - 13.27
Daily Weight Gain (gm)	$44.05 \pm 6.19$	28.57 - 71.43
DM intake (gm)	$64.45 \pm 3.84$	50.17 - 75.31
<b>Energy intake (Kcal)</b>		
DE	$170.16 \pm 10.13$	92.18 - 179.25
ME	$138.77 \pm 13.18$	75.12 - 146.23
NE	$78.32 \pm 7.43$	42.41 - 82.54
DP intake (gm)	$3.54 \pm 0.28$	2.30 - 4.47

**Table 2:** For 1 litre milk production (4% fat)

Average	Range
$33.25 \pm 5.43$	29.30 - 36.30
$13.83 \pm 2.18$	12.59 - 14.78
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$658.50 \pm 97.15$	569.49 - 856.65
$1738.41 \pm 256.22$	911.46 - 2659.75
$1418.18 \pm 209.22$	980.40 - 2169.79
$800.58 \pm 118.11$	527.64 - 1224.88
$43.46 \pm 6.41$	37.80 - 66.50

The values of energy and protein requirements for Jaunpuri goat worked out during the course of present investigation are very similar to values reported by French (1994) [5], Rindsig (1997) [9] and Sengar (1980) [12], Kléber Tomás Resende *et al* (2018) [10], Pulina *et al* (2008) [11], Sengar studied four species of indigenous goats in India and reported that the maintenance requirements for energy and protein were 125.0 Kcal DE per Kg W<sup>0.75</sup> and 3.13 gm DCP/Kg W<sup>0.75</sup> respectively. French (1994) [5] reported the energy requirement at maintenance level were 171.43 Kcal DE or 139.85 Kcal ME or 78.95 Kcal NE while Rindsig (1997) [9] reported that the energy and protein requirements were 156.29 Kcal DE or 127.5 Kcal ME or 71.78 kcal NE and 3.63 /Kg W<sup>0.75</sup> respectively for maintenance. According to Kléber Tomás Resende *et al* 1.246 g CP kg<sup>-0.75</sup> EBW is required by indigenous kids weighing from 5 to 25 kg BW

### Requirement for Lactation

Energy and protein requirement for milk production is considered as one of the most important aspects in dairy industry. For this purpose amount of energy and protein required to produce one litre milk was worked out on the basis of intake and digestibility of DM and protein during lactation. On an average a goat required  $658.50 \pm 97.15 \text{ gm DM}$  and  $1738.41 \pm 256.47 \text{ Kcal DE}$  for 1 litre milk production (4% fat). Similarly  $1418.18 \pm 209.22 \text{ Kcal ME}$  and

$800.58 \pm 118.11 \text{ Kcal NE}$  were required for one Kg milk production (Table.1). On the other hand,  $43.46 \pm 6.41 \text{ gm DP}$  was required to produce 1 litre milk.

On these lines Mackenzie (1967) [4] reported 1653.50 kcal DE, 1348.90 Kcal ME, 761.48 Kcal NE and 49.89 gm DP/lit milk production. Winter and Grosch (1977) [14] reported 1628.57 Kcal DE, 1328.57 Kcal ME, 750.00 Kcal NE and 65 gm DP per litre milk production. Rajput *et al* (2007) [12] reported 1520 Kcal DE, 1240.00 Kcal ME, 700 Kcal NE 46.56 gm DP per litre milk production while working on 4 species of indigenous goats in India.

### Conflict of Interest

Not available.

### Financial Support

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### References

- Turkmen N. Academic press book Nutrients in Dairy and Their Implications on Health and Disease. 2017:441.
- Souza AP, *et al*. Front Vet Sci. 2021 Jun.
- Almeida AK, Resende KT, St-Pierre N, Silva SP, Soares DC, Fernandes MHMR, *et al*. Rev Bras Zootec. 2015;44:397.
- A.O.A.C. 13th ed. Washington, D.C.: Association of Analytical Chemists; 1980.
- French H. E Afric Agric J. 1994;10:66. Cited in: Digestive Physiology and Nutrition of Ruminants. Vol. 3. p. 97331.
- Garrett WN, Mayer JH, Lofgreen GP. J Anim Sci. 1969;18:228-547.
- Mackenzie D. Goat Husbandry. 2nd ed. London: Faver & Faber Ltd; 1967. p. 368.
- National Research Council (NRC). 5th ed. Washington D.C.: National Academy of Sciences; 2007.
- Rindsig RB. Dairy Goat J. 1997;55:12.
- Resende KT, *et al*. Semina: Ciências Agrárias. 2018;39(1):241.
- Pulina G, Nudda A, Battacone G, Fancellu S, Francesconi AHD. Book Dairy Goats and their Nutrition. 2008.
- Rajpoot RL, Sengar OPS, Singh SN. Ph.D Thesis on “and Protein in Goat Nutrition”. Agra: Deptt. Anim. Husbandry, R.B.S. College; 2007.
- Sengar OPS. J Dairy Sci. 1980;63:10; 1655.
- Winter J, Grosch R. Ziegen als Versuchstierein Beitrag zur Fulleroptimierung Z.versichstierk. 1977;16:256.

### How to Cite This Article

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