



A STUDY ON RUMINATION AND RESTING BEHAVIOUR OF OSMANABADI KIDS HOUSED IN KATCHA HOUSING SYSTEM UNDER DIFFERENT FLOOR SPACE

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ABSTRACT

The aim of this study was to evaluate the effect of different floor space on rumination and resting behaviour of Osmanabadi kids. Eighteen Osmanabadi castrated kids with an initial average body weight (BW) of 6.80 kg at 3-4 months old age (after weaning) were used in this experiment. There were three different floor space provision of 0.8, 0.7 and 0.6m² in three experimental groups (T₀, T₁ and T₃ respectively) with the same managerial conditions. The behaviours were observed using continuous focal sampling method and measured as minutes/4hr/week. The results indicated that the lying period under the category of resting behaviour and rumination duration were significantly (P<0.05) higher with increasing floor space. In conclusion, floor space provision as managerial practice in goats has effects on resting and rumination behaviour, where more floor space is favourable to the goats.

KEY WORDS: Floor space, Osmanabadi kids, katcha housing, resting behaviour, rumination behaviour.

INTRODUCTION

Ruminants are of great economic importance in livestock industry and small ruminants play very important role in the socio-economic status of the society. In fact, goat plays a significant economic role for the farming communities living in lowland, midland and highland provinces. Goat being small sized animal and more prolific animal, requirements in terms of capital and maintenance costs are minimal with less risk in investment. Amongst the goat breeds of India, Osmanabadi goat breed is a native of Marathwada region of Maharashtra, but it is reared, bred and well adapted throughout India. The housing plays a key role in rearing of goats. In housing management, particularly floor management is an important aspect of goat husbandry, which provides both comfort and cleanliness with minimal risk of injury. The floor space requirement for the weaned kids (3-6 months old) as per BIS standard is 0.8m². The decrease in space reduces resting time and increases the aggressive interactions (Fregonesi and Leaver 2002). The increase in space improves welfare and performance of farm animals (Boe *et al.*, 2006). When resources are limited there will be a higher competition and the level of aggression through the social interactions will increase as a result of this (Milinski and Parker, 1991) and for farm animals these resources may be feeding or drinking space, access to litter or straw, attractive resting places and the freedom to move itself if the overall space is limited. Although resting pattern may not appear to be the most important indicator of the welfare status, farm animals tend to show a very synchronous activity and resting pattern if the environmental conditions allow it (Rook and Penning, 1991). The objectives of this study were to determine how

the floor space influences the behaviour of Osmanabadi kids.

MATERIALS & METHODS

The effect of different floor space on resting and rumination behaviour of animals was investigated by using 18 Osmanabadi kids, approximately similar age (3-4 months) and body Weight (average 6.80 kg), at Instructional Livestock Farm Complex, Bombay Veterinary College, Mumbai during summer season. The kids of either sex were divided into 3 groups i.e. 0.6, 0.7 and 0.8m².

Gr.T₂- 0.6m² floor space/kid

Gr.T₁- 0.7m²/kid

Gr.T₀- 0.8m²/kid

The study was conducted for 90 days.

The house was made of katcha floor made up of soil and mud. The pens were naturally ventilated and built under shade region. The kids were fed chaffed green fodder @350g/day/kid and concentrates @150g/day/kid in the morning as well as in the evening. This amount then gradually increased in relation to the age and body weight. The pens were cleaned out once a day, usually in the morning, and a layer of sawdust was added in the solid resting area to ensure a dry surface.

Social behaviour was observed in all the groups, every week during the entire experiment period of 90 days. The behavioural observations were carried out for two hours twice a day after the morning (9 am) and afternoon (4 pm) feeding. The first behavioural study was conducted one week after the kids were mixed into their respective groups to ensure that the rank order and coping status with the new confinement was fully established. The

behavioural observation was recorded by three different persons at the same time. The behaviors were scored by using an ethogram containing the behaviors which were scored using continuous sampling method. The ethogram was based on studies on the behaviour in goats (Mohamed and Mohamed, 2013). The statistical analysis was done by using RBD (Randomized Block Designs) as suggested by Snedecor and Cochran (1982).

RESULTS & DISCUSSION

The average duration of rumination in T₀, T₁ and T₂ was 26.08 ±0.49, 24.94 ±0.39 and 24.65 ±0.36 mins/4hr/wk respectively. The differences in total duration of rumination in Osmanabadi kids of T₁ & T₂ was found to be non significant. However, the total duration of rumination noticed in kids of T₀ was found to be higher and significantly (P<0.05) different with other groups. Weerasinghe and *De silva* (2014) found that the goats spent 10% of the total time on rumination. In this experiment it is observed that from 4 hrs of rumination study around 10 % rumination was done which is around 24.88 ±0.40 to 26.08 ±0.49 minutes, this is similar with above author's findings.

Mohammed (2014) reported that rumination time in Egyptian Balady Goats was 45.57±0.23, 48.55±0.92, 49.83±1.18 and 53.52±2.27 minutes /8 hr in the space allowance of 0.5 m², 1 m², 1.5 m² and 2 m² respectively. From the above study it was clear that decreasing the floor space decreases the rumination time. Similar findings are observed during the present study.

In most of the times farm animals lie down during ruminating (Fraser and Broom, 1997). It is therefore important that they are readily able to access a comfortable and inviting place to lie down to maximize rumination time. Due to reduced floor space, lying space was also reduced³ and thereby rumination time is affected. It was reported that overcrowding of animals significantly (P<0.05) reduces their rumination activity. (Batchelder, 2000; Grant and Albright, 2001; Krawczel *et al.*, 2012).

In the present study it is seen that by reduction of floor space of Osmanabadi kids their rumination time also reduced which might be due to overcrowding and reduction in lying space.

The average lying period of Osmanabadi kids in T₀, T₁ and T₂ was 26.35 ±0.49, 25.95 ±0.47, 24.88 ± 0.35 min/4hr/wk respectively. The lying period was more in kids of T₀ followed by T₁ and T₂. There was significant (P<0.05) difference in the lying period of Osmanabadi kids of T₂ with other groups. It is indicated that the lying period in Osmanabadi kids was less with lower floor space and vice versa. As the floor space per individual reduces, the lying space is also reduced accordingly. Increasing the total space allowance and thereby allowing more personal space may thus be of greater importance to reduce aggression and to increase resting time (Andersen and Bøe 2007). Similar findings in relation to floor space and lying period were observed during the present study.

Mohamed and Mohamed (2013) found that the lying time in goats ranges from 24.70±1.43 to 114.57±6.61 minutes/8hr in the space allowance of 1.5m²/goat, which is similar with study of present results.

The average idling period of Osmanabadi kids in T₀, T₁ & T₂ was 2.24 ±0.31, 1.60 ±0.26 and 1.79 ±0.23 min/4hr/wk respective respectively. There was no significant difference in the idling period of Osmanabadi kids in between groups. However, no significant difference noticed in lying period in kids of T₀, T₁ & T₂. It means that there was no effect of on idling period of Osmanabadi kids even after reduction in floor space.

The idling period observed was 3.60 ±0.97 to 8.2 ±1.49 minutes/8hr and 0.48 ±0.02 to 30.35 ±1.75 minutes/8 hr respectively in Egyptian balady goats (Mohamed and Mohamed, 2013; Mohammed 2014). The findings of the present study did not match with the findings of these authors as the idling period was found less. As the floor space per animal increases, resting time also increases (Zeeb *et al.*, 1988; Jarvis and Cockram 1995; Fisher *et al.*, 1997).

TABLE 1: Mean (± SE) of behavioural patterns in goats reared on different floor space allowances

Behavioural patterns (min/4hr/wk)	Gr. T ₂ (0.6m ²)	Gr. T ₁ (0.7m ²)	Gr. T ₀ (0.8m ²)	P value
Rumination duration	26.08 ± 0.49 ^a	24.94 ± 0.39 ^b	24.65 ± 0.36 ^b	<0.05
Lying period	26.35 ± 0.49 ^a	25.95 ± 0.47 ^a	24.88 ± 0.35 ^b	<0.05
Idling Period	2.24 ± 0.31	1.60 ± 0.26	1.79 ± 0.23	ns

^{a,b}Means in the same row with different superscripts are significantly different at (P < 0.05).

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