

Short communication

The influence of age on semen parameters, libido and mating behaviour of Siamese Long Tail sheep

(Pengaruh umur terhadap ciri-ciri semen, libido dan tabiat mengawan biri-biri Siam Ekor Panjang)

P. Ramakrishnan*, A. W. Hassan* and M. Murugaiyah*

Key words: age, Siamese Long Tail sheep, semen parameters, libido

Abstrak

Sejumlah 325 sampel semen telah dipungut daripada 36 ekor biri-biri jantan Siam Ekor Panjang (SLT) yang berumur antara 5 hingga 28 bulan. Pemungutan dilakukan selama 8 bulan bagi mengkaji pengaruh umur terhadap ciri-ciri semen, libido dan tabiatnya mengawan. Peratus pergerakan spermatozoa nyata lebih rendah ($p < 0.05$) pada biri-biri jantan yang berumur kurang daripada 10 bulan berbanding dengan yang lebih tua. Telah dicerapkan juga bahawa dengan meningkatnya umur (sehingga 28 bulan) libido dan tabiat mengawan tidak terjejas. Kajian ini menunjukkan bahawa SLT mampu menghasilkan semen pada usia 5 bulan tetapi semen yang benar-benar bermutu hanya dapat dihasilkan apabila ternakan mencapai usia 12 bulan.

Abstract

A total of 325 semen samples were collected from 36 Siamese Long Tail (SLT) rams ranging in age from 5 to 28 months for 8 months to study the influence of age on semen characteristics, libido and mating behaviour. An increasing trend in semen volume was observed from 5 up to 28 months of age in the SLT rams. The spermatozoa motility percentage was significantly ($p < 0.05$) lower in rams below 10 months of age compared with the older animals. It was also observed that the libido and mating behaviour of the SLT rams were not affected with the advancement of age up to 28 months. This study showed that although the SLT rams could produce semen at the age of 5 months, semen with desirable quality could only be produced when the rams were around 12 months old.

Introduction

In recent years, Siamese Long Tail (SLT) sheep have been imported into Malaysia in large numbers with the aim of integrating them with oil palm or rubber plantations. This breed is being evaluated for various characteristics including its adaptability to

the local environment. However, to date very little information is available on its reproductive characteristics. Since the reproductive performance of the male contributes to one-half of the inheritance of the next generation, it is important to study the various factors which influence the

*Livestock Research Division, Headquarters Station, MARDI Serdang, P.O. Box 12301, 50774 Kuala Lumpur, Malaysia

Authors' full names: Ramakrishnan s/o Patchaiappan, Hassan Abdul Wahab and Murugaiyah s/o Marimuthu
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reproductive performance of SLT rams in this country. Apart from environmental temperature (Murugaiyah 1992), the semen production of rams has also been reported to be influenced by age (Tiwari and Sahni 1982). A study was therefore made to assess the effect of age on the quantity and quality of semen, and the libido of SLT rams in Malaysia.

Materials and methods

Semen samples from 36 SLT rams ranging in age from 5 to 28 months were collected once a week for 8 months. By gross examination, the semen volume was recorded immediately after collection. Microscopic examination of semen for progressive motility, live sperm, abnormalities and sperm concentration was carried out according to Ramakrishnan et al. (1989). Libido testing was carried out fortnightly during the same period. For this purpose, the males were allowed to mate the female teaser. The interval between the presentation of the ram to the female teaser and its initial mount was recorded as reaction time, while the interval between the presentation of the ram to the teaser until ejaculation was recorded as ejaculation time. The number of mounts the animal made before ejaculation was also recorded.

The rams were allowed to graze on native grasses and weeds under fruit trees in the Malaysian Agricultural Research and Development Institute (MARDI) Research Station, Bukit Ridan, Pahang from 0900 h to 1700 h daily. At night, they were housed in a shed raised about 1.5 m above the ground level. The animals had access to drinking water and mineral licks at all times. The ambient temperature at this research station during the period of study ranged between 22 °C (minimum) and 31 °C (maximum).

All data collected were analysed statistically using SAS (SAS Institute Inc. 1982). Analysis of variance was applied using a general linear model. The difference between mean values was tested using Duncan's Multiple Range Test.

Results and discussion

The various semen characteristics and mating behaviour of the rams in different age groups are presented in *Table 1* and *Table 2*, respectively.

The young SLT rams showed libido and produced semen at the age of 5 months. These findings are in agreement with earlier reports of Stepanov et al. (1962). However, Tiwari and Sahni (1982) reported that young crossbred (Rambouillet x Malpura) rams showed libido only at 8 months of age. This was possibly due to the semi-arid condition where the rams were raised.

In this study, the age of rams was found to have a significant effect on the mean volume of semen per ejaculate. The analysis indicated increasing trends in semen volume with advancing age up to the age of 28 months. A significantly ($p < 0.05$) lower progressive motility of spermatozoa was noticed in the age groups of 5–7 and 8–10 as compared with the animals in the older age groups. These findings were in close agreement with the findings of Tiwari and Sahni (1982) who reported that progressive motility of semen samples obtained from young rams (8–10 months of age) was lower compared with adult rams (more than 12 months).

It was also observed that for animals within the age group of 11–13 months, the progressive motility of spermatozoa from 11-month-old rams ($57.50 \pm 20.16\%$) was significantly lower ($p < 0.05$) than 12-month-old rams ($65.88 \pm 9.17\%$) and thereafter there was no significant difference ($p > 0.05$) in progressive motility among the different age groups. The progressive motility value of the 12-month-old rams was comparable with the mean progressive motility value reported by Ramakrishnan et al. (1991) for SLT rams of age between 14 and 23 months old. Apart from progressive motility, no significant differences ($p > 0.05$) were observed for other semen characteristics of rams of 11, 12 and 13 months old. Among the semen characteristics studied, sperm concentration and all the three sperm

Table 1. Mean ejaculate values of Siamese Long Tail rams from different age groups

Age (months)	N	Volume (mL)	Progressive motility (%)	Concentration (10 ⁶)	Live sperm (%)	Sperm abnormalities (%)			Total sperm abnormalities (%)
						Head	Mid-piece	Tail	
5-7	10	0.43a±0.19	49.00a±26.12	2 125.08a±832.42	79.00±18.52	3.30a±4.62	1.10±1.37	1.80a±2.10	6.20a±4.94
8-10	52	0.50ab±0.27	54.23a±15.48	2 406.3ab±899.22	83.83±11.33	1.00b±2.46	1.42±2.44	1.15ab±1.11	3.58bc±3.59
11-13	103	0.60bc±0.28	63.84b±13.05	3 117.25bc±1 060.28	82.43±14.45	0.87b±1.85	0.96±1.22	0.82b±0.90	2.65c±2.43
14-16	48	0.63bc±0.26	65.52b±8.95	3 642.76c±1 220.33	85.63±8.12	0.77b±1.02	2.57±2.86	1.15ab±1.46	4.49abc±4.93
17-19	53	0.67c±0.32	61.70b±13.04	3 059.07bc±1 244.72	81.17±12.90	0.71b±0.96	1.35±1.83	1.21ab±1.20	3.26c±2.16
20-22	18	0.72c±0.22	66.94b±11.65	3 191.29bc±1 171.97	80.56±14.03	1.56b±1.69	0.78±0.65	1.81a±1.76	4.14abc±2.13
23-25	17	0.71c±0.22	67.35b±12.39	2 850.04b±718.72	84.06±9.07	1.53b±1.62	2.12±2.18	2.24ac±1.79	5.88ab±3.57
26-28	24	0.75c±0.13	68.33b±5.84	3 364.67bc±705.64	87.04± 3.57	1.25b±1.22	1.00±0.93	2.63c±1.35	4.83abc ±1.97

Mean values (± SD) in the same column with different letters are significantly different ($p < 0.05$)
 N = number of semen samples

abnormalities (head, mid-piece and tail) showed high variations among rams from the same age groups. The reason for these variations is yet to be determined.

The mean progressive motility, sperm concentration and live sperm percentage of the adult SLT rams were higher than those reported by Abdul Wahid et al. (1992) for Dorset and Suffolk rams. This may show that the SLT rams are more adaptable to the local environmental conditions than the other imported breeds, Dorset and Suffolk.

Although the mean values of the reaction time among the various age groups were statistically not significant ($p > 0.05$), there was a trend of declining mean reaction time with the advancement of age of the rams. Since reaction time measures the intensity of the animal's sexual stimulation in a specific situation, this declining trend shows that the animals became more responsive towards the teaser and the semen collection methods with the advancement of age. There was no significant difference ($p > 0.05$) in the ejaculation time and the number of mounts per ejaculate among the various age groups. This shows that libido and mating behaviour were not affected by age for SLT rams between 5 and 28 months.

In general, the semen quality of the young rams was poorer than that of adult rams. The semen volume, progressive motility and sperm concentration increased at a steady rate, and semen samples with higher percentage of morphologically normal and live spermatozoa were produced with the advancement of age of the rams. Increase in the fertility of rams is assumed to be related to the higher percentage of spermatozoa motility and lower percentage of abnormal spermatozoa (Court 1983). In this case, results of this study also showed that the SLT rams produced semen with desirable quality at about 12 months old.

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Table 2. Libido and mating behaviour of Siamese Long Tail rams from different age groups

Age (months)	N	Reaction time (s)	Ejaculation time (s)	No. of mounts per ejaculation
5-7	19	25.68 ± 21.49	29.69 ± 20.39	2.31 ± 2.50
8-10	43	16.93 ± 14.65	29.71 ± 23.08	3.92 ± 2.73
11-13	72	19.28 ± 12.83	27.64 ± 20.38	2.96 ± 2.52
14-16	47	19.89 ± 13.37	32.71 ± 21.92	3.11 ± 3.01
17-19	25	17.36 ± 11.73	32.05 ± 22.68	3.47 ± 2.40
20-22	18	15.06 ± 8.93	28.71 ± 21.60	2.12 ± 1.54
23-25	12	16.50 ± 2.12	31.00 ± 17.08	2.50 ± 0.71
26-28	14	14.50 ± 8.98	20.88 ± 16.77	2.63 ± 2.45

N = number of observations
± SD

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