BLOOD PROLACTIN IN THE MALE LAMB FROM BIRTH TO PUBERTY

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Prolactin has been detected in the peripheral blood plasma of adult male mammals. Basic levels of 20 to 30 ng/ml plasma have been detected in the male rat (Amenori, Chen & Meites, 1970). These basic levels can reach 50 ng/ml in the ram (Davis, Reichert & Niswender, 1971), 80 to 200 ng/ml in the male goat (Hart, 1973; Buttle, 1974) and 30 to 40 ng/ml in the bull (Oxender, Hafs & Ingalls, 1972). The rôle of prolactin in the male, however, is not well known.

This paper deals with the evolution of prolactin in the peripheral blood plasma of nine ram lambs (Île de France) during the first 17 weeks after birth. The period studied covered the onset of spermatogenesis (Courot, 1962). The animals, born at the end of September, were bred in natural conditions and were weaned progressively when 100 days old. Weekly morning blood samples were collected from the jugular vein, the first one being collected 1 week after birth. After cold centrifugation, all plasmas were kept frozen until they were analysed simultaneously for their prolactin concentration by specific radioimmunoassay according to the method described by Kann (1971). The results were expressed in ng prolactin PS6/ml plasma. Table 1 shows the mean prolactin concentrations and the body weights of the nine lambs and Text-fig. 1 indicates the individual prolactin concentration values in the same animals over the same period.

Prolactin was present in the peripheral blood 1 week after birth.

In three lambs (Nos 49, 58 and 68), there was a slight increase to 38 to 50 ng PS6/ml plasma for 1 or 2 weeks after birth, but the level of prolactin remained at a basic level in the six other lambs. A sharp increase in prolactin level occurred 10 weeks (Nos 49, 58 and 79), 11 weeks (Nos 62 and 68) or 12 weeks (Nos 69, 72, 76 and 77) after birth and reached a maximum value in 1 or 2 weeks, with individual values as high as 140 ng PS6/ml plasma (No. 79). The prolactin level then fell rapidly within 1 or 2 weeks to basic levels.

The first peak, which occurred only in three lambs, and the small variations seen in the other animals, might have been due to stresses which are known to induce a prolactin discharge (Raud, Kiddy & Odell, 1971). Such an hypothesis cannot, however, explain the sharp peak encountered in all the animals around 80 days after birth, since they were inured to venepuncture, and the peak occurred before the stress of weaning. The subsequent rapid decrease of prolactin to basal levels would also appear to discount any stress effect. In the

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Table 1. Body weight and plasma prolactin concentration ($\pm$ S.D.) in more Île-de-France ram lambs from 1 to 17 weeks after birth

	Weeks after birth																
	1	2	3	4	5	6	7	8	9	10	12	12	13	14	15	16	17
Body weight (kg)	5.5	7.2	9.3	11.7	13.9	16.3	18.7	21.3	23.5	26.0	28.8	31.0	33.1	35.3	37.0	39.0	40.2
Prolactin PS6	9.76	31.4	27.5	22.7	18.2	16.9	14.6	19.4	20.7	35.4	41.1	69.3	31.2	15.6	14.0	18.1	13.6
(ng/ml plasma)	± 1.16	± 5.2	± 4.5	± 2.7	± 3.1	± 1.9	± 2.0	± 2.2	± 2.9	± 7.6	± 5.2	± 14.4	± 6.9	± 4.5	± 2.6	± 1.9	± 2.4

Between the 7th and 12th week and between the 12th and 14th week $P < 0.01$.

bull (Karg & Schams, 1974), in the male goat (Buttle, 1974) and in the ram (Pelletier, 1973; J. P. Ravault and M. Courot, unpublished observation), high levels of prolactin are found during long daylight periods (March to

TEXT-FIG. 1. Prolactin levels in the peripheral blood plasma of each of nine Île-de-France ram lambs from 1 to 17 weeks after birth.

September) and low levels during short daylight periods (October to February). Consistently low values occurred in November and December and these results indicate that the prolactin peak is not light-dependent.

The rapid increase in prolactin was present in all animals and occurred simultaneously with the beginning of a rapid increase in the weight of the testes and in spermatogenic activity. While the duration of the prolactin peak was very brief, the maximum corresponding to a testicular weight of 50 to 60 g (calculated by a linear regression—Courot, 1971), the growth of the gonads continued. This evolution of prolactin was completely independent of blood LH and

testosterone levels checked in the same animals (Courot, 1971; Cotta, Terqui & Courot, 1974). The prolactin secretion during postnatal development in the lamb differs from that in the rat in which the prolactin secretion in the peripheral blood increases with age (Negro-Vilar, Krulich & McCann, 1973; Döhler & Wuttke, 1974).

In conclusion, these results show that prolactin secretion in ram lambs occurs during a well-defined time in the growth of the testes and the establishment of spermatogenesis.

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