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Initiation of Copious Milk Secretion in Virgin Goats by Anterior Pituitary.

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Almost all the experimental data on the lactation principle of the anterior pituitary have been obtained from studies involving the use of the rabbit, guinea pig, rat or dove as the test animal. These species do not allow any quantitative estimation of the milk yield. Grüter and Stricker¹ demonstrated that in cows in normal lactation, it was possible through one injection of a potent extract of the anterior lobe to increase the milk yield 1 to 1½ liters per day. Asdell² reports that it was possible to prevent, "for a time at any rate, the normal decline in milk yield with advancing lactation" in the goat, by injections of anterior lobe extract (Parke, Davis & Co.). Using this same extract, Asdell was unable to significantly initiate milk secretion in a young virgin goat, nor was he able to effect any increase in the milk yield of a mature goat whose lactation was nearly spent.

In this laboratory we have prepared our own alkaline extracts of the anterior pituitary. Copious lactation has been induced in 3 virgin goats and one dry goat. Figure 1, a and b, illustrates in a striking manner the effect of daily subcutaneous administration of 15 cc. alkaline extract of the anterior pituitary for 6 days. This goat on her first milking gave 4 pounds of milk. Further, it should be emphasized that all attempts to induce secretion of milk from her udder before the injections were started, failed. The same is true of the other 2 virgin goats and the dry goat. After 10 days, the injections were discontinued because it was evident that no further increase in yield could be effected. The daily milk yield was then 3.5 pounds. It was found, however, that subsequent administration of the extract 40 days later effected a second increase in milk flow to a daily yield of 4.8 to 5.8 pounds.

The milk yield for the other 2 virgin goats 20 days after all injections had been stopped was 1.8 and 2.8 pounds, respectively. At

¹ Grüter, F., Proc. Second Int. Cong. Sex Research, Oliver & Boyd, London, 1932, 443.

² Asdell, S. A., *Am. J. Physiol.*, 1932, **100**, 137.

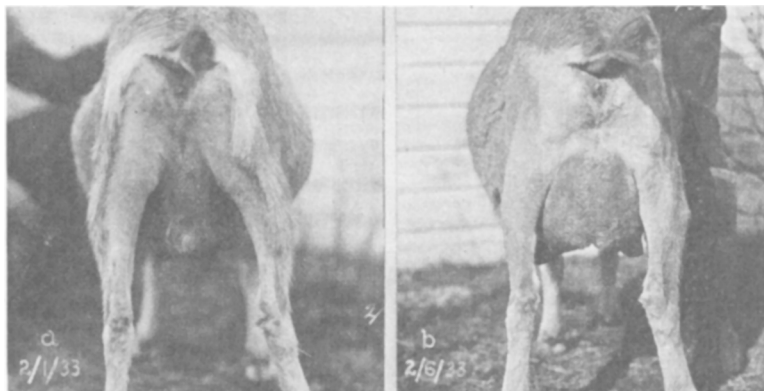


FIG. 1. a and b.
(a) 2/1/33 before injections; (b) 2/6/33 after six daily injections of 15 cc. anterior pituitary extract.

no time have any toxic symptoms been noted, even though as much as 40 cc. of the extract has been injected in one day to determine this effect. Further, these results have been checked on virgin cows and dogs; one cow is now giving 15.5 pounds daily.

In collaboration with Dr. I. P. Earle, we are making chemical examinations of the protein fractions of the first milks from these virgin goats and cows. Preliminary observations indicate that the first milk secreted under these experimental conditions (anterior lobe extracts) strongly resembles colostrum (globulin fractions, casein, percentage of total nitrogen, R.B.C.'s). These data present evidence that the secretion of colostrum may be controlled by the anterior lobe through its effect on the permeability of the blood vessels of the mammary gland.

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Saliva and Coagulation of Blood.

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Following the observation that saliva markedly decreases the coagulation time of the blood,¹ studies were made to investigate the

¹ Bellis, C. J., Birnbaum, W., and Scott, F. H., *PROC. SOC. EXP. BIOL. AND MED.*, 1932, **29**, 1107.