

stances and those induced by the pseudopregnant state itself on the mammary glands of the rabbit.

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Effect of Castration on Fasting Ketonuria in Rats Following Diacetic Acid Administration.*

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Deuel and Gulick¹ have shown that women are much more susceptible to fasting ketosis than are men. Although no sexual difference was observed by Butts and Deuel² in the level of the slight ketonuria which develops in rats during fasting, it was noted that the administration of diacetic acid by stomach tube to fasting rats in proportion to their surface areas was followed by a greater excretion of acetone bodies in the urine of the females than in that of the males. Similar results were obtained with guinea pigs.

In the present investigation a comparison has been made in the acetone body excretion in normal male and female rats with castrated ones of both sexes, some of which received theelin after the administration of diacetic acid. The experimental technic was similar to that employed in the earlier work.² Rats which were 4 to 5 months old were used. The number of rats used in each group is as follows: normal males, 24; castrate males, 12; castrate males with theelin, 9; normal females, 23; castrate females, 12; and castrate females with theelin, 9.

The acetone body excretion was uniformly about twice as high in the female as in the males. Castration in the male resulted in a small decrease in the level of ketonuria. However, the acetone body excretion in the oöphorectomized female rats was reduced to a value about one-fourth that of the normal females and about one-half that of normal males. This level showed no tendency to rise during the 5 days during which the experiment was carried on. The administration of 3 units of theelin per 140 gm. rat to castrate male

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¹ Deuel, H. J., Jr., and Gulick, M., *J. Biol. Chem.*, 1932, **96**, 25.

² Butts, J. S., and Deuel, H. J., Jr., *J. Biol. Chem.*, 1933, **100** 45.

and female rats daily for 3 days prior to and for the 5 days during which the diacetic acid was fed did not appreciably alter the ability of these animals to burn diacetic acid. This dose of theelin was sufficient to maintain the female animals in active oestrus during the entire experiment. In one series of tests, 10 times this amount of theelin was given also with negative results. It is concluded that the greater ketosis which obtains in females than in males is to be traced to some substance produced by the ovary other than theelin.

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Relation of Anterior Pituitary to Sexual Differences in Ketosis in the Rat.

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Burn and Ling¹ have reported that the administration of an alkaline extract of the anterior pituitary gland to female rats fed on a butter fat diet brought about a marked rise in the level of ketonuria. The experiments on males were uniformly negative. In order to determine whether the sexual differences in ketonuria reported in the previous paper² might be traced directly or indirectly to this ketogenetic hormone, further experiments under varying conditions seemed advisable.

The experimental procedure was similar to that used in the previous work.² The extracts of anterior pituitary were made from fresh glands of steers according to the procedure of Burn and Ling.¹ The administration of this extract to normal or castrated male or female rats which were receiving diacetic acid resulted in a marked rise in the level of acetone bodies in the urine over that of the controls. The response was as prompt and as great in male as in female rats and in the castrated as the normal animals. No glycosuria was observed. The following is the number of experiments which were made on the anterior pituitary extract and all were strongly positive; normal males, 9; castrate males, 14; normal females, 11; oöphorectomized females, 14.

¹ Burn, J. H., and Ling, H. W., *Quart. J. Pharm. and Pharmacol.*, 1933, **6**, 31.

² Deuel, H. J., Jr., Grunewald, C. F., and Cutler, C., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **31**, 309.