

sents the amount of estrin necessary to bring 50 out of 100 rats into estrus.)

Table I shows the results obtained.

Conclusions. We conclude that the results obtained according to the method used do not indicate the formation of any anti-hormone against estrin.

7611 P

Effect of Various Dietary Principles on Lactation in Rats.

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It has been known for some time that milk production can be materially increased by dietary treatment. This increase was first accomplished by increasing the protein content of the diet, then later by using good quality animal proteins such as liver. The vitamins, especially the B complex, are of considerable importance as well.

In the present study the growth of approximately 350 litters of suckling rats was used as a criterion of milk production. Only the growth period from the fourth to the seventeenth day of life was considered. The logarithmic functions of the daily weight of litters of 6 were plotted against time. The slopes of the resultant curves were compared, and expressed as lactation indices.

The basal diet of the lactating rats consisted of casein, 15 parts; salt mixture, 5; agar agar, 2; starch, 76; lard, 14; wheat germ oil, 5 drops per day; cod liver oil, 6 drops per day; and irradiated yeast, 3 gm. per day. To this basal ration were added daily supplements of various fractions of liver or egg. When dried substances such as amino acids were used they were incorporated in the basal ration replacing part of the casein.

The lactation promoting factor was found to be present in considerable amounts in the following: liver, egg, water extract of autolysed liver or egg; 25% level of casein, Witte's peptone, blood fibrin, cystine. The best results were obtained when one part of cystine replaced one part of casein in the basal ration. This is a rather low protein diet for a rat, especially a lactating rat, and the results suggest that cystine plays a specific rôle in stimulating milk production either as such or as a constituent of glutathione which in turn may influence the production of milk.

Poor results were obtained with the following: extra lard, liver or egg fat; the unsaponifiable fractions of liver or egg fat, lecithin, and extra wheat germ oil.

7612 C

Spontaneous Activity, Direct and Indirect Measures of Sexual Drive in Adult Male Rats.

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Numerous experiments¹⁻⁵ have demonstrated a significant relationship between the level of spontaneous activity in male rats, as measured by revolving drums, and the presence or the absence of the testes. Castration is followed by a marked decrease in spontaneous activity. Although the reduction is somewhat less striking when castration is performed on infantile males than when it is performed on fully developed males,⁶ there is at either age a decline in spontaneous activity that may be ascribed to the loss of gonadal secretions.

A clear relationship has also been shown to exist between copulatory behavior and the presence or absence of the testes. Young male rats castrated prior to puberty seldom if ever copulate or display aggressive sexual behavior toward receptive females; furthermore, adult males, although copulating for some weeks or even months after castration,⁷ soon show a measurable reduction in sexual drive as measured either by direct tests of copulatory frequency or by obstruction tests.⁸ These facts indicate that reduction in spontaneous activity and reduction in quantitative expressions of sexual vigor go hand in hand in castrated males when the latter are compared with normal males. They also suggest the possibility of using the revolving drum technique to study sexual drive in normal

¹ Hoskins, R. G., *Am. J. Physiol.*, 1925, **72**, 324.

² Wang, G. H., Richter, C. P., and Guttmacher, A. F., *Am. J. Physiol.*, 1925, **73**, 581.

³ Richter, C. P., and Wislocki, G., *Am. J. Physiol.*, 1928, **86**, 651.

⁴ Slonaker, J. R., *Am. J. Physiol.*, 1930, **93**, 307.

⁵ Richter, C. P., *Quart. Rev. Biol.*, 1927, **2**, 307.

⁶ Richter, C. P., *Endocrinology*, 1933, **17**, 445.

⁷ Stone, C. P., *J. Comp. Psychol.*, 1927, **7**, 369.

⁸ Nissen, H. W., *Genet. Psychol. Monog.*, 1929, **5**, 451.