

The tungstic acid process offers still other possibilities which have been partially explored. By certain modifications we have made preparations which show thyreotropic activity in the guinea pig and still other extracts which produce hyperglycemia in the rabbit. Kallikrein is likewise present in the crude extracts. Certain preliminary work indicates that the application of the process to pregnancy urine will greatly simplify the preparation of prolan.

6851

Effect of Tungstic Acid Extract of Normal Human Urine Upon Ovary of Rodents.

W. D. COLLIER AND N. J. WADE.

From the Departments of Pathology and Biology, St. Louis University School of Medicine.

This is a histological report on the study of the ovaries of 20 rats and 24 mice which had been injected by Drs. Katzman and Doisy with their tungstic acid extract of normal human urine.

All of the animals were injected on the twenty-first day of life and upon the 2 following days with 1 cc. of extract in the case of the mice and 2 cc. in the case of the rats. The mice were killed on the twenty-fourth or twenty-fifth day of life and the rats on the twenty-eighth or twenty-ninth day. Six rats and 8 mice were injected with the extract from the urine of adult males, 4 rats and 6 mice with the extract from the urine of normal females, 2 rats and 2 mice with the urine extract of pre-pubertal boys, one rat with the urine extract from a 16-year-old boy, one rat and 2 mice with the urine extract of an elderly female past the menopause, 6 rats and 6 mice with the urine extract from female castrates receiving theelin therapy.

The common qualitative effects are: inhibition of follicular growth in most cases, marked conversion of granulosa and theca of small follicles into interstitial gland substance, cystic degeneration of many of the larger follicles, luteinization of some large follicles with the formation of pseudo-corpora suggesting those of ovulation, lutein-

¹³ Kurzrok, R., *Endocrinol.*, 1932, **16**, 361.

¹⁴ McCullagh, E. P., McCullagh, D. R., and Hicken, N. F., *Endocrinol.*, 1933, **17**, 49.

ization of granulosa and theca of many follicles, extensive atretic degeneration of follicles and congestion of vessels.

There is a wide quantitative variation in the degree of response produced by the extracts. The rats gave greater response than the mice but the latter were killed sooner after treatment. The extracts from the urine of female castrates receiving theelin therapy produced the greatest degree of change in the ovaries of the animals treated. The extracts from young males from 16 to 21 produced the next greatest degree of response. The extract from older males and adult females produced about the same degree of response but this degree was considerably less than that produced by the extracts from younger postpubertal males. The extracts from the urine of 2 prepubertal boys produced very slight changes in the ovaries of the treated animals and the extract from the post-menopause female produced only a slightly greater effect.

The production of luteinization of granulosa and theca and the production of great quantities of interstitial gland substance and the production of cystic atretic follicles strongly suggests a relationship between the action of this tungstic acid extract and that of prolactin extracted by the benzoic acid method from urine of human pregnant females. We have recognized no definite follicle stimulating effect such as we have observed after the administration of prolactin to rats and mice of the same age. We have not used comparable doses of the 2 extracts if the Katzman-Doisy unit can be accepted as the standard unit for both. The tungstic acid extract dose has been much smaller than the prolactin doses that we have used so far.