

α -bromo-tertiary butyl acetyl ureide, α -bromo-di-methyl ethyl acetyl ureide, α -bromo-di-ethyl acetyl ureide, α -bromo-methyl-iso-propyl acetyl ureide.

SUMMARY.

Four aliphatic ureides were prepared and their general properties determined. A preliminary study of their physiological action has indicated that they may be of value as sedatives or hypnotics.

REFERENCES.

- (1) Conant and Tuttle, *Organic Synthesis*, Collective Vol., 180 (1932).
- (2) Issotacherko, B., *Beilstein Organic Chemistry*, Band 1, 349 (1920).

A NOTE ON THE PRESENCE OF MALE SEX HORMONE IN FISH TESTES.*

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The earliest knowledge of the comb growth activity of the testes was gained by A. Pezard in 1918 (1). The hormone activity was first extracted from bull testes in 1927 by L. C. McGee (2).

The history and literature is excellently reviewed by C. R. Moore in the *Journal of the American Medical Association* (3). It will be noticed that the active principle has been obtained from the bull, goat and ram testicles and human male urine, but its occurrence outside the mammalian family has not been studied.

With this in mind and in consideration of the fact that the testes of the Silver Salmon are very large and that great numbers of this fish are caught annually, this investigation was undertaken to determine the presence or absence of the hormone and the quantity.

The male salmon were taken during the breeding season from the state fish-traps at Goldbar, Washington. The testes were removed and frozen for storage during a period of one month. The method for extraction of the hormone was essentially that followed by Gallagher and Koch (4); 3100 Gm. of the tissue were ground and extracted with four volumes of 95% alcohol for five days. The alcohol was then expressed from the tissue and removed by distillation at 20-mm. pressure at 25° C. The solution was concentrated to a sludge of about 1500-cc. volume.

The sludge from above was extracted with benzene until all color was removed and evaporation of a benzene sample left no residue.

The benzene was removed by distillation at 40-mm. pressure at 18° C. A semi-solid mass of 125 cc. remained. The benzene was completely removed by a current of dry air, and the residue treated with acetone at -10° C. for 24 hours, then the acetone was filtered and removed by distillation at 70-mm. pressure at 18° C.

The residue so obtained weighed 12.047 Gm. and was assayed on capons by the method of Gallagher and Koch (5). We were, however, unable to obtain leghorn capons such as were used by the authors and used instead the larger barred rock capons. Previous work (6) has shown that heavier breeds of capons are much less reactive to the hormone than are the white or brown leghorn capons which have become standard birds for assay. We therefore regard the growth obtained in our birds as being positive. Although the growth obtained was not as large as would

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have been obtained in the standard birds, it varied with the dosage which was evidently not large enough to produce maximum growth.

A daily dose of 50 mg. in sesame oil for five days produced a total increase in length plus height of 1.7 mm. in the first capon and a daily dose of 100 mg. produced a similar increase of 2.3 mm. in the second bird. A distinct brightening in color was observed in the comb in both cases during the treatment. At the end of seven days the size and color of the combs was normal again. Injection was made deep into the pectoral muscle and no irritation was produced at the site.

Testes of the salmon, therefore, contain a substance similar in physiological action to the male sex hormone. Further work on quantity, identification and purification is now being carried on.

REFERENCES.

- (1) Pezard, A., *Bull. biol. franc et belge*, 52, 1 (1918).
- (2) McGee, L. C., *Proc. Inst. Med.*, 6, 242 (1927).
- (3) Moore, C. R., *J. A. M. A.*, 104, 16, page 1405.
- (4) T. F. Gallagher and F. C. Koch, *J. Biol. Chem.*, 84, 495 (1929).
- (5) T. F. Gallagher and F. C. Koch, *J. Pharmacol.*, 54, 5-97 (1935).
- (6) McCullagh, McCullagh and Hicken, *Endocrin.*, 17, 49 (1933).



The American Institute of Pharmacy.—The advancement of Pharmacy.—The youth depicts the progressive step; the senior represents the pioneer, observing the improvements made as fruits of his earlier researches.



The American Institute of Pharmacy.—The woman, symbolic of Hope, leads the invalid toward Light; the lamp on the pedestal symbolizes, in this interpretation, the Knowledge to cure.