5477

On the Assaying of the Potency of Liver Extract.

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In a previous paper[1] a method was described for determining in a qualitative fashion the efficacy of liver extracts. It consisted essentially in feeding varying quantities of the extract to fowls suffering from a naturally occurring disease, which resembles very closely pernicious anemia of human beings.

The procedure has since been elaborated so as to put it more or less on a quantitative footing. Liver extract does not seem to be well absorbed from the alimentary tract of fowls, and resort has been made to intraperitoneal injection with the result that there has been a very considerable lowering of the dose necessary to produce a "response" or indicator for purposes of standardization.

The procedure for standardization consists of the injection intraperitoneally twice daily over a period of time of increasing small doses of the extract until a dose is reached at which a "response" is obtained. This "response" consists in a definite rise in the hemoglobin and red blood cell curves, appearing sharply and for the first time.

The "response" for the same extract sample appears to be obtained at the same dosage, whatever may be the state of the marrow, as regards hyperplasia, etc., provided the marrow is in a condition of hyperplasia and has not become aplastic.

The "response" dose for fowls of the White Leghorn breed of about 1500 gm. weight and kept under fairly ordinary laboratory conditions is in the neighborhood of 0.225 gm. per day of the extracts employed. These were different samples of Extract No. 343, prepared by Eli Lilly & Co., Indianapolis.

At times there is difficulty in procuring experimental fowls. It is practically certain that the majority of cases of pernicious anemia in the fowl are due to infestation with the tape worm, *Davainea proglottina*. It is suggested that the supply of cases might be increased by causing fowls, known to be hosts of *Davainea proglottina*, to cohabit in close quarters in a confined area with garden slugs, the intermediate host of the tape worm. Care would have to be taken that optimum conditions in regard to dampness, vegetation,

[1] McGowan, J. P., *Edin. Med. J.*, 1930, **27**, 330.

shelter, etc. for the welfare of the slugs prevailed. Under such circumstances one would expect heavier infestations and an increased supply of anemia cases.

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5478

Induction of Ovulation in Frogs and Toads.

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Experiments on the induction of ovulation in frogs and toads by means of pituitary inoculations and injections of extracts were carried on during the fall of 1930. The results obtained are in essential agreement with those of Houssay, Giusti, and Lascano-Gonzalez[1] and of Kehl[2] on different species of toads and frogs. At the same time it appears possible to explain the seemingly contradictory results in the work of these authors and in the present work without employing the idea of a "zoological specificity" of anterior lobe hormones suggested by Houssay *et al.*

Mature toads *(Bufo vulgaris)* and frogs *(Rana vulgaris)* were inoculated with anterior lobes of pituitaries or injected with extracts† of mammalian pituitary, human placenta, pregnant urine, or with 0.7% NaCl solution. The pituitaries were placed in the dorsal lymph sacs of the animals, while extracts were injected into the dorsal lymph sac, or the muscles of the hind leg, or (rarely) into the body cavity.

Inoculations of pituitaries into toads and frogs. I. The first series of experiments consisted of toads inoculated with toad pituitaries (Table 1).

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[1] Houssay, B. A., Giusti, L., et Lascano-Gonzalez, J.-M., *Compt. Rend. Soc. Biol.*, 1929, **102**, 864.

[2] Kehl, R., *Compt. Rend. Soc. Biol.*, 1930, **103**, 744.

† These extracts were prepared by Dr. Wiesner and members of his section of the Animal Breeding Research Department, to whom I wish to express my appreciation.