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Comparative Pharmacology of Stomach Washings from Pernicious Anemia and Essential Achylias.

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The senior author has demonstrated repeatedly the presence of a specific toxin in the blood of pernicious anemia, which is not found in the blood serum of any other form of anemia, and is therefore of diagnostic interest as well as of value in following the results of various therapeutic procedures.[1] Later studies by Macht have revealed that a similar specific phytotoxic reaction is exhibited by spinal fluid from pernicious anemia patients, as compared with normal human spinal fluid.[2] This was found to be of value in differentiating neurological complications of pernicious anemia from similar cases of different etiology. Employing Macht's phytopharmacological methods, the authors made a systematic study of 125 patients in respect to toxicity of their stomach washings for the growth of living seedlings of *Lupinus albus*. A uniform procedure or technique was employed. A patient's stomach was washed in the morning, before food was taken, with 100 cc. of distilled water. The hydrogen ion concentration of the pumped-out fluid was then determined and the phytotoxic index was obtained. A 2% solution of the "washing" in each case was made in a standard plant-physiological solution and the growth of the straight, well-defined roots of *Lupinus albus* seedlings in the dark at a temperature of 20°C. for 24 hours was carefully measured. A comparison of these with control seedlings, grown under exactly the same conditions, was then made, and the effect of the washings, expressed as a phytotoxic index or percentage of growth in terms of the normal controls, was determined.

The average phytotoxic index obtained from stomach washings of 100 normal patients was found to be 86%. The lowest reading was 86%, while the highest was 100%. Stomach washings from cases of carcinoma showed no difference in toxicity as compared with normal subjects. The most interesting results, however, were found in cases of pernicious anemia and essential achylia, respectively. Phytopharmacological examination of the stomach washings for 9

[1] Macht, *Science*, 1930, **71**, 302.

[2] Macht, *Am. J. Physiol.*, 1930, **93**.

cases of pernicious anemia gave 60, 52, 47, 63, 55, 67, 63, 63, 62%, with an average phytotoxic index of 59%, while the phytotoxic index obtained from 8 cases of essential achylia gave 82, 95, 83, 82, 79, 82, 88, 90%, with an average index of 85%. All the 8 cases of essential achylias were of a very severe type, that is to say, each failed to respond with acid secretion to injections of histamine. The difference in toxicity in the 2 sets of cases bears no relation whatever to the hydrogen ion concentration of the solutions used as these were practically the same after the dilutions in physiological saline had been prepared. This difference in the readings between the achylias of pernicious anemia and those of idiopathic or essential type promises to be of diagnostic value. The toxicity of stomach washings from pernicious anemia cases is furthermore of interest in relation to various theories concerning the etiology of that baffling disease.

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Growth and Differentiation of Rat Embryos on the Chorioallantoic Membrane of the Chick.

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The experiments previously reported[1] have shown that rat embryos possess the potency to undergo a development of their tissues when implanted in strange surroundings. In order to test further the capacity of the embryonic parts for differentiation, transplantations of 8 and 9 day rat embryos have been made to the chorioallantoic membrane of the chick. This experiment was first performed by Hiraiwa[2] using rat embryos of a considerably older stage of development. He found that there was a considerable degree of self-differentiation in this form.

Up to the present about 200 such transplantations have been made; the eggs have been incubated from 7 to 9 days after transplantation (9 day hosts) and the grafts studied. In many cases the transplant causes only a minor reaction which is indicated by a slight thickening of the membrane on the site of the operation and a slight increase in the vascular field. This is the so-called

[1] Nicholas, J. S., PROC. SOC. EXP. BIOL. AND MED., 1931, **29**, 188.

[2] Hiraiwa, Yoshi Kuni, *J. Exp. Zool.*, 1927, **49**, 441.