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**Effect of Biotin on Certain Physiological Functions.**

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Biotin, the factor curative of egg white injury<sup>1</sup> and a growth-essential for many bacterial species,<sup>2, 3, 4</sup> is now considered an important component of the vitamin B-complex. Up to the present time, a study of the immediate effect of biotin on physiological functions has not been undertaken. The experiments described here demonstrate the effect of biotin on blood pressure, respiration, frog heart, excised uterus and intestinal strip. Since crystalline biotin is available only in limited quantity and because of its high degree of biological activity (1  $\mu\text{g}$  equals 27 vitamin H rat curative units<sup>1</sup>), relatively small amounts were used in carrying out this study.

Because of its low solubility in water, crystalline biotin methyl ester was hydrolyzed and the acid converted into the more soluble sodium salt. To 5 mg of the methyl ester was added 0.775 mg NaOH, after which dilution was made to 10 cc with distilled water. This mixture was heated in a pyrex tube over a free flame until solution took place (about 2 minutes).

Two small cats (2 kg each) were used for studying blood pressure and respiration. The blood pressure was recorded with a mercury manometer connected to a carotid artery, and respiration was recorded with a Marey tambour attached to a by-pass in the tracheal cannula. Rapid intravenous injection of 500  $\mu\text{g}$  of biotin produced no significant change in blood pressure, heart rate and respiration (Fig. 1).

Smooth-muscle studies were made in a 20 cc excised organ bath of all-glass construction. Eight strips of guinea pig uterus, one strip of rabbit uterus and one segment of rabbit intestine were studied suspended in oxygenated Sollmann-Rademaeker's solution at 38.5°C. Concentrations of biotin up to 1 part in 40,000 did not affect the normal rhythmic contractions of these organs (Figs. 2 and 3).

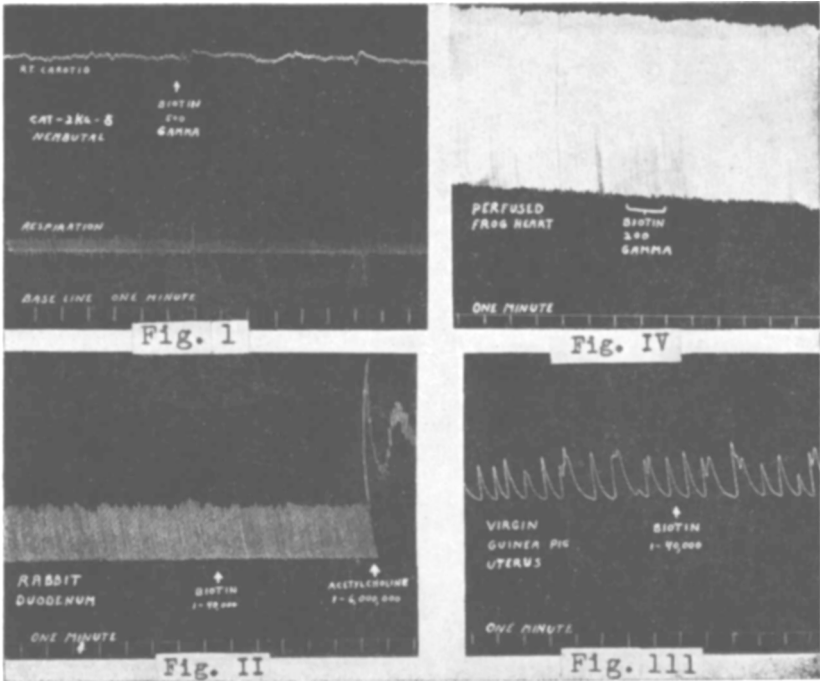
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<sup>1</sup> György, P., Rose, C. S., Hofmann, K., Melville, D. B., and du Vigneaud, V., *Science*, 1940, **92**, 609.

<sup>2</sup> Snell, E. E., and Williams, R. J., *J. Am. Chem. Soc.*, 1939, **61**, 3594.

<sup>3</sup> West, P. M., and Wilson, P. W., *Enzymologia*, 1940, **8**, 152.

<sup>4</sup> Porter, J. R., and Pelezar, M. J., *J. Bact.*, 1941, **41**, 173.



The effect of biotin on the frog heart was studied by perfusing this organ *in situ* through a Greene cannula tied into the vena cava. To each of 3 preparations, 200  $\mu\text{g}$  (0.4 cc) of biotin was introduced through the standpipe of the cannula and washed in by the Ringer perfusate. In no case was there significant alteration in amplitude, rate or rhythm (Fig. 4).

*Summary.* Biotin failed to produce any changes in the following physiological functions: blood pressure, heart rate and respiration of anesthetized cats following rapid intravenous injection of 250  $\mu\text{g}$  per kilo; excised guinea pig and rabbit uterus and rabbit intestine suspended in concentrations up to 1:40,000; and the frog heart perfused *in situ* with 200  $\mu\text{g}$  of biotin.