Comments and Communications

Failure of Vitamin B_{12} to Promote Growth of Premature Infants

With the development of knowledge of animal protein factors and of vitamin B_{12} as growth-promoting factors for bacteria and some animals, it seemed that possibly these agents might be of value in similarly promoting the growth of premature infants.

A study was undertaken in this clinic several months ago to determine whether or not this could be demonstrated. To date, that portion of the study having to do with the use of vitamin B_{12} intramuscularly has been completed.

Forty-eight infants with birth weight between 1,245 g and 2,326 g have been considered. Twenty-five received vitamin B_{12}[1] intramuscularly, and the others served as controls. The average birth weight in each of the groups was similar, 1,950 g and 1,933 g, respectively, for those receiving the vitamin and the controls. All infants received one of three types of formula, with comparative distribution between control and experimental groups.

TABLE 1

	Controls	Vitamin B_{12}
Average birth weight	1,933 g	1,950 g
Average discharge weight	2,630 "	2,577 "
Average total gain	698 "	618 "
Average daily gain	29.4 "	24.5 "
Average time to regain birth weight	7.5 days	8 days
Average time to reach 2.5 kg:		
Birth weight 1,500–2,000 g	28.6 "	29.3 "
Birth weight 2,000–2,500 g	14.6 "	14.8 "

The general condition of the infants in each group was similar. The vitamin B_{12} was given intramuscularly in a dosage of 10 μg. The frequency of administration varied from daily to every three days. The average total dose was 70 μg, with a range of 30–220. The time of introduction of the substance varied from the second to the seventh day of life, the average being the fourth day.

The results of the study in this particular group of premature infants was disappointing. There was no appreciable difference between those receiving vitamin B_{12} and those serving as controls in respect to average total gain before discharge, average daily gain, average time to regain birth weight, and average time to reach a weight of 2.5 kg. Indeed, on all counts there was a slight margin of superiority in the control infants. No difference was noted in the individual infants in the experimental group so far as dosage was concerned, those receiving the maximum total dose gaining no better than those receiving the minimal amount.

Although the group studied is not large, one may perhaps justly conclude that vitamin B_{12} is not effective in promoting weight gain of what might be termed normal premature infants. One may speculate that larger doses intramuscularly or doses similar to those used, but given orally, might be more effective. These possibilities are being explored, but we doubt that the results will differ materially from those detailed above. Wetzel (Wetzel, N. C., Fargo, W. C., and Smith, I. H. *Science*, 1949, **110**, 651) has recently reported suggestive evidence that the vitamin is effective in promoting weight gain in certain older children with slow progress in growth, children who perhaps have a deficiency of the factor. It is probably reasonable to believe that no premature infant will benefit from its administration unless he, too, has the specific deficiency. At present there is no evidence that such deficiency exists in premature infants.

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[1] Cobione, kindly supplied by Merck and Company.

Effect of Tricaine Methanesulfonate on the Determination of Sulfonamides

Tricaine methanesulfonate was used with a considerable success for the anesthesia of lower vertebrates (McGovern, B. H., and Rugh, R. *Proc. Soc. Biol. Med.*, 1944, **57**, 127; Hamburger, V. *A manual of experimental embryology*. Chicago: Univ. Chicago Press, 1942. Part II, p. 40; Schotte, O. E., and Harland, M. *J. Morphol.*, 1943, **73**, 329; and Gordon, M. N. Y. Zool. Soc. Private communication). Therefore, in one of the series of tests on the concentration of sulfamerazine in the tissues of fingerling brook trout (*Salvelinus fontinalis*), tricaine methanesulfonate M.S. 222 (Sandoz) was used as an anesthetic. The results in this series became inconsistent with the previous tests, and the tissue level of sulfamerazine was higher than could be expected. Therefore, tests were carried out in order to determine the effect, if any, of the anesthetic on the sulfonamide test.

Sulfamerazine was determined with a photometric modification of the method of Bratton and Marshall (Bratton, A. C., and Marshall, E. K. *J. biol. Chem.*, 1939, **128**, 537). The trout selected for the determinations were expected to contain in their tissues only a trace of sulfamerazine or none. In the trout anesthetized with tricaine methanesulfonate, the test indicated that the tissue level of free sulfamerazine was from 1 to 2 mg % and of total sulfamerazine from 2 to 4 mg %. Trout from the same batch, but not anesthetized, gave negative results, indicating that they were free from this sulfonamide.