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The effect of germanium dioxide on red cell regeneration in experimental anemia.

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Hammett, Nowrey and Müler,[1] Hammett and Nowrey[2] and Müller and Iszard[3] have reported that germanium dioxide stimulates red cell formation. These authors experimented almost exclusively with normal animals, chiefly rats and guinea pigs. In view of the suggested therapeutic use of germanium dioxide in the treatment of anemia, we investigated the effect of this compound in a number of animals which had been previously made anemic with methyl-phenyl-hydrazine, symmetrical di-iso-propyl-hydrazine 2-2' azobis-propane and other derivatives of hydrazine.

In the case of dogs, the usual course of recovery from anemia is irregular and varies considerably in different animals. To some extent this is due to temperamental differences in individual dogs and to the inability of certain of these animals to maintain themselves in nitrogen equilibrium. For these reasons, we experienced some difficulty in controlling adequately all of our experiments with germanium.

However, the evidence adduced thus far shows that the erythropoietic action of germanium dioxide, whenever such effect occurs, is transitory. The administration of germanium dioxide over a prolonged period does not appear to alter the degree of red cell regeneration occurring without the use of this compound. Not infrequently, a decrease in the red cell count may follow an injection of germanium dioxide. Where a temporary erythrocythemia was observed in our animals, there was no corresponding increase in the percentage of hemoglobin.

The appended chart is illustrative of the effect produced by

1 Hammett, F. S., Nowrey, J. E., and Müller, J. H., *J. Exp. Med.*, 1922, xxxv, 173.

2 Hammett, F. S., and Nowrey, J. E., *Ibid*, 507.

3 Müller, J. H., and Iszard, M., *Am. J. Med. Sci.*, 1922, clxiii, 364.

germanium dioxide, administered over a period of one month to a mildly anemic puppy. In similar experiments in which no germanium dioxide was administered, red cell regeneration occurred as rapidly, and in some instances even more rapidly than in this animal.