respiratory movements occurred when the average oxygen content was 6.5 volumes %; these specimens showed active digestive type of peristalsis. It was found, on the other hand, that fetuses were apneic when the average oxygen content was 2.1 volumes %; the amount of propagation in intestines tended to decrease in apneic fetuses but rhythmical segmentation persisted. It would seem, then, that fairly normal intestinal motility is compatible with marked anoxia in cat fetuses. That gut movements would have been as vigorous and frequent or that they would have occurred at all had better oxygenation prevailed we cannot say.

When the fetuses were deeply depressed and in the asphyxia following interruption of the placental circulation, the tonus of the intestines diminished and agonal, pendulous, writhing movements appeared. Similar activity was induced under profound asphyxia in the newborn kittens.

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Cure of Microcytic Hypochromic Anemia in Dogs with Crystalline "Factor I."

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Severe microcytic hypochromic anemia developed[1] when puppies were fed a purified casein diet apparently deficient only in factor I (rat antidermatitis factor, vitamin B_6). This anemia was cured by addition to the diet of a concentrate prepared from rice bran containing the missing factor. Knowledge at that time did not justify the conclusion that the material in rice bran extract which cures rat dermatitis is identical with the substance that cures anemia in dogs. This has now been shown to be the case by use of crystalline factor I.

The basic diet of 3 adult dogs[1] was supplemented daily with 0.05 mg of thiamine per kilo, 60 micrograms of crystalline riboflavin per kilo, 4.0 cc of liver extract 1A containing factor II (chick antidermatitis factor) per kilo,[1] 15 mg nicotinic acid, and halibut

[1] Fouts, P. J., Helmer, O. M., Lepkovsky, S., and Jukes, T. H., *J. Nutrition*, 1938, **16**, 197.

liver oil. When started on the diet, the dogs' red blood cell counts were 8.68, 6.88, and 7.53 million, hemoglobin 16.7, 12.3, and 16.2 g per 100 cc. Hematocrit of dogs 1 and 3 at beginning of study was 62 and 56 cc per 100 cc of blood respectively, while the mean corpuscular volume was 71.4 and 74.3 cubic micra. Microcytic hypochromic anemia developed in all 3 animals. Loss of appetite, weight, and severe constipation also occurred. Daily addition of 0.5 g of iron and ammonium citrate and 0.5 mg of copper sulphate to diet of 2 dogs failed to prevent increase in the anemia.

The dogs were maintained on the diet until moderately severe anemia was present. Crystalline factor I prepared by the method of Lepkovsky*[2] was then administered by mouth in daily doses of 60 micrograms per kilo. The hemoglobin of the dogs was 6.2, 4.8, and 7 g, and the red blood cell counts 4.53, 3.54, and 5.29 million when therapy was started. Hematocrit of dog 1 was 25 cc, mean corpuscular volume 48.4 cubic micra 7 days before starting therapy. Hematocrit of dog 2 was 20 cc and mean corpuscular volume 54.5 cubic micra 3 days before starting therapy, while hematocrit of dog 3 was 27 cc and mean corpuscular volume 51 cubic micra on the day therapy was begun. Reticulocytes rose from 1.8, 2.3, and 0.0% to 14, 12.8, and 6.5% by third or fourth day of treatment, and this was followed by a rise in red cells and hemoglobin and increase in hematocrit and mean corpuscular volume. In 28 days the red blood cell count of dog 1 was 7.09 million, hemoglobin 14.5 g, hematocrit 44 cc and mean corpuscular volume 62.1. After 16 days on therapy the red blood cell count of dog 2 was 6.46 million, hemoglobin 14.2 g, hematocrit 43 cc and mean corpuscular volume 66.6 cubic micra. On the nineteenth day of therapy the red blood cell count of dog 3 was 7.61 million, hemoglobin 14.7 g, hematocrit 47 cc and mean corpuscular volume 61.8 cubic micra. The hematological improvement was associated with improvement in general condition of dogs, increase in appetite and gain in weight.

Conclusions. A dietary microcytic hypochromic anemia of dogs was cured by addition of crystalline factor I to the diet. These results indicate that the material (factor I) which cures rat dermatitis is identical with that which cures microcytic hypochromic anemia in dogs.

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[2] Lepkovsky, Samuel, *J. Biol. Chem.*, 1938, **124**, 125.