

tissue waste amount to 30-40 mg. per kilo per day and the rest is dietary, this mechanism does not necessarily work in the later cachectic stages. While in some cases the increase of meat in the diet may markedly increase the amounts of bile salts excreted, in others (dogs No. 940 and 959) the opposite occurs. It is well known that a meat diet hastens the exitus of bile fistula animals and in many cases such as this the added intoxication resulting from the meat seems to bring about a closing down of the excretory mechanism.

Conclusion. Acholic cachexia is not due to lack of bile salts in the body.

7549 P

Studies on Acholic Cachexia. VII. Effect of Viosterol.*

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The rapid loss of weight, anemia and other changes which may occur in biliary fistula have recently been attributed to lack of ability to absorb fat-soluble vitamin. Takasu¹ has postulated that lack of bile salts in the intestinal tract prevents absorption of ergosterol in the same manner that fat digestion is impaired or stopped. Murakamis² reports that the excretion of bile acids is quadrupled by a single cubic centimeter of irradiated ergosterol, given subcutaneously. Others have found that vitamin administration had a markedly beneficial effect on the anemia and also prevented the bone changes.

Our experiences do not substantiate any of these conclusions. As shown in a previous article, the anemia did not seem an important factor. It was not profound and occurred mostly as a terminal phenomenon. Also the bone changes have not occurred in animals who did not have an ascending hepatitis. In 2 animals in whom frequent blood counts were made there was no effect from the administration of $\frac{1}{2}$ cc. viosterol (250 D per cc.). In these experiments the viosterol was given about the third month and the fall in the hemoglobin and red count was more rapid after its administration

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¹ Takasu, M., *Deutsche Z. f. Chir.*, 1930, **224**, 240.

² Murakamis, R., *J. Biol. Chem.*, 1928, **9**, 321.

than before. As to the bone changes, much emphasis has been put by some workers on the lack of rise in blood calcium after viosterol administration to bile fistula dogs. The well known tolerance of the dog to viosterol is here overlooked. Its calcium threshold is low and viosterol injection even in very large doses does not affect the blood calcium even of the normal dog, so it would hardly be expected to act any better in the presence of bile fistula.

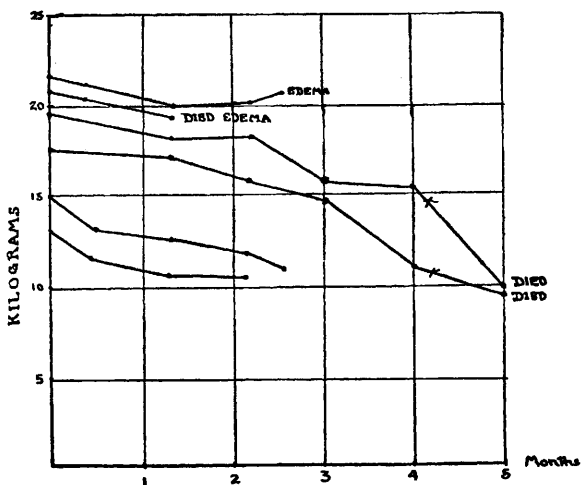


FIG. 1.

Effect of Viosterol in Bile Fistula Dogs.

4 short experiments had viosterol 250 D 1 cc. every 4 days.

2 long experiments had viosterol 250 D $\frac{1}{2}$ cc. daily from point marked X.

Much of the previous work has been done on dogs which were allowed to lick their fistulae and such animals may be kept in good health for very long periods. If this is rigidly guarded against as in our experiments, in quite an extensive series, the loss of weight has been irregular and at the rate of about 1-1.5 kilos a month. It is quite clear from the accompanying table that administration of viosterol even in very large doses has no effect whatsoever on the progress of the cachexia nor does it appear to save the life of any of the animals.

The completeness of the biliary fistula may be the cause of the apparent differences in our experiences from those of others. It is quite conceivable that an animal which gets minimal but adequate amounts of bile by mouth (5 cc. daily according to Whipple) is in a different condition from those having none. In the former condition viosterol may exert a profound effect which is absent in the latter.

Conclusion. Viosterol does not exert a favorable influence on dogs with complete biliary fistulae.

7550 P

Influence of Variations of O₂ and CO₂ Tension in Inspired Air Upon Hearing.

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Although tests made on aviators and other observations at high altitudes indicate that O₂-lack causes sensory disturbances,¹ particularly in vision, no systematic study seems to have been made in which the influence of various O₂- and CO₂-tensions was investigated in regard to sensory functions. Such a study seems to be of particular interest since the importance of these factors for various reflexes is well known. The present paper is based upon 96 audiometer experiments carried out on 6 thoroughly trained subjects. The administration of various O₂-, N₂- and CO₂-air mixtures, which were inhaled from several large Douglas bags, was preceded and followed by control periods in which the threshold for a certain sound was determined in intervals varying between 1 and 4 minutes. Long control series extending over several hours were also carried out in order to determine the spontaneously occurring variations in threshold. The observation room was nearly sound proof.

In 37 experiments the influence of breathing CO₂-air mixtures (2%-8.4%) during 5-22 minutes was studied upon the threshold of C 128, C 2048, and C 4096 cycles per second. It was found that a distinct hearing loss occurred during CO₂ breathing at and above 3% CO₂. Depending on the CO₂ concentration and the duration of the breathing period, the recovery after the end of the CO₂-period varies somewhat, but in general it was found that in less than 15 minutes the threshold was the same as before the experiment.

Contrary to expectation, similar losses in auditory acuity were obtained in 26 experiments in which the CO₂ tension of the blood was lowered by means of voluntary hyperpnea which was carried out for 3-6 minutes. The threshold determined immediately after the hyperpnea period during which apnea obtained was considerably

¹ McFarland, R. A., *Arch. Psychol.*, 1932, 145, 1.