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Effect of an Exclusive Meat Diet on Chemical Constituents of the Blood.

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This is a preliminary report of an experiment to study the effect on human beings of an exclusive meat diet of several months duration. Our subjects were 2 Arctic explorers who had spent many years in the Arctic Circle, and while there, lived for the greater part of the time on a practically 100% meat and fat diet. Preliminary to our observations they were given careful physical surveys. Both were in excellent condition and showed no evidence of impaired health. Following these examinations studies were made of the respiratory exchange, ketogenesis, protein balance, mineral metabolism, fecal bacteriology, hematology and the chemistry of the blood. This report confines itself to the blood chemical findings.

Both men have eaten absolutely nothing but meat, cooked or raw Two experienced dieticians prepared and served the meat. No subjective untoward effects were noted.* Each subject consumed 120 to 130 gm. of protein and enough fat to total a daily caloric intake of 2200 to 2800. Both men were up and about, and took their exercise in walking. At times when they left the hospital they were accompanied by an attendant so that there might be no criticism as to the supervision of their diet. After 4 months the intensive metabolic studies were temporarily suspended. These subjects reported only once a month for blood chemical studies which we have continued for the past 11 months.

This communication deals with 2 questions: (1) Does an exclusive meat diet over a period of 11 months affect the kidney? (2) What changes, if any, are found in the blood of men receiving such a diet over the period mentioned? The following were studied: N. P. N. urea, uric acid, creatinine, NaCl, sugar, CO_2 C. P., serum Ca, plasma P, albumin (plasma), globulins, total protein (plasma), A/G, and cholesterol, before the meat diet and after an exclusive meat diet for 8 months. All analyses were done in duplicate whenever there was a question as to the correctness of the procedures analyses were checked at frequent intervals.

* One of the subjects at one time developed nausea and diarrhea while on a lean meat diet; the other suffered from an incidental attack of influenza of 3 or 4 days duration. His recovery was uneventful.

The data may be summarized as follows: (1) 2 healthy men living exclusively on meat for the past 11 months, felt no untoward effects, maintained their weight and were in excellent health. (2) We find no evidence of renal impairment. (3) The chemical composition of the blood is little affected, except for a slight increase in uric acid and a temporary lipemia. The latter occurred significantly and only after unusual amounts of fat were taken.

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The Male Hormone.

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The stumbling block in the successful demonstration of the testicular hormone has been the absence of a reliable animal test. Pézard and his collaborators found that caponized cockerels are good objects for demonstrating the presence of the hormone. They have shown that when ovarian grafts are introduced into such animals, the combs (and whiskers) diminish in size, become pale, and the feathers change in the direction of the female type. Testicular grafts, on the other hand, emphasize masculinity. Carindroit and Pézard[1] succeeded in demonstrating the presence of the male hormone in the blood of cocks. Busquet,[2] using the same test, concluded that the hormone exists in the blood of various young animals. He also claims to have obtained encouraging results by oral administration.

In view of the apparent successful demonstration of the presence of the male hormone in the circulating blood, and of the estrus-producing hormone in the urine of pregnant women[3] it seemed of value to investigate the urine of young men, in the hope of showing the presence of the male hormone.

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[1] Carindroit and Pézard, *C. r. soc. de biol.*, 1926, xcv, 296.

[2] Busquet, *C. r. soc. biol.*, 1927, xcvii, 1463.

[3] Lowe and Lange, *Klin. Wochenschr.*, 1926, v, 1038; Zondek, *Ibid.*, 1928, vii, 485; Veler and Doisy, PROC. SOC. EXP. BIOL. AND MED., 1928, xxv, 806. The authors and Dr. Olivier can also confirm this work.