Work is in progress to determine what part, if any, these factors play in cellular damage *in vivo*.

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Dietary Fats and Thrombosis

IN order to study the influence of the fat content of food on the occurrence of thrombosis in the arterial and venous system, a group of 133 hospital patients aged 65–90 years were treated with a diet in which butterfat, margarine and lard were replaced by vegetable oils (unhydrogenated corn oil and soybean oil). The daily intake of vegetable oils was about 40 gm., or half the total fats. The time of treatment of the 133 patients ranged from 1 to 17 months (average 4·7 months) representing a total of 52½ years. For comparison, a control group of the same size and composition who received an ordinary hospital diet containing about 80 gm. animal fats (including about 40 gm. butter-fat, margarine and lard) was used. The occurrence of thrombosis and embolism in both groups was diagnosed clinically and post-mortem.

In the treated group only 4 cases of thrombo-embolism were observed: 1 case of myocardial infarction after 6 days of treatment, 1 case of myocardial infarction after 26 days of treatment, both verified by autopsy; 1 case of little stroke with transient aphasia of a few days' duration occurring after 30 days of treatment, and 1 case of pulmonary embolism after 4 months of treatment in a patient with bronchial cancer (verified by autopsy).

In the control group 15 cases of thrombosis were observed: 2 cases of thrombophlebitis (1 case complicated with pulmonary embolism and 1 case with thrombosis in the carotid artery), 2 cases of pulmonary embolism (both verified by autopsy), 5 cases of myocardial infarction (all typical, 2 verified by autopsy), 6 cases of cerebral thrombosis (3 verified by autopsy).

The difference in the occurrence of thrombosis in the two patient groups was statistically significant ($t = 5.1$) and cannot be interpreted in terms of variations in age, weight and blood pressure in the groups.

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BIOLOGY

Interaction between the Plasma of the Loggerhead Turtle and Toxin of the Portuguese Man-of-War

THE loggerhead turtle, *Caretta caretta*, is reported to eat the Portuguese man-of-war, *Physalia physalis*¹⁻³. Where *Physalia* are assembled in windrows, loggerheads are often seen at the surface with eyes closed, eating this siphonophore. *Veella*, an allied species, has also been identified from stomach contents of a turtle which was identified as a loggerhead⁴. *Physalia* is equipped with a singularly potent toxin⁵. This is contained in nematocysts which can penetrate a rubber glove and presumably even the chitinous exoskeleton of a crab's leg. As Barbour pointed out, the dense impenetrable skin of the face and jaws might protect a turtle from some of the obvious hazards of such a feast. However, since tentacles of active colonies have been observed to cling tightly to the skin, gloves, glass containers and even to the polished steel surface of a pair of scissors, it is difficult to explain the ability of the turtle to swallow, much less to digest and survive this meal. We believe that the acid of the stomach contents would inactivate the nematocyst and its contained venom virtually upon contact. The unconcern of the adult turtle with the toxic effects of the nematocysts might be due to the presence of protective antibodies in the blood acquired by contact with *Physalia* early in life. It is the object of this communication to report the results of experiments designed to test this hypothesis.

A 15-kgm. loggerhead turtle which had been in captivity less than one week was obtained from the Miami Seaquarium. The jugular vein was cannulated and the animal was bled. Sufficient potassium oxalate was added to the blood to bring the concentration to 0.2 per cent and the blood was cooled. Later the blood was centrifuged and the separated plasma was frozen at -20°C . without preservative. Toxin of *Physalia* was prepared according to procedures already described⁵, with the following modifications: (1) Washed quartz sand and glass-distilled water were used for homogenization of the washed purified nematocysts. (2) After centrifugation, the material was mixed with 4/3 volumes of calcium phosphate gel prepared by the method of Kunitz⁶ and was recentrifuged. The water-clear supernatant solution apparently contains all the toxic material. (3) This supernatant solution was lyophilized in tared 5-ml. capsules. These were sealed without admitting air and stored at -20°C . until used.

Fractions prepared in this way have regularly assayed at LD₅₀ of 2.5–3.0 mgm./kgm. body-weight of pure strain, 18–25 gm. C57 black male mice when the mice are injected intravenously. The lyophilized material dissolves easily and completely. We assume that the entire weight of lyophilized material is toxic for purposes of estimating concentrations. It should be noted that if any significant fraction of the lyophilized 'toxin' were inactive then the active moiety would considerably exceed 2.5 mgm./kgm. in toxicity. The toxin is quite thermolabile and its activity decreases during manipulation.

In one experiment lyophilized toxin was dissolved in glass-distilled water to produce a concentration of 20 mgm./ml. One aliquot was diluted with 19 vol. of 0.9 per cent saline to a final concentration of 1 mgm./ml. (solution A, Table 1). The second aliquot was diluted with one volume of turtle plasma