Summary. The factor included in liver extract ("vitamin M") which is responsible for maintaining nutritional and hematopoietic equilibrium in monkeys is (1) apparently not identified with the following constituents as at present isolated: riboflavin, thiamin, nicotinic acid, pantothenic acid, glutamine, pimelic acid, choline, sodium paraminobenzoate, inositol and pyridoxin; or (2) if it is any of these factors, the combined administration of the above respective fractions did not result in the effect obtained with liver extract when given by the parenteral route (hypothetical "M" factor).

The administration of a yeast residue, containing, among other unknown elements, folic acid, more closely simulated the effect of parenteral liver extract than any other material we have thus far had the opportunity to test.

Liberal amounts of the basic diet and fresh water were kept in the cages at all times. The supplements were suspended in water and fed by stomach tube except liver extract which was administered subcutaneously. Diet and supplements were supplied by the S. M. A. Corporation.

S. SASLAW
H. E. WILSON
C. A. DOAN
J. L. SCHWAB

DEPARTMENTS OF BACTERIOLOGY AND MEDICINE,
OHIO STATE UNIVERSITY

INOSITOL A TUMOR GROWTH INHIBITOR

THE importance of inositol for normal growth was established by the investigations of Eastcott,[1] Woolley[2] and others. There are no reports to date on the influence of inositol on malignant growth.

In this communication we describe the results of experiments dealing with the action of inositol on tumor growth. For these studies a rapid test for tumor growth inhibitors was employed.[3] In this test the inhibition of tumor growth is judged by comparing tumor sizes and tumor weights of treated groups of mice with untreated ones in an experimental period of 48 hours.

In Table 1 a series of experiments is presented, in which varying doses of inositol were studied. From this table it is evident that intravenous injections of inositol inhibit tumor growth, the degree of inhibition depending on the dose injected. Since September, 1942, inositol in varying doses was used in 16 experiments on 400 animals with the corresponding number of controls. The results of these experiments were similar to those presented in Table 1.

TABLE 1

EFFECT ON TUMOR GROWTH OF FOUR INTRAVENOUS INJECTIONS OF INOSITOL IN VARYING DOSES GIVEN OVER A PERIOD OF 48 HOURS*

Group No.	No. of animals in each group	Dose of Inositol γ	Mean terminal tumor weight mg	Standard error
453	11	0 (control: saline)	470	25.6
452	18	38	436	22.8
451	14	50	350	33.6
450	10	75	270	34.1
449	7	100	246	41.1
448	5	150	215	26.4
447	5	250	222	9.8
446	5	1000	142	12.8

*Female Rockland mice transplanted with Sarcoma 180; start of the experiment 8 days after transplantation; mice kept on polished rice diet for the experimental period of 48 hours.

Subcutaneous or oral administration of inositol was ineffective. Equally ineffective were intravenous injections of l-inositol,[4] inosose,[4] crystalline factors of the vitamin B-complex (thiamine, riboflavin, pyridoxine, nicotinamide, pantothenic acid, p-aminobenzoic acid, biotin and choline). Sodium phytate[4] and lipositol[4,5] showed an inhibition similar to that of inositol.

CONCLUSIONS

Inositol was found to inhibit tumor growth. The degree of inhibition depends on the dose injected. Inositol, a pure crystalline substance, can be used as a standard of reference for testing tumor growth inhibitory factors.

D. LASZLO
C. LEUCHTENBERGER

MOUNT SINAI HOSPITAL,
NEW YORK, N. Y.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

NEW OBJECTIVE METHOD FOR THE DETERMINATION OF THE CIRCULATION TIME

THE determination of the circulation time in animals and human beings has generally been associated with certain disadvantages. The various tests which require subjective cooperation on the part of the patient are open to many criticisms. Some of the disadvantages are evident in the case of children, deaf mutes, moronic or mentally sluggish individuals and

[1] E. V. Eastcott, *Jour. Phys. Chem.*, 32: 1096, 1928.
[2] D. W. Woolley, SCIENCE, 92: 384, 1940; *Jour. Biol. Chem.*, 139: 29, 1941.
[3] D. Laszlo and C. Leuchtenberger, Cancer Research, 1943. To be published.
[4] We are indebted to Dr. D. W. Woolley, of the Rockefeller Institute, New York, for generously supplying us with these substances.
[5] D. W. Woolley, *Jour. Biol. Chem.*, 147: 581, 1943.