

peated microscopic examination of the infected tissues of human beings and experimental animals by a number of investigators has failed to reveal the presence of rickettsiae or elementary bodies. Although the experiments with chloromycetin in cotton rats were of a preliminary nature they leave little doubt that at a dosage up to 400 mg/kg the effects of this antibiotic against the agent of primary atypical pneumonia are irregular. The results parallel to some extent other observations with these two antibiotics against viruses of the psittacosis-lymphogranuloma group. Against intracerebral or intranasal infections of mice with these agents aureomycin apparently shows a greater activity than chloromycetin.(10,13,14)

11. Commission on Acute Respiratory Diseases, *Bull. Johns Hopkins Hosp.*, 1946, v79, 97.

12. Dingle, J. H., *Bull. N. Y. Acad. Med.*, 1945, v21, 235.

13. Smadel, J. E., and Jackson, E. B., *Proc. Soc. Exp. Biol. and Med.*, 1948, v67, 478.

Summary. Aureomycin injected intraperitoneally starting 24 hours after intranasal infection of cotton rats with the virus of primary atypical pneumonia almost completely inhibits the development of pulmonary consolidation when given in daily doses of 1 mg, and is partly active at a dosage of 0.5 mg per day. Therapeutic activity with doses of 2.0 to 5.0 mg daily was also demonstrable when the beginning of treatment was delayed for 5 to 6 days.

Chloromycetin in doses of 5 to 20 mg per day had slight and irregular effects on the virus in cotton rats under the same experimental conditions.

Aureomycin inhibits the growth of the atypical pneumonia virus in chick embryos when injected into the yolk sac in two doses of 1 mg each 2 and 48 hours after amniotic inoculation of the virus.

14. Eaton, M. D., unpublished observations.

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The Huggins Cancer Test on 700 Normal Persons. (17564)

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Huggins *et al.*(1) have demonstrated that blood serum from persons with cancer, when heated at 100°C for 30 minutes, coagulates less readily than does normal serum. This defect in serum from persons with cancer can be accurately detected by the use of an inhibitor to coagulation, sodium iodoacetate, at a pH of 7.4. To permit mathematical expression of this phenomenon, Huggins proposed the "iodoacetate index"; the micro-moles of iodoacetate required to inhibit coagulation of one milliliter of serum, divided by the total protein of the serum in grams per cent. In a group of 283 individuals; 100 normals, 88 cancer patients, and 95 patients with non-malignant pathology; 85 clinically active can-

cers had indices of less than 9.0, as did 16 patients with non-malignant pathology. All normals fell within the range of 9.2 to 12.6. Since it is equally important to know how often one may expect an index below 9.0 in healthy persons, we have determined the iodoacetate index of 700 apparently healthy men and women of various ages at a large Army Training Center.

In our survey, the method, reagents, and equipment to determine the iodoacetate index were exactly the same as those used by Huggins and his coworkers.(2) The total serum protein was determined by the falling drop method, using the Eimer and Amend falling

1. Huggins, C. B., Miller, G. M., and Jensen, E. V., *Cancer Research*, 1949, v9, 117.

2. Huggins, C. B., Miller, G. M., and Jensen, E. V., *Simplified Procedure for Serum Coagulation Test*, University of Chicago, 24 May, 1949.

TABLE I.
Frequency of Occurrence of Various Iodoacetate
Indices on 700 Normal Persons.

Iodoacetate index	No. of persons
9.3-9.5	6
9.6-10.0	24
10.1-10.5	71
10.6-11.0	164
11.1-11.5	185
11.6-12.0	156
12.1-12.5	80
12.6-13.0	11
13.1-13.5	2
13.6-14.0	1
	700

drop apparatus to attain the serum's specific gravity(3) and Weech's formula for total protein conversion.(4)

Serum specimens were obtained from 700 apparently healthy men and women at an Army Training Center. The age range of the individuals studied was from 17 to 56 years. Seventy-five percent were below age 24. Twenty-five sera of cancer patients were obtained from other hospitals and used as controls in the performance of the thermal coagulation tests on the normal sera. Tests were run in batteries of 40, with from 2 to 5 positive sera per battery as controls.

Results. Of the 700 individuals tested, the iodoacetate index of all fell within the range of 9.3 to 13.7. (Table I). The mean value was 11.27. The median was 11.10. Neither age nor sex significantly influenced the iodoacetate index. In 6 instances, the original determination yielded values of less than 9.3, ranging from 7.78 to 9.08. However, repetition of these determinations yielded normal values in each case, the results ranging from 9.76 to 12.18, so that they have been excluded from Table I. Of the 25 sera from cancer patients used for controls, 6 gave values higher than 9.3, ranging from 9.38 to 11.96. The remaining 19 values ranged from 3.06 to 8.95. Only those sera yielding an iodoacetate index of less than 9.0 were used as control sera in the survey. Of the 6 patients within the control

group presumed to have cancer and who gave values within the normal range, 9.38 to 11.96, one was later determined to have a benign gastric polyp, and one was diagnosed as lymphosarcoma but had been receiving extensive x-ray therapy. The results in the 4 remaining cases are not explained. Their respective diagnoses are leukemia, adenocarcinoma of the rectum, carcinoma of the mandible, and generalized metastatic carcinoma, primary site unknown. One patient thought to have cancer of the cervix uteri gave an iodoacetate index of 4.24; however, a diagnostic curettage did not reveal malignant cells.

Discussion. It would seem that the iodoacetate index is uniformly negative in normal individuals. The technic is relatively simple and within the scope of the laboratory technician qualified to use an analytical balance in the preparation of the necessary reagents. The thermal coagulation endpoint is striking and quite reproducible. All determinations yielding abnormal indices should be repeated. On 6 occasions in which the initial index was below 9.3, a subsequent determination on different serum from the same individual yielded results above 9.3. The reason for this is not clear. However, in these cases, it was not possible to repeat the test with the original sera, so that experimental error may not be eliminated. In no instance of multiple determination upon the same serum specimen have the results varied more than one tube. In general, our findings on the sera of cancer patients coincide with those of Huggins. Since the clinical material was not under our direct control, it has not been possible to ferret out the explanation for normal results in supposed cancer patients nor the positive result in the one patient suspected of having, but not proven to have, cancer of the cervix.

Summary. The iodoacetate index was determined on 700 apparently healthy men and women of various age groups and found to be greater than 9.3 in all instances except in six cases in which normal values were obtained on repetition of the test. Seventy-five percent of the persons tested were less than 24 years of age.

3. Guthrie, C. C., *J. Lab. and Clin. Med.*, 1932, v17, 1158.

4. Weech, A. A., Reeves, E. B., and Goettsch, E., *J. Biol. Chem.*, 1946, v113, 167.