patients with xanthoma tuberosum is frequently extremely labile so that no special significance can be attributed to these changes seen in only one of 2 patients and based on limited data.

Conclusions and summary. 1) Tyrosine and potassium iodide do not have any effect on serum lipoprotein and total serum cholesterol concentrations. 2) These findings indicate that in clinically euthyroid patients neither substance appears to be a limiting factor in thyroidal synthesis of thyroid hormones from tyrosine and iodide.

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Histoplasmin-Latex Agglutination Test. II. Results with Human Sera.* (23851)

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Previous studies from this laboratory(1,2) have shown that polystyrene latex particles sensitized with histoplasmin can be used in a simple tube agglutination technic to detect antibody against *Histoplasma capsulatum* of infected or immunized animals. The latex particles were employed in a manner similar to that utilized in the collodion agglutination test for histoplasmosis(3-5). The purpose of the present report is to compare agglutination test results obtained with latex and collodion particles in the presence of human sera.

Materials and methods. Procedures used in preparation of materials and in performance of histoplasmin-latex agglutination tests were described in detail previously(2). In brief, a suspension of latex particles† is mixed with the previously-determined optimal dilution of histoplasmin, and kept at room temperature 1-2 hours. This antigen is then added to serial 2-fold dilutions of serum. After incubation for 2 hours at room temperature, test tubes are centrifuged at 2000 rpm for 5 minutes, and read after gentle flicking or tapping of the tubes. Reactions are graded from 1+ to 4+, depending on size of agglutinated particles and opacity of the supernatant, as in any agglutination reaction. In previous work with animal sera(2), agglutinations were read with the aid of a concave microscope mirror. This practice has been discontinued, however, and in the present study all tests were read by gross examination of the tube held in front of an appropriately shaded light (Fig. 1). The technic of the histoplasmin-collodion agglutination test has been described previously(3).

Results with random human sera. To obtain informaton as to specificity of the histoplasmin-latex test, and the frequency with which so-called "normal" human serum samples would yield detectable reactions, the test was performed on 204 random specimens originally submitted to the Ohio Department of Health Laboratory for routine syphilis serol-

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† Dow Chemical Co., Midland, Mich.

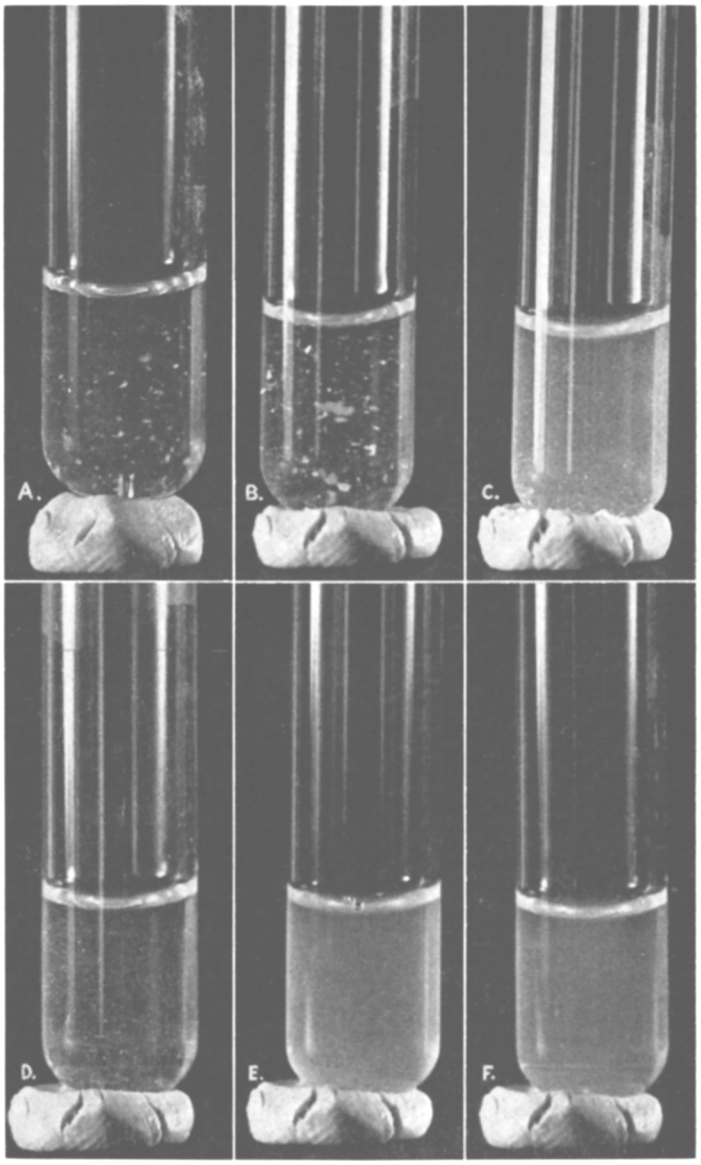

FIG. 1. A histoplasmin-latex agglutination test. A. 4+ latex agglutination. B. 4+ collodion agglutination. C. 2+ latex agglutination. D. 2+ collodion agglutination. E. Negative latex agglutination. F. Negative collodion agglutination.

ogy. Only one of the 204 sera exhibited 4+ agglutination; this sample was positive also by the collodion test, suggesting that this patient had histoplasmosis. Latex agglutination reactions of 3+ intensity were observed in 4 samples (2%) at only a 1:5 serum dilution, while 55 (26.9%) showed 1+ or 2+ reactions at serum dilutions of 1:5 and 1:10. These results are presented in Table I.

TABLE I. Histoplasmin-Latex Agglutination Reactions with 204 Human Sera Originally Submitted for Syphilis Serology.

Intensity of reaction	Serum dilution 1:5	1:10	1:20	Total	%
4+	—	1	—	1	0.5
3+	4	—	—	4	2.0
1+ - 2+	40	15	—	55	26.9
			Total	60	29.4

TABLE II. Histoplasmin-Latex and Histoplasmin-Collodion Agglutination Reactions with 208 Human Sera Originally Submitted for Histoplasma Serology.

	Latex test					Collodion test				
Intensity of reaction	Serum dilution 1:5	1:10	1:20	Total	%	Serum dilution 1:5	1:10	1:20	Total	%
4+	—	1	—	1	.5	—	—	—	—	.0
3+	1	1	—	2	1.0	11	6	—	17	8.2
1+–2+	56	18	1	75	36.0	36	29	—	65	31.2
		Total		78	37.5				82	39.4

TABLE III. Histoplasmin-Latex and Histoplasmin-Collodion Agglutination Reactions with 42 Positive Human Sera.

		Serum dilution							
Type of test	Intensity of reaction	1:5	1:10	1:20	1:40	1:80	1:160	1:320	Total
Latex	4+	5	8	11	9	4	1	—	38
	3+	1	3	—	—	—	—	—	4
	1+–2+	—	—	—	—	—	—	—	0
								Total	42
Collodion	4+	5	12	7	9	8	1	—	42
	3+	—	—	—	—	—	—	—	0
	1+–2+	—	—	—	—	—	—	—	0
								Total	42

In addition, 208 serum specimens from University Hospital patients with various diseases other than histoplasmosis, were studied by the latex agglutination test. These sera had been considered negative because of absence of histoplasma infection, and their failure to give 4+ reactions in the collodion agglutination test. One of these 208 samples (0.5%) showed 4+ reactivity in the latex test. Reactions of 3+ intensity were seen in only 1 sample (0.5%) at a serum dilution of 1:5 and in only 1 sample (0.5%) at a serum dilution of 1:10, while 75 (36%) showed 1+ or 2+ reactions in serum dilutions between 1:5 and 1:20. In the collodion particle test, 17 (8.2%) of these same 208 samples yielded 3+ reactions at serum dilutions of 1:5 and 1:10, while 65 (31.2%) gave 1+ or 2+ reactions at dilutions of 1:5 and 1:10. Comparative results of latex and collodion agglutination tests on the 208 sera are summarized in Table II. It should be mentioned that although the number of reactive sera was approximately the same as measured by each of the 2 tests, individual serum samples did not react the same in the 2 tests. In many cases, specimens yielded 1+ or even 2+ reactions at serum dilutions of 1:5 and 1:10 in the latex test and were completely negative by collodion agglutination. The reverse was true in approximately the same number of cases.

Results with positive human sera. Comparative studies of histoplasmin-latex and histoplasmin-collodion agglutination tests were carried out with 42 sera from patients with histoplasmosis. Twenty-five were from patients in University Hospital; the remainder were kindly supplied by Dr. John Procknow,‡ Miss Charlotte Campbell,§ and Mr. Arthur H. Bauer.‖ Table III summarizes results obtained with the 42 samples in both tests. All of the 42 sera gave 4+ reactions in the collodion test at serum dilutions of 1:5 or higher, while 38 of 42 yielded 4+ reactions in the latex test; 3 of the remaining 4 sera gave 3+ reactions at 1:5 and 1:10 and the 4th at 1:5 only. These latter 4 sera (Nos. 31, 33, 36, 38) are included in Table IV which depicts the results obtained with 12 less strongly positive sera, and compares relative sensitivity of the 2 tests at a lower level of positivity. These data suggest that the collodion agglutination is slightly more sensitive than the latex procedure.

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TABLE IV. Histoplasmin-Latex and Histoplasmin-Collodion Agglutination Reactions with Moderately Positive Human Sera.

Specimen No.	Latex Serum dilution 1:5	1:10	1:20	1:40	1:80	1:160	C*	Collodion Serum dilution 1:5	1:10	1:20	1:40	1:80	1:160	C*
31	3	2	2	1	—	—	—	4	4	2	1	—	—	—
32	4	3	2	1	—	—	—	4	4	3	2	1	—	—
33	3	3	2	1	—	—	—	4	4	3	3	2	1	—
34	4	3	2	1	—	—	—	4	3	2	1	—	—	—
35	4	3	3	2	1	—	—	4	4	3	2	1	—	—
36	3	3	2	1	—	—	—	4	3	2	1	—	—	—
37	4	4	2	1	—	—	—	4	4	3	2	1	—	—
38	3	3	2	1	—	—	—	4	4	3	2	1	—	—
39	4	4	4	2	1	—	—	4	3	2	1	—	—	—
40	4	4	4	3	1	—	—	4	3	3	2	1	—	—
41	4	3	2	1	±	—	—	4	3	2	1	—	—	—
42	4	3	2	2	1	—	—	4	4	3	2	1	—	—

* Control—Serum 1:5 and particles without histoplasmin.

Summary. This laboratory has now had 10 years experience with the collodion agglutination test for histoplasmosis(3-9). We use it routinely in screening for active histoplasmosis. The test itself is simple to perform and read. However, smaller laboratories or institutions with lesser demand for serologic studies for histoplasmosis find the preparation of collodion particles too time-consuming for their purposes. Commercially-prepared latex particles show similar results as collodion particles when both are sensitized with histoplasmin. It is suggested from these studies that, as in the collodion agglutination test, a 4+ reaction at 1:5 dilution or higher is compatible with active histoplasmosis. In 4 instances 3+ latex agglutinations were observed in sera showing 4+ collodion tests. Thus, at the present time, 3+ agglutinations with latex are placed in the "suspicious" category. As with collodion agglutinations, 1-2+ reactions are considered negative.

Studies are in progress to evaluate further the use of histoplasmin-latex agglutinations in serologic diagnosis of histoplasmosis.

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Effect of Certain Amino Acids and Peptides on Hyaluronidase Production by *Staphylococcus aureus*.* (23852)

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Rogers(1) devised a semisynthetic medium for production of hyaluronidase by a number of bacteria, including *Staphylococcus aureus*. This medium consisted of acid hydrolyzed

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