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Lactic acid in exudates and transudates.

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We have determined lactic acid in a number of serous fluids and in samples of blood taken at the time of paracentesis. Determinations were made immediately by the method of Clausen.

The exudates all showed a considerably greater lactic acid content than that of the blood, the highest values and greatest excess being found in frankly purulent fluids and in sero-fibrinous exudates (streptococcus) which later became purulent. The transudates yielded relatively low figures, usually slightly below the blood values.

The accumulation of lactic acid in inflammatory exudates may be due to bacterial action or to the action of leucocytes on glucose

TABLE I—Exudates.

Case	Clinical diagnosis	Date	Lactic acid in		Excess in Fluid
			Blood	Fluid	
			mg. %	mg. %	mg. %
8	Streptococcus pleurisy	12/16	18	170	152
		12/17	19	165	146
12	Streptococcus pleurisy	1/13	21	148	127
	Streptococcus empyema	2/4	23	362	339
16	Empyema		13	318	305
13	Tuberculous pleurisy		15	56	41
10	Tuberculous pleurisy	1/4	23	87	64
		1/14	28	84	56
15	Tuberculous pleurisy		15	97	82
9	Portal cirrhosis and tuberculous peritonitis	12/21	39	60	21
		1/14	93	123	33
2	Carcinoma of pleura		18	43	25

and other metabolites, as noted by Levene and Meyer.[1] In malignant exudates its presence, in concentrations greater than that of the blood, would be explained by the observation of Warburg,[2] whose study of the respiration of malignant tissues showed a production of lactic acid by cancer cells many times greater than that of normal tissues.

TABLE II—Transudates.

Case	Diagnosis.	Source	Date	Lactic acid in		Excess in Fluid
				Blood	Fluid	
				mg. %	mg. %	mg. %
1	Cardiac cirrhosis	Chest	11/23	15	13	—2
		Abdomen	1/8	22	18	—4
		Chest	2/11	13	25	12
8	Portal cirrhosis	Abdomen	12/8	37	20	—17
		Abdomen	12/14	22	23	1
4	Chronic nephrosis	Chest		17	3	—14
5	Myocardial insufficiency	Chest		20	27	7
7	Myocardial insufficiency	Abdomen		14	21	7
14	Myocardial insufficiency	Abdomen		23	9	—14
17	Myocardial insufficiency	Chest		17	20	3
11	Myocardial insufficiency	Chest		33	24	—9
6	Portal obstruction	Abdomen		33	25	—8

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The crystallization of starch.

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To 3 grams of wheat starch, ground according to the method of Alsberg and Perry,[1] 100 cc. of distilled water was added at room temperature. This solution was centrifuged for 10 minutes and after removal of the precipitate, centrifuging was repeated twice. To one part of the amylose solution thus obtained two parts of 96 per cent alcohol was added the same afternoon and the

[1] Levene, P. A., and Meyer, G., *J. Biol. Chem.*, 1912, xi, 361; xii, 265.

[2] Warburg, O., *Wochenschr.*, 1925, iv, 534.

[1] Alsberg, C. L., and Perry, E. E., PROC. SOC. EXP. BIOL. AND MED., 1924, xxii, 60-61.