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On plastein.

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"Plastein" is the name usually applied to the protein-like substance or substances precipitated from concentrated albumose solutions by the action of enzymes. Of those who have investigated the nature of plasteins, some have agreed that they are resynthesized proteins, resulting from the reversibility of the hydrolytic reaction; others view them merely as albumoses separating from the concentrated solutions because of a lack of proper conditions to maintain solubility; while still others regard them as the insoluble simple products of further digestion of the albumoses.

Because, probably, of the small yields in which plasteins are obtained, no investigator has hitherto performed a systematic estimation of the hydrolytic products, although such estimations furnish at present our most significant data concerning the nature of proteins. We have hydrolyzed 130 g. of plastein obtained by the action of pepsin upon Witte peptone. For comparison we tabulate with our results those obtained by Brunner in Fischer's laboratory from fibrin, the mother protein of the plastein.

	From 100 g. plastein	From 100 g. fibrin (Brunner)
Tyrosine	3.03	3.1
Glycocoll	0.50	2.2
Alanine	?	3.1
Valine }	15.59	Present
Leucine }		13.0
Phenylalanine	1.20	1.2
Glutaminic acid	10.02	6.8
Aspartic acid	2.15	1.7
Proline	2.55	2.4
Histidine	0.43	Not determined
Arginine	2.06	"
Lysine	1.42	"
Tryptophane	Present	Present
Total determined	38.95	33.5

Of the thirteen amino-acids tested for in plastein the presence was proved of all except alanine, which was not isolated in pure

condition. The proportions otherwise were not greatly different from those found in fibrin. It is evident that the plastein ranks with either the complex native proteins or their higher decomposition products.

In order to obtain evidence indicating with which of the above classes the plastein is to be ranked, viscosity measurements were employed. It has been shown that digestion of a protein solution is accompanied by a rapid decrease in viscosity. Consequently it appears that, under similar conditions, even its primary decomposition products form markedly less viscous solutions than the mother protein.

On comparison of equally concentrated solutions of plastein and fibrin in normal NaOH (400 mg. of dry substance to 10 c.c. solvent), it was found that the plastein solution showed much the lower viscosity. The fibrin was gradually hydrolyzed by the alkali, however, and the viscosity of its solution fell finally even below that of the plastein, which had changed but little.

For further comparison, viscosity measurements were performed upon similar solutions of hetero-albumose, and of the proteins casein, gliadin, glutein and edestine. The hetero-albumose gave a solution of viscosity similar to that of the plastein, while the native proteins all showed, like fibrin, markedly higher viscosities, and also less stability in the presence of alkali.

These results indicate that the plastein is related to the higher albumoses, and apparently, from its resistance to alkali, to the anti-albumoses rather than to the native proteins.

For the determinations, the proteins were dissolved by shaking on a machine at room temperature. All solutions were clear except that of glutein, which was cloudy. The viscosity of each was determined as soon as solution became complete, and the determination repeated at intervals. The time intervals were not regular, but figures for roughly comparable intervals are tabulated on the same line. The figures under "Hrs." indicate the time in hours between the mixing of substance and alkali, and the viscosity determination opposite. The viscosity figures indicate the rate of flow of the solutions through an Ostwald viscosimeter at $23° \pm 0.1°$, the rate of flow of water at the same temperature being taken as 100.

VISCOSITY OF SOLUTIONS OF PLASTEIN AND HETERO-ALBUMOSE.

Plastein		Hetero-albumose	
Hrs.	Viscosity	Hrs.	Viscosity
½	160.7	½	166.7
2½	156.5	1¾	161.6
8	156.0	8	154.8
20	156.3	18	150.7
——	——	30	146.9
——	——	42	146.8
52	156.1		

VISCOSITY OF VARIOUS PROTEIN SOLUTIONS.

Fibrin		Casein		Gliadin		Glutein		Edestin	
Hrs.	Viscosity	Hrs.	Viscosity	Hrs.	Viscosity	Hrs.	Viscosity	Hrs.	Viscosity
——	——	¼	266.8	——	——	—	——	——	——
——	——	——	——	——	——	—	——	2	175.9
4	223.1	5	178.0	——	——	—	——	3	169.1
8½	179.2	——	——	8½	181.4	9	247.8	10½	153.0
23	158.3	18	163.3	24	165.1	26	226.1	28	146.3
54	151.3	52	154.6	47	155.5	—	——	53	143.1

The viscosity determinations were made at the Laboratory of the U. S. Fish Commission, Woods Holl, Mass.

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The action of bile and some of its constituents upon intestinal peristalsis and the circulation.

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In their experiments with a Vella fistula, Fubini and Luzzati found that a pea, fastened to a thread, passed along the bowel more quickly when ten to fifteen minutes previously they had injected two grams of bile. C. Eckhard,[1] of Giessen, also studied the influence of the bile upon the peristaltic movement of the small intestine.

Eckhard experimented upon rabbits. He used a sodium chloride bath and studied the movements of the intestine *in situ* after opening the abdomen. After the injection into the duodenum of one cubic centimeter of bile of the rabbit the duodenum remained for ten minutes in absolute rest. He injected three c.c. of bile of rabbit, calf and sheep in different parts of the small intestine with the

[1] Eckhard: *Centralblatt für Physiologie*, 1889, p. 49.