

ing power, not only over nearly all filtrates from scarlatinal strains, but also over those from non-scarlatinal strains. The serum from Horse 19 had slight neutralizing power over some filtrates; normal horse serum had none. The identity of the toxin produced by the respective strains is further shown by the fact that convalescent scarlet fever serum, and the serum of humans after severe reactions to inoculations of scarlet fever filtrates, had neutralizing power over both sets of filtrates.

### 94 (2617)

#### A study of the occurrence of peptide nitrogen in the blood.

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The nitrogen found in tungstic acid blood filtrates, which cannot be attributed definitely to any known nitrogenous substances, has been studied by the following method: To 10 cc. of tungstic acid blood filtrate in a large test-tube graduated to 25 cc. are added 10 cc. of a saturated solution (room temperature) of barium hydroxide. The test-tube is fitted with a reflux condenser, and the contents kept boiling gently for 20 to 24 hours. The solution is then concentrated to 5 cc., a drop of 0.25 percent phenolphthalein is added and sufficient 2 percent sulfuric acid to precipitate the barium. Water is added to the 25 cc. mark, and the contents shaken and filtered. The determination of the free and hydrolyzed amino acids is carried out according to the method of Folin.<sup>1</sup> The difference between the free and total amino-acid nitrogen is considered as peptide nitrogen.

In a recent paper Blau<sup>2</sup> came to the conclusion that the amount of peptide nitrogen is by far too small to account for the undetermined nitrogen. The values found in the table, obtained by the method described, show that the peptide nitrogen makes up a very high percent of the unknown nitrogen. The reason that a more exact check on the total nitrogen is not obtained, is due probably to unavoidable small losses in the various methods and

<sup>1</sup> Folin, O., *J. Biol. Chem.*, 1922, li, 377.

<sup>2</sup> Blau, Nathan F., *J. Biol. Chem.*, 1923, lvi, 873.

the variable quantities of the more complex amino-acids, which do not give a color proportional to their nitrogen content. It appears that easily hydrolyzed peptides are responsible for a large percent of the undetermined rest nitrogen.

Non-protein Nitrogen Determinations per 100 cc. of Whole Blood (Human).

No.	Total Non-Protein N	Urea N	Preformed Creatinin N	Total Creatinin N	Uric Acid N	Amino Acid N	Und'ter'd Rest N	Pep-tide N	Peptide N % of Und'ter'd Rest N
	mg.	mg.	mg.	mg.	mg.	mg.	mg.	mg.	
1	29	13	0.5	1.6	0.9	8.7	4.8	4.3	90
2	38	17	0.8	1.5	0.84	7.0	11.8	11.0	93
3	45	17.8	0.8	2.0	0.88	8.7	15.6	11.0	70
4	42	11				8.0	23.0	20.0	
5	40	17				8.3	14.7	13.3	
6	40	13.8				7.8	18.4	13.0	
7	43	16.5				7.8	19.0	15.0	
8	36	17.6				9.1	9.3	5.2	
9	41.5	14				8.7	18.8	11.3	
10	142	108	1.8	4.6	1.7	8.7	19.0	13.8	72
11	114	91				8.0	15.0	7.0	
12	115	90			1.6	7.0	16.4	14.0	
13	150	114	3.0		2.0	7.7	23.3	20.0	
14	154	120		3.2	2.6	7.3	21.0	16.0	76

### 95 (2618)

The effect of sodium ricinoleate upon bacterial toxins, and the value of soap-toxin mixtures as antigens.

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The present study is a continuation of the work published by Larson and Nelson<sup>1</sup> on the effect of castor oil soap upon bacterial toxins. It was shown that sodium ricinoleate possessed the property of detoxifying soluble toxins as well as endotoxins.

In the present paper an attempt is made to analyze the mechanisms of the detoxifying action of soaps, and further, to study the antigenic properties of toxins which have been thus detoxified.

<sup>1</sup> PROC. SOC. EXP. BIOL. AND MED., 1924, xxi, 278.