

caderas by a single injection of trypanred acquired an immunity that lasted 50 days. Another mouse cured of surra of Mauritius by acetylatoxyl and "Cl" had a strong immunity. In the 46 days that followed treatment it received eleven inoculations of virulent surra of Mauritius trypanosomes but did not become infected. When next tested for its immunity (311th day), it was apparently hypersensitive to infection. It was killed in 8 days by a greatly attenuated surra of Mauritius strain. The attenuation was apparently due to long continued passage through guinea pigs. One of the two controls inoculated with this virus died on the twentieth day. The other carried the trypanosomes for 111 days, recovered spontaneously, and is still alive (184th day).

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The leucin fraction of proteins. II.

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In a previous communication¹ we have described a method for quantitatively separating leucin and isoleucin from valin, the leucin isomers being precipitated as normal lead salts. It has since been found that from the specific rotation of the mixture of leucin and isoleucin, as obtained analytically pure from the lead salts, the percentage of each can be accurately calculated. The rotation of d-leucin in 20 per cent. hydrochloric acid is + 36.8°, of l-leucin + 15.6°. Consequently the proportions are calculated by the formulæ :

$$\begin{aligned}\text{per cent. d-isoleucin} &= \frac{100 (R - 15.6)}{21.2}, \\ \text{per cent. d-leucin} &= \frac{100 (36.8 - R)}{21.2}\end{aligned}$$

(*R* representing specific rotation in 20 per cent. hydrochloric acid). The specific rotations of the isomers are unaffected by the boiling acid used for hydrolysis, but are affected by boiling with alkalies. Consequently the method is not applicable to products of alkaline hydrolysis, which however is seldom used.

¹ These Proceedings, 1909, vi, 54.

Analysis of the leucin fractions of casein and edestin gave the following results, those obtained by Abderhalden being given for comparison. The figures represent yield in grams from 100 grams of protein.

	Casein.		Edestin.	
	V-S. and L.	Abderhalden.	V-S. and L.	Abderhalden.
Leucin,	7.84	10.5	8.1	20.9
Isoleucin,	1.51			
Valin,	6.69	10	5.6	0.45
Total "leucin fraction,"	16.04	11.5	13.7	21.35

Our figures are based on analytically pure products. It is evident that Abderhalden missed from 80 to 90 per cent. of the valin which was undoubtedly calculated in with the leucin, as the two are not separable by the methods previously available. Still other products in the necessarily crude mixture may account for the high yield from edestin.

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"Clavin," Vahlen's active principle of ergot.

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In a recent paper Vahlen¹ describes the isolation of the two constituents of clavin, a crystalline substance isolated by him from ergot. By means of their copper salts two substances, leucin and "clavin base" of the formula $C_5H_{11}O_2N$, were separated from the clavin. From analysis of clavin it appeared to consist of leucin and clavin base in molecular proportions, and was regarded as a salt-like combination, similar to that in which some alkaloid bases are found, the leucin acting as acid, the clavin base as base. Vahlen regards clavin as the active principle of ergot in stimulating contraction of the uterus, and the clavin base as the active constituent of clavin.

From the description of clavin, it appeared similar in both physical and chemical properties to the mixture of leucin and valin obtained from proteins. A sample of Vahlen's clavin was obtained from Merck and submitted to the process devised for determination of leucin, isoleucin, and valin in the presence of one another.² The

¹ *Arch. f. exper. Path. u. Pharm.*, 1909, lx, 42.

² Levene and Van Slyke: These Proceedings, 1909, vi, 54.