

C, 67.59; H, 6.93; Cl, 11.08; N, 4.38. Found: (normal form) C, 67.55; H, 6.94; Cl, 11.44; N, 4.27; (iso form) C, 67.50; H, 6.93; Cl, 11.07; N, 4.31.

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A MATERIAL IN BOVINE STOMACHS RELATED TO BLOOD GROUP B SUBSTANCE¹

Sir:

Blood group A substances in cattle have been studied^{2,3} and the possible presence of blood group B substance noted.⁴ Our findings using hemagglutination-inhibition indicate that substances with either blood group A, B, O, AO, BO, or with negligible activity can be obtained by an identical procedure⁵ from different individual bovine stomachs (abomasus). The purified^{6,7} substances were analyzed: N, 5.0–7.2%; reducing sugar as glucose (after hydrolysis) 51–60%; hexosamine (after hydrolysis) 23–34%; methylpentose 1.5–5.2%. Analytical data of hog⁶ and human⁷ substances are similar, except that their methylpentose contents are higher.⁸

Four of nine preparations showed only blood group B activity, which was 1–5% the activity of B substances from human saliva or horse stomach as determined by hemagglutination-inhibition.

TABLE I

ANTIBODY N PRECIPITATED FROM 2.0 ML. SERUM OF A HUMAN OF BLOOD GROUP A IMMUNIZED WITH HORSE B

Bovine substance added, μg	Antibody N precipitated, μg	SUBSTANCE		Total antibody N, μg
		Vol. of supernatant giving detectable agglutination of human B cells, ^a ml.	Antibody N precipitable from supernatant by horse B, μg	
25	24.6	0.05	11.0	35.6
50	29.0	.1	4.9	33.9
100	24.5	.2	1.2	25.7
250	19.6	.2	1.6	21.2
500	10.4	.2	2.1	12.5
Horse B				
60	32.5 ^b			

^a 0.003 ml. of original serum is capable of agglutinating the quantity of B cells used. ^b Point of maximum precipitation. No agglutinins for human B cells are detectable in the supernatant.

(1) Aided by grants from the United States Public Health Service and the William J. Matheson Commission.

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(4) K. Landsteiner and M. W. Chase, *J. Exp. Med.*, **63**, 813 (1936).

(5) W. T. J. Morgan and H. K. King, *Biochem. J.*, **37**, 640 (1943).

(6) A. Bendich, E. A. Kabat and A. E. Bezer, *J. Exp. Med.*, **83**, 485 (1946).

(7) E. A. Kabat, A. Bendich, A. E. Bezer and S. M. Beiser, *ibid.*, **85**, 685 (1947).

(8) H. Baer, Z. Dische and E. A. Kabat, *ibid.*, **88**, 59 (1948).

However, the bovine B substances cross reacted extensively but not completely with anti-horse B and showed a much higher capacity to precipitate anti-B per unit weight than would have been expected from the hemagglutination-inhibition test.

The table shows the anti-horse B nitrogen precipitable from 2.0 ml. serum by various quantities of bovine B, as compared with horse B. The cow B precipitates anti-B as evidenced in the supernatant by the reduction in anti-B agglutinins and in antibody N precipitable by homologous horse B substance. Excess bovine B inhibits precipitation and reduces the quantity of antibody precipitable from the supernatant by horse B.

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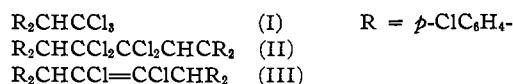
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INSECTICIDAL ACTIVITY OF 1,1,4,4-TETRA-(*p*-CHLOROPHENYL)-2,2,3,3-TETRACHLOROBUTANE

Sir:

The recent communication by Fleck¹ prompts me to report that 1,1,4,4-tetra-(*p*-chlorophenyl)-2,2,3,3-tetrachlorobutane (II), closely related to the compound III which is shown by the above author to be produced in the ultraviolet irradiation of DDT (I), has been found to possess decided insecticidal activity.



Although I have been aware of this fact for a year, only preliminary tests are at hand, because much time has been consumed in various attempts to obtain a more satisfactory procedure for the preparation of II than the method of Brand and Bausch.^{2a} However, recently, a test was performed by Prof. E. Delvaux (Agronomic Institute, Louvain) which gave evidence that II is as toxic as DDT to *Drosophila melanogaster* Meig., though slightly weaker in knock-down activity.

The insecticidal power of II suggests that it may contribute possibly to some extent to the well-known high residual effect of DDT, because it is not objectionable at all to assume that II is an intermediate product in the formation of III,^{2b} which is provisionally considered as being much less effective than II, by analogy with the strong decrease in activity which accompanies the conversion of DDT into the corresponding ethylenic derivative.

Besides, in connection with the problem of the relation between insecticidal activity and chemical constitution an extensive review of the litera-

(1) Fleck, *THIS JOURNAL*, **71**, 1034 (1949).

(2) (a) Brand and Bausch, *J. prakt. Chem.*, **127**, 232 (1930); (b) **127**, 233 (1930).