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Influence of Vitamin C on Development of Skin Sensitivity to Neoarsphenamine in the Guinea Pig.

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Scorbutic guinea pigs have a reduced skin reactivity.^{1, 2, 3} Frei⁴ sensitized guinea pigs to neoarsphenamine. Mayer and Sulzberger⁵ reported that diet exerted an important influence in neoarsphenamine sensitization in guinea pigs. The present experiment demonstrates that guinea pigs on a scorbutic diet fail to develop as definite skin sensitivity to intradermal injections of neoarsphenamine as animals on a diet sufficient in Vitamin C.

Guinea pigs in groups B, C, D and E (Table I) were fed a grain mixture and carrots. Group B received in addition at various intervals 2 mg. ascorbic acid by mouth. Animals of Group A received the grain mixture, kale, hay and some carrots. These animals of group A did not develop the cardinal symptoms of scurvy but were maintained in a subacute state. They did not increase in weight during the experiment as did the animals in the other groups. The animals were fed these diets for 15 days before receiving the first intradermal injection.

For the sensitizing dose, groups A, B and C received intradermally 0.1 cc. of a 0.15% solution of neoarsphenamine in 5% C.P. dextrose, the solution being made from freshly boiled, glass-redistilled water. Control groups, D and E, received intradermally 0.1 cc. of the same solution without the neoarsphenamine. The provocative dose for groups A, B and E was the same as the sensitizing dose. For groups C and D the sensitizing and provocative doses were reversed (Table I). There was an interval of 40 days between the 2 doses.

Results. In group A (subacute scurvy), the *sensitizing* dose gave a smaller reaction than it did in group B. There was little or no difference in the reactions produced by the sensitizing and provoca-

¹ Prausnitz, C., and Schilf, F., *Deutsch. Med. Wchnschr.*, 1924, **50**, 102.

² Bieling, R., *Deutsch. Med. Wchnschr.*, 1927, **53**, 182, 228.

³ Arkwright, J. A., and Zilva, S. S., *J. Path. and Bact.*, 1923, **27**, 346.

⁴ Frei, W., *Klin. Wchnschr.*, 1928, **22**, 1026.

⁵ Mayer, R. L., and Sulzberger, M. B., *Arch. f. Dermat. u. Syph.*, 1931, **163**, 245.

TABLE I.

Group.	No.	Diet	Sensitizing Dose.				*	Provocative Dose.				
			Left Flank.					Right Flank.				
			Soln. used	Days after injection				Soln. used	Days after injection			
1st	3rd	8th		1st	3rd	4th	6th					
A	201	Scor- butic	Neo- arsphen- amine + Dextrose	S	O	O	Neo- arsphen- amine + Dextrose	S	O	O	O	
	209		S	O	O	O	S	S	O			
	210		S	S	O	S	S	O	S			
	211		S	S	O	S	S	O	O			
	212		S	S	O	O	O	O	O			
B	214	Anti- Scor- butic	Neo- arsphen- amine + Dextrose	D	S	O	Neo- arsphen- amine + Dextrose	M	D	O	O	
	200		D	O	O	D	O	O	O			
	202		D	D	O							
	204		D	D	O	M	S	O	O			
	213		S	S	O	M	D	M	O			
C	215	Anti- scor- butic	Neo- arsphen- amine + Dextrose	S	D	O	Dextrose	S	O	O	O	
	219		S	S	O	O	O	O	O			
	221		S	S	O	O	O	O	O			
	240		S	S	O	O	O	O	O			
	D		206	Anti- scor- butic	Dextrose	S	O	O	Neo- arsphen- amine + Dextrose	S	S	M
208		S	O		O	S	O	O	O			
220		S	O		O	S	O	O	O			
E	203	Anti- scor- butic	Dextrose	S	O	O	Dextrose	O	O	O	O	
	205		S	O	O	S	O	O	O			
	207		S	O	O	O	O	O	O			

* Interval of 40 days between sensitizing and provocative dose.

M = Marked reaction; a very marked redness covering an area not less than the size of a large bean.

D = Definite reaction; a definitely red area about the size of a pea.

S = Slight reaction; a small faintly red area.

O = No reaction.

tive doses in group A. This shows that skin sensitivity is not developed in animals suffering from subacute scurvy. The provocative dose in group B resulted in very marked skin reactions indicating that these animals were sensitized. Groups C, D and E serve as controls. They show that no reaction is produced by dextrose, group E; that guinea pigs receiving neoarsphenamine and then dextrose for the provocative dose do not react, group C; and that animals receiving dextrose in the first injection are not sensi

tive to neoarsphenamine, group D. Pig No. 206 gave a "spontaneous flare-up", as described by Sulzberger,⁶ after the first injection of neoarsphenamine, due to *developing* skin sensitivity. Group B, which received some ascorbic acid in addition to carrots, grew at the same rate as groups C, D and E which did not receive ascorbic acid, but developed more marked skin reactions to the sensitizing dose than groups A and C.

This experiment carried out during October-December, 1934, confirms the results obtained in a previous experiment on definitely scorbutic pigs during June-August, 1934.

⁶ Sulzberger, M. B., *Arch. Derm. and Syph.*, 1929, **20**, 669.