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Immunization Studies with the Virus of Infectious Myxomatosis.

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Unsuccessful attempts to immunize the domestic rabbit against the virus of infectious myxomatosis by means of various vaccines have been reported by Sanarelli,¹ Moses,² and Hobbs.³ In this study 8 rabbits immunized with phenolized and formalized vaccines prepared from the South American myxoma virus also demonstrated no immunity.

Recently a strain of myxoma virus has been encountered in several rabbitries of Southern California (Kessel, Prouty and Meyer⁴), and this strain has been employed in the accompanying series of vaccination experiments. All of the vaccines were made from virus in the form of fresh sterile blood collected from rabbits showing the symptoms of advanced myxomatosis, and were injected into the experimental animals by the subcutaneous route. Chemically inactivated vaccines were prepared by phenolizing and formalizing 10 and 20% solutions of the myxomatous blood. Heat was also employed as a means of inactivating the virus, and portions of the blood were heated both at 60°C for 30 minutes and at 45°C for 24 hours.

Eight animals vaccinated with heat inactivated virus proved susceptible to subsequent inoculation of living virus. Attempts to immunize rabbits with phenolized and formalized vaccine have yielded more encouraging results, and are summarized in Table I.

In addition to the above 29 control animals, 111 other unvaccinated rabbits have been inoculated with the California strain of virus in other studies in progress. Of these 150 unvaccinated animals, 5, or 3.3%, have shown partial resistance, and 2, or 1.3%, have recovered. No inoculated animals in this series have failed to develop symptoms. Thus a total of 7 unvaccinated animals, or 4.6%, as contrasted with 25.6% of vaccinated animals have exhibited either partial or complete resistance to inoculation.

¹ Sanarelli, G., *Centr. Bakt.*, 1898, **30**, 865.

² Moses, A., *Mem. Inst. Oswaldo Cruz.*, 1911, **3**, 46.

³ Hobbs, J. B., *Am. J. Hyg.*, 1928, **8**, 800.

⁴ Kessel, J. F., Prouty, C. C., and Meyer, J. W., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **28**, 413.

TABLE I.
Showing Number of Animals Immunized with Chemically Inactivated Vaccine.

	39 Vaccinated Rabbits		29 Unvaccinated Rabbits	
	No.	%	No.	%
Partial resistance (<i>i. e.</i> , lived 10 days or more after symptoms)	6	15.4	1	3.4
Resisted 2 subsequent I. C. inoculations of virus	2	5	0	0
No symptoms. Complete resistance	1	2.6	0	0
Recovery with subsequent complete resistance	1	2.6		
Total showing partial or complete resistance	10	25.6	1	3.4

The 2 animals that recovered without previous vaccination were of the long-haired, Angora variety. These also developed abscess at the point of inoculation, from which an organism resembling *Pasteurella cuniculicida* was recovered.

Reinoculation experiments with both California and South American strains of virus performed on 2 of the animals recovered from myxomatosis are shown in Table II.

TABLE II.

Strain of Virus	No. 1, Angora Rabbit. Received no vaccine, natural recovery	No. 2, Brown (mixed) Rabbit. Received formalized vaccine prior to inoculation
Californian	Subcutaneous inoculation 14 days after recovery Remained normal Control died 5 days after symptoms	Subcutaneous inoculation 20 days after recovery Remained normal Control died 2 days after symptoms
		Intravenous inoculation 27 days after recovery Remained normal Control died 1 day after symptoms
South American	Intracutaneous inoculation 28 days after recovery Remained normal Control died 6 days after symptoms	Subcutaneous inoculation 37 days after recovery Remained normal Control died 4 days after symptoms
	Subcutaneous inoculation 37 days after recovery Remained normal Control died 4 days after symptoms	

From this table, it will be seen that a naturally recovered animal, and an animal recovered following vaccination have demonstrated immunity both to the California and South American strains of myxoma virus.

Dr. J. R. Hobbs, of the Harvard University Medical School, by personal communication of May 16, 1931, states that one of his experimental rabbits, naturally recovered from an infection of the South American variety of myxomatosis, has resisted subsequent inoculation with the California strain of virus. Dr. Hobbs' and our results thus indicate that recovery from either South American or Californian types of myxomatosis will render immunity to subsequent inoculations with both strains of virus.

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Effect of Vitamin C Diet on Blood Formation in Experimental Scurvy of Guinea Pigs.*

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We recorded¹ that a variable degree of anemia occurred in a large percentage of individuals suffering from vitamin C deficiency. That a reticulocyte response could be induced in such patients by the administration of a diet rich in vitamin C. That the evidence suggested an altered function of the bone marrow, in great measure directly dependent upon the chronic lack of vitamin C. Since anemia, reported by Meyer and McCormick² and others is of regular incidence in experimental scurvy of guinea pigs, it seemed desirable to determine the effect of vitamin C-containing foods on blood formation. Accordingly, experiments were made (1) to ascertain the effect of a diet deficient in vitamin C on the bone marrow of the guinea pig; (2) to ascertain the effect of a diet containing vitamin C on the bone marrow administered to animals with manifest scurvy.

Adult guinea pigs weighing between 300 to 550 gm. were used throughout the experiment. The males were segregated from the females and all animals were observed over a preliminary period of one to 3 weeks.

* Read before the Section on Medicine of the American Association for the Advancement of Science, Pasadena, California, June 17, 1931.

¹ Mettier, Stacy R., Minot, George R., Townsend, Wilmot C., *J. Am. Med. Assn.*, 1930, **95**, 1089.

² Meyer, A. W., and McCormick, L. M., *Stanford University Publications*, 1928, **2**, 199.