

plexed antigen, *e.g.*, the slow release of bound antigen by dissociation from the complex.

Summary. Rabbits immunized with insoluble *C. atrox* venom-antivenom precipitate produced less precipitins and nearly as much neutralizing antibody as those injected with whole venom. The data show that venom neutralizing antibodies are precipitins and that the apparent non-relationship between precipitin titer and antitoxic value is the result of the polyvalency of venom-antivenom systems. The value of using insoluble antigen-antibody precipitates to isolate specific antigens, from a mixture, for immunization is pointed out.

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Effect of Hydrocortisone Feeding on Concentration of Free Fatty Acids and Other Lipids of Rabbit Sera.* (31118)

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The chief purpose of this investigation was to study changes in the free fatty acids (FFA) concentration of rabbit serum as the serum lipids were modified by administration of hydrocortisone. We reported previously that addition of 20 mg of hydrocortisone/kg of stock rabbit diet markedly increased the serum triglyceride concentration(1). When the diet also contained cholesterol, the serum cholesterol as well as the triglyceride concentration rose to very high levels. Since the blood became very lipemic when cholesterol was added to the diet, cholesterol was omitted in this study in order to be able to work with less severe lipid changes. Two diets were employed. One was Purina rabbit chow to which hydrocortisone was added at a level of 30 mg/kg. The other was similar except that coconut oil was added at a 5% level. The

coconut oil replaced an equal weight of Purina chow. Blood samples were collected in the morning. Food was allowed at all times.

Method. Free fatty acids were determined using the modification by Trout *et al*(2) of Dole's procedure(3). Phospholipid phosphorus was determined using the method of Outhouse and Forbes(4), following extraction with alcohol-ether. All basic references to the procedure for cholesterol and triglycerides were given previously(5).

Results. The experimental results are shown in Table I. The average and range are given in each case. It will be seen that a markedly elevated FFA was always associated with a high level of the other lipids. The presence of coconut oil accelerated the changes although its presence in the diet was not necessary to obtain elevated serum lipid concentrations.

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TABLE I. Serum Lipids in Hydrocortisone Fed Rabbits.

Exp	Days on diet	Serum				Diet
		FFA, mEq/l*	Cholesterol, mg/100 ml*	Triglycerides, mg/100 ml*	Phospholipids,† mg/100 ml*	
1	0	.120 (.115-.125)	35 (35- 35)	57 (47- 62)	80 (77- 82)	Purina rabbit chow + HC‡
	6	.281 (.204-.388)	184 (168-216)	1048 (695-1378)	267 (255-290)	
	13	.288 (.245-.331)	93 (76-104)	528 (262- 816)	177 (145-197)	
	24	.259 (.216-.281)	127 (100-145)	525 (354- 752)	207 (195-227)	
	45	.830 (.649-.921)	148 (138-164)	1391 (1332-1431)	330 (275-372)	
2	0	.130 (.118-.136)	35 (35- 35)	81 (71- 89)	65 (60- 70)	Purina rabbit chow + 5% coconut oil + HC‡
	6	.337 (.280-.410)	280 (238-352)	1612 (785-2263)	387 (362-425)	
	13	.451 (.360-.505)	217 (200-246)	2146 (1513-2664)	382 (365-425)	
	24	.479 (.317-.661)	175 (142-194)	2443 (636-3810)	482 (447-552)	
	45	.924 (.734-1.062)	265 (196-364)	1969 (906-2920)	427 (272-605)	

* Values indicate average and range obtained on 3 rabbits in each experiment.

† Phospholipid phosphorus \times 25.

‡ Hydrocortisone.

Discussion. The most satisfactory explanation for the results obtained seems to be that in rabbits, hydrocortisone in the diet causes marked mobilization of FFA from adipose tissue and that the hypertriglyceridemia results from liver utilization of FFA for lipoprotein synthesis. The fact that high FFA was always associated with markedly elevated serum lipoprotein concentration also suggests that under these conditions lipoproteins may play an important role in the transport of FFA. To investigate this, some of the serum from each animal collected on day 13 was centrifuged at $20,000 \times g$ for 2 hours in a refrigerated centrifuge and FFA determined on the infranate. The results showed that a minimum of 23% of the total FFA was removed along with the supernatant. It is of interest that Nestel(6) found that in man, the increase in FFA following norepinephrine administration was directly related to the original serum triglyceride concentration. The FFA concentration prior to the norepinephrine administration showed no relationship to the serum lipid concentration.

Summary. Rabbits fed Purina rabbit chow supplemented with 30 mg of hydrocortisone/kg of diet showed a marked rise in FFA content of the serum as well as in serum cholesterol, phospholipids, and triglycerides. The addition of coconut oil at a 5% level to the diet augmented the effect. It is postulated that the various changes in serum lipid may be secondary to an increased mobilization of FFA from the adipose tissue as a result of the hydrocortisone feeding.

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