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## Avitaminosis. XIV. Effect of Vitamin A Deficiency on Concentration of Blood Lipids of Albino Rat.*

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Although it is well known that fats act as carriers of certain vitamins, nothing definitely has been established on the influence of avitaminosis on lipid metabolism. The literature is conflicting, because the difficulties involved in the analytical chemical methods are many. Another reason for inconsistent data, obtained on adequate control diets, is probably due to the fluctuating results produced by metabolic changes incident to the normal processes of digestion and absorption of lipids in the animal organism. In our lipid metabolism work we have fasted our animals one hour previous to bleeding. In order, however, to eliminate all possibilities of the influence of food on blood lipids, we are continuing our studies, fasting the rats for much longer periods. In the meantime, we feel that a summary of our results completed would be of interest to the clinician as well as to the nutritional investigator.

The dietary technique employed has been described in a previous communication.[1] The details of our blood methods will be submitted in a subsequent communication elsewhere.

The blood determinations were made once weekly and the experimental period lasted 50 to 65 days.

TABLE I.
Lipid Metabolism of Blood in Vitamin A Deficiency
(Fatty acids and phospholipids)
P—pathological; C—control.

| Animal No. | | Wt. gm. | | Exp. Period | Fatty Acids (mg. per 100 cc.) | | Phospholipids (mg. per 100 cc.) | |
|---|---|---|---|---|---|---|---|---|
| P | C | Init. | Final | (days) | Range | Ave. | Range | Ave. |
| ♀ 8997 | | 51 | 78 | 57 | 182-286 | 224 | 160-237 | 194 |
| ♀ 8801 | | 47 | 70 | 51 | 192-253 | 227 | 181-229 | 204 |
| | ♀ 8798 | 46 | 167 | 57 | 190-266 | 211 | 171-234 | 194 |
| | ♀ 8800 | 48 | 155 | 41 | 192-246 | 218 | 170-213 | 194 |
| ♂ 8799 | | 50 | 59 | 41 | 209-286 | 255 | 170-236 | 201 |
| | ♂ 8802 | 45 | 228 | 51 | 194-246 | 215 | 182-219 | 197 |
| ♂ 8803 | | 60 | 77 | 58 | 169-253 | 213 | 170-213 | 189 |
| | ♂ 8804 | 58 | 225 | 58 | 185-274 | 225 | 179-236 | 196 |

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[1] Sure, B., Kik, M. C., and Walker, D. J., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 495.

For this study a total of 64 rats was employed, 27 controls and 37 pathological animals. In Tables I and II are submitted typical illustrations representative of the remainder of the group.

TABLE II.
Lipid Metabolism of Blood in Vitamin A Deficiency (Cholesterol).

| Animal No. | | Wt. gm. | | Exp. Period | Cholesterol (mg. per 100 cc.) | |
|---|---|---|---|---|---|---|
| P | C | Init. | Final | (Days) | Range | Ave. |
| ♀ 8821 | | 85 | 84 | 30 | 69-100 | 82 |
| | ♀ 8822 | 90 | 155 | 30 | 70-104 | 89 |
| ♂ 8823 | | 90 | 133 | 25 | 76-94 | 85 |
| | ♂ 8824 | 83 | 181 | 25 | 71-90 | 82 |
| ♂ 8825 | | 67 | 93 | 29 | 71-106 | 80 |
| | ♂ 8826 | 60 | 180 | 29 | 68-94 | 81 |
| ♀ 8831 | | 92 | 134 | 30 | 67-92 | 77 |
| | ♀ 8832 | 103 | 170 | 30 | 69-86 | 78 |

The pathological states of the animals during the advanced stages of the avitaminosis were associated with loss of weight, severe xerophthalmia and pneumonia, but as shown in Tables I and II the concentration of the blood fatty acids, cholesterol, and phospholipids fall within the same range as that of the controls, which made excellent growth without any apparent symptoms of vitamin A deficiency.

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## Avitaminosis. XV. Effect of Vitamin D Deficiency on Concentration of Lipids of Blood of Albino Rat.*

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In this investigation a total of 48 rats was employed, 16 controls and 32 pathological animals. The dietary technique has been described.[1]

The blood determinations were made once weekly and the experimental period lasted 30 to 40 days.

In Tables I and II are submitted typical illustrations representative of the remainder of the group.

* Research paper No. 272, Journal Series, University of Arkansas.

[1] Sure, B., and Kik, M. C., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 496.