178 (2138)

The therapeutic value of egg yolk in rickets.

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In view of its high content of fat-soluble vitamine, and the association of this vitamine with the anti-rachitic factor, it seemed worth while to test the value of yolk of egg in relation to the prevention and cure of rickets. Mellanby added this to his experimental diet in one instance and was able to cure rickets in a dog. In our experiments young rats were used and the Sherman-Pappenheimer low phosphorus diet was fed. The yolk was given to each animal separately. Table I shows the

TABLE I. PROPHYLACTIC TREATMENT OF RATS WITH EGG YOLK

Weight (g.) at onset and after 28 days	Rickets-producing diet	Daily amount of egg yolk	Radiographic rickets	Path. rickets		Blood P. (mg. per cent.)
				Gross	Microscopic	
50-44	No. 84		marked	R.	R.	2.5
40-44	(High Ca		marked	R.	R.	
50-38	Low P.)		slight	R.	R.	
50-50	No. 84	0.25 g.	neg.	neg.	neg.	4.0
40-40	(High Ca		neg.	neg.	neg.	
50-60	Low P.)		neg.	neg.	neg.	
40-50			neg.	neg.	neg.	
30-66	No. 84	0.33 g.	neg.	neg.	neg.	4.5
40-60	(High Ca		neg.	neg.	neg.	
50-58	Low P.)		neg.	neg.		
40-58			neg.	neg.		
30-60	No. 84	0.5 g.	neg.	neg.	neg.	
40-70	(High Ca		neg.	neg.	neg.	5.0
40-60	Low P.)		neg.	neg.	neg.	
40-70			neg.	neg.	neg.	5.0

result of prophylactic treatment. It will be noted that animals receiving as little as 0.25 g. daily of yolk failed to develop rickets. The yolks contained 450 mg. per cent. of phosphorus so that the protective action cannot be attributed simply to an addition of phosphorus. The gains in weight of these rats were remarkably

good, and their bones were found to be exceptionally well calcified. The addition of white of egg, on the other hand, increased rather than prevented the development of rickets.

Curative experiments likewise were carried out on rats. In these tests rickets was induced by the above diet, or by the 5 per cent. dry milk diet, and later supplemented by 1.0 or 0.5 g. of yolk of egg. After a period of 8 days calcification could be noted in radiographs. The inorganic phosphate of the blood also was higher than in the control rats which had not received the supplementary food.

Similar prophylactic and curative treatment were employed on infants. Table II summarizes the preventive treatment in

TABLE II. PROPHYLACTIC TREATMENT OF INFANTS WITH EGG YOLK

Case	Age (mos.)	Weight (lbs.)	Egg yolk begun	Rickets X-ray (March)	Rickets Clinical (March)	P. (Feb. and Mar.)	Ca (Feb. and Mar.)
1	12	19½	12-14-22	neg.	neg.	3.8	11.0
2	10	18	1-16-23	neg.	neg.	3.7	12.4
3	14	20¼	1- 3-23	neg.	neg.	4.6	10.8
4	11	18	12-24-22	neg.	neg.	3.9	12.0
5	6½	16½	12-22-22	neg.	neg.	4.5	
6	6½	12¼	12-14-22	neg.	neg.	4.5	11.2
7	12½	16¾	12-14-22	neg.	neg.	4.1	11.8
8	10	17	12-14-22	neg.	neg.	4.3	12.0
9	12	17¼	12-14-22	neg.	neg.	4.0	12.0
10	13½	18¾	12-14-22	neg.	neg.	4.0	
11	10	15¾	1- 8-23	neg.	neg.	4.3	
12	13	25	12-20-22	neg.	neg.	4.0	11.4

twelve cases. It shows that rickets did not develop in any instance, and that the percentage of inorganic phosphate in the blood during February and March was maintained at the high level characteristic of the summer months. Curative treatment was found to be of value, but less potent than cod liver oil.

It is concluded that egg yolks possesses marked anti-rachitic properties for animals and for infants, far more than any other natural food stuff. It is very well tolerated and can be recommended as a supplement to the dietary of even very young infants, much as orange juice is used to protect against scurvy. The yolk has also curative value but definitely less than cod liver oil.