3662

Growth-Promoting Value of Cod Liver Oil Irradiated by Sunlight and the Mercury Vapor Lamp.

AMY L. DANIELS AND LILAH M. BROOKS.

From the Child Welfare Research Station, State University of Iowa.

In order to obtain further evidence regarding the possibility of increasing the antirachitic potency of cod liver oil, we have fed groups of young rats (six each) a standard rachitic ration[1] to which has been added 1 per cent of Norwegian cod liver oil. With one group the cod liver oil was exposed to the direct solar rays, according to the method outlined by Price.[2] A second group received the same amount of cod liver oil, which had been irradiated with a Mercury vapor lamp, at a distance of two feet, for twenty minutes. Control animals were given the non-irradiated cod liver oil. To make sure that the oil, which was obtained from the same source in each case, would be evenly distributed in the ration, it was mixed with 2 per cent of corn oil, a substance which has been shown to contain no antirachitic properties. Two groups of animals receiving the basal rations have been included for comparison. In one case the ration was irradiated with the Mercury vapor lamp in the same manner as the cod liver oil.

Our criteria of the effect of these rations has been the growth of the animals throughout an eight weeks period. The results are summarized in the following table:

TABLE I.

Growth of rats receiving rickets ration with irradiated cod liver oil additions.

Ration	Average initial wt. gm.		Average wt. 8 weeks gm.		Ave. gain per week gm.		Range of gain gm.		Remarks
	♂	♀	♂	♀	♂	♀			
Rickets Control	46	50	62	65	0.2	0.6	0	46	
Rickets ration, irr.	53		177		15.5		124	128	2 animals
Rickets 1% cod oil solar irr.	63	58	138	116	9.3	7.2	44	82	Cod liver oil mixed with corn oil, 2 per cent
Rickets 1% cod oil lamp irr.	54	42	126	100	9	7.3	44	64	Cod liver oil mixed with corn oil, 2 per cent
Rickets 1% cod oil	64	65	134	127	8.5	7.7	46	88	Cod liver oil mixed with corn oil, 2 per cent

It will be observed that the animals receiving the irradiated rations to which no cod liver oil was added made greater gains than those which were given the cod liver oil additions. It would seem, therefore, that the growth stimulation in the animals receiving the cod liver oil was the result of the antirachitic property of the cod liver oil, and not of the Vitamin A contained in the oil.

The gains per week of all the animals receiving the cod liver oil additions are approximately the same. In the group receiving the cod liver oil irradiated by the solar rays, the males gained an average of 9.3 grams per week, while those on the non-irradiated oil gained only 8.5 grams per week. The females, however, receiving the non-irradiated oil made slightly better growth, 7.7 grams as against 7.2 grams in the sun irradiated group. These variations are within the range of error of the method employed. The minimum and maximum gains in all the cod liver oil groups are comparable, but less than that of animals receiving optimum rations or of those on the irradiated rachitic ration. These results are in accord with those of previous workers who have shown that the irradiation of cod liver oil does not increase its antirachitic potency.

[1] McCollum, E. V., Simmonds, N., Parsons, H. T., Shipley, P. G., and Park, E. C., Ration No. 2249, *J. Biol. Chem.*, 1920, xlv, 333.

[2] Price, W. A., *Am. J. Dis. Child.*, 1927, xxxiii, 78.

3663

Influence of Feeding Mixture on the Antirachitic Potency of Cod Liver Oil Concentrate.

AMY L. DANIELS AND LILAH M. BROOKS.

From the Child Welfare Research Station, State University of Iowa.

By suitable methods the radio-active substance of cod liver oil can be separated from the oil, and prepared in concentrated form for therapeutic purposes. Recent work by Hart, Steenbock and Hoppert[1] has suggested that such concentrates under certain conditions may fail to be effective. In a study of calcium and phosphorus balances it was observed that the addition of cod liver oil to the ration of milking goats increased the calcium retention.[2] The cod liver oil concentrate (non-saponified fraction), however, was without effect unless it was previously dissolved in oil. The results with the concentrate administered dissolved in oil were comparable to those with the non-saponified cod liver oil.