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VARIATIONS in the growth-response of vitamin A-deficient rats to carotene dissolved in different oils has been partly attributed to their linoleic acid content[1]. While trying to discover the causes of the variations, it was felt that it would be of interest to test this hypothesis by equalizing the intake of linoleic acid. Rats depleted of vitamin A reserves on a low-fat diet similar to that of Sherman[1] were divided into five groups and fed the supplements indicated in the accompanying table by *a* and *b* by means of calibrated droppers.

Group	No. of rats used	Supplements	Gain in wt. (gm.)		Pigment excreted (%)		
			5 wks.	7 wks.	Total	Non-carotene	Carotene
I	7	*a*: 3 μgm. β-carotene and 100 mgm. cottonseed oil *b*: 100 mgm. cottonseed oil	25	31	40·5	24·0	16·5
II A	6	*a*: 3 μgm. β-carotene and 100 mgm. arachis oil *b*: 100 mgm. arachis oil	24	32	—	—	—
II B	6	*a*: 3 μgm. β-carotene and 100 mgm. arachis oil *b*: 80 mgm. ethyl linoleate and 20 mgm. arachis oil	24	30	34·2	17·1	17·1
III A	6	*a*: 3 μgm. β-carotene and 100 mgm. coco-nut oil *b*: 100 mgm. coco-nut oil	17	22	26·1	16·2	9·9
III B	7	*a*: 3 μgm. β-carotene and 100 mgm. coco-nut oil *b*: 100 mgm. ethyl linoleate	18	23	23·2	14·6	8·6

The supplements *a* and *b* were fed on alternate days to overcome the antagonism between carotene and linoleate[1]. The oils were free from carotene, since control rats receiving 500 mgm. of each in their diet continued to decline in weight and died. Since cotton seed oil contains 48 per cent, arachis oil 21 per cent and coco-nut oil 2 per cent approximately of linoleic acid[2], the total linoleic acid intake of rats in groups I, II *B* and III *B* on two consecutive days was almost the same. The ethyl linoleate was kindly prepared by Mr. P. R. Aiyar from sesame oil and had an iodine value 165.

The growth-response in coco-nut oil was much less than in arachis or cottonseed oils. The latter were equally efficient in spite of the wide variation in linoleic acid content. Further, increase in the intake of linoleic acid did not improve the response. It appears that the causes for the variations in response have to be sought elsewhere.

Ramasarma and Hakim[3] reported that rats excreted carotene even when it was administered at the level used in biological assays. Analysis of the fæces of the different groups of rats, collected for a number of days during the experimental period, confirmed their results, and showed that differences in fæcal excretion were too small to explain the variations in growth-response. The non-carotene pigment in the fæces could be separated from the carotene by chromatographic adsorption on a column of Brockman's alumina. The necessary correction was applied by determining the pigment excreted on a carotene-free diet.

The response to carotene has been shown to be improved by vitamin E (tocopherol)[4]. The tocopherol contents of the cottonseed, arachis and coco-nut oils determined by a modification of Moore's[5] procedure were 260, 286 and 0 gm. per gm. respectively. The utilization of carotene, therefore, appears to depend on the tocopherol content. A similar hypothesis has been put forward independently by Guggenheim[6], and experiments are in progress here to test this theory. The higher excretion of carotene with cottonseed and arachis oils may be explained by the antioxidative action of tocopherol in the gastro-intestinal tract. Incidentally, it was confirmed that no loss of tocopherol occurred during the saponification of the oil with alkali in the presence of pyrogallol. The details of these investigations will be published elsewhere.

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