EFFECT OF SUPPLEMENTATION WITH TAMARIND AND CHILLI ON THE GROWTH OF YOUNG RATS ON A POOR-SOUTH-INDIAN-RICE DIET

ALTHOUGH millions of people have lived for generations, on a poor rice diet composed mainly of rice, the growth response and fertility of rats on experimental diets composed of the same major components have been repeatedly observed to be disappointing.[1-4] This apparent discrepancy is either due to the unsuitability of the rice diet to rats or, possibly, the absence of some supplement which forms a part of the normal human diet, but which is excluded from the experimental diet. A significant omission made in the formulation of the experimental rice diet is with regard to tamarind and chilli, which are invariably added to the rice diet as consumed in South India. As these two ingredients are normally considered to be unimportant in evaluating the food value of experimental diets, it is of interest to determine whether their incorporation would make any difference in the response of the rat to the Poor-South-Indian-Rice-Diet.

Twelve rats from our stock colony were weaned, eighteen days after birth, at the weight of 28 gms., and placed on the rice diet plus 10 c.c. of 10 per cent. Klim milk each till they

weighed about 40 gms. This preliminary procedure has been found to be desirable to accustom the rats to the rice diet. The rats were divided into two groups of six each with equal number of littermates of the same sex. The first group received a poor rice diet of the following percentage composition:

Polished rice, 78·5; tur dal (*Cajanus indicus*) 5·0; common salt, 0·3; non-leafy vegetables, 8·2; leafy vegetables, 2·1; whole milk powder (Klim), 0·9; crude groundnut oil, 5·0.

This diet does not differ materially from the conventional rice diet used by most of the earlier workers. The rice, dal, vegetables and salt were mixed together and cooked with three to four times its volume of water. The crude groundnut oil was mixed with the cooked diet. The milk powder was made into a 10 per cent. solution and fed to the rats separately.

For the second group, the diet was prepared in the typical South Indian style by using tamarind, chilli and extra salt to taste which together made up 2 per cent. of the diet replacing an equal proportion of rice in the above composition. An aqueous extract of the ripe tamarind as prepared in the household and dry chilli powder was used. Extra salt (0·2 per cent.) was also added so as to correspond to the normal diet.

The difference between the two diets in regard to essential constituents (protein, fat, carbohydrate, calcium and phosphorus) is almost negligible.

The growth rate of the animals over a period of 15 weeks are presented in Table I. It was observed that the animals in the second group took slightly longer to get adapted to the tamarind and chilli. The animals receiving tamarind and chilli as supplement were distinctly more active than those on the rice diet alone. In both the groups, there was shedding of hair but this was less pronounced in the tamarind group than in the control. There was no mortality in either of the groups during the experimental period. After that period, the animals were mated. Some of the animals of the tamarind group gave birth to litters, whereas none of the control group has so far done so in spite of over two months of pairing. The related observations will be continued with the succeeding generations.

TABLE I

Poor Rice Diet

Sex	Initial wt. (average)	Final wt. (after 15 weeks) (average)	Average food intake (gm. dry wt.) per day	Average weekly increase gm.
M ..	40·5	105·3	8·2	4·34
F ..	40·2	94·7	8·07	3·61
Poor rice diet supplemented with tamarind and chilli				
M ..	40·8	123·0	8·57	5·5
F ..	39·3	110·0	8·33	4·7

The average food intake of the rats receiving supplement of tamarind and chilli was only slightly more than that of the animals on the rice diet. The increase in growth of the former was distinctly out of proportion with the extra food intake.

The above is only a *preliminary* note indicating the importance of two food components which had not been considered to be of any nutritional significance. Further work extending the above findings and designed to throw light on the mechanism of action is in progress.

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