

PRELIMINARY STUDY OF A COMMON PORTO RICAN DIET

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A food to be adequate for growth and the rearing of young must fulfill four requirements. Quoting from Sherman's "Chemistry of food and Nutrition". The essentials of chemically adequate food supply may therefore be summarized as follows:—(1) sufficient of the organic nutrients (proteins, fats, carbohydrates) in digestible forms to yield the needed energy; (2) protein, sufficient in amount and appropriate kind; (3) adequate amounts and proper proportions of the various ash constituents or inorganic foodstuffs; (4) sufficient of each of the essential vitamins.

In the past we did not always regard a food from this broad scientific standpoint but were apt to be interested chiefly in proteins or the calorie content of the diet. It is now recognized that a food failing in any one of the respects can not fulfill its function of properly maintaining nutrition and equal weight should be given each factor in evaluating a diet.

Knowledge is valuable as a whole only as it can be applied to the problems that confront us. One of our major problems in Porto Rico is the one of nutrition. We import half or more of the food we eat, and rice and beans make up 47 percent of the energy of imported foods. This would lead us to believe that these two articles make up a major portion of the diet here. Now rice, though it is the staple cereal of more people of the world than any other grain, is not a complete food in the sense of the requirements quoted above. In the first place it is low in protein. Secondly it lacks an adequate supply of mineral salts, and thirdly the polished variety used here in Porto Rico is deficient in the antineuritic factor of vitamin B. Red kidney beans are on the whole good sources of protein and mineral salts, but in the dried condition they lack vitamin C and are low in vitamin A and possibly B, though when mixed with rice in the diet they would tend to supplement the protein and mineral deficiencies of the latter, the mixture can not be considered a complete food.

Mixing boiled rice and stewed beans in the proportions of 60 percent rice and 40 percent beans yields a food containing approximately 4 percent per pound. The question of whether this will furnish all

the requirements for growth and rearing of young is one that aside from all theoretical grounds must be tested by experiment. Such an experiment is now in progress at the School of Tropical Medicine and in this paper we can only touch upon one phase of the problem as more experimental work must still be carried out.

The ability of a food to properly nourish the animal body may be conveniently separated into three divisions which in the order of increasing severity of requirements; are:—1, adult maintenance; 2, normal growth in the young and 3, reproduction and lactation. As a rule 2 and 3 are the tests most used in evaluating a diet, and in the present instance we are reporting the results of feeding cooked rice and beans to young rats to measure their growth.

Two groups of young rats were placed in individual cages. To one group was fed a standard laboratory diet adequate in all respects, to the other cooked rice and beans were fed daily. This food was purchased from a restaurant in Puerto de Tierra in order to duplicate as much as possible the conditions that prevail throughout the Island in the use of these articles of food. The animals were weighed each week and in the comparing graph fig. 1 we see the results of the 8 weeks experimental period. It is evident that the rats on the standard diet gained a little over twice the amount of those on the experimental diet. In fact, the figures are in terms of averages for each group of rats:

101 g—gain per rat on standard diet

46 g—gain per rat on Rice and Beans

Thus this diet fails to support normal growth in the young and fails through a deficiency of one or more of the four factors which we now consider as essential, to a complete food. We might suspect from a knowledge of the vitamin deficiencies of this diet that no growth could occur, but in cooking beans small amounts of other vegetables such as squash, tomatoes, potatoes or yautias are added and would supplement this deficiency to some extent, and we believed it better in this experiment, to use the food as universally prepared in Porto Rico. The question of just what factor it is that limits growth in the case of rice and beans can not be answered from an experiment of this kind but further work is in progress to clear up this point. Rice will probably always be our staple cereal due to its low price and high energy value per pound. Since this is so, and since it is not an adequate food, if we can find some simple way in which it can be supplemented by foods already in the markets or grown on the island we will be in a position to better our living conditions by developing a stronger and healthier people.

