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SELF SELECTION OF DIET BY NEWLY WEANED INFANTS

AN EXPERIMENTAL STUDY

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Editor's Note: *This pioneer work on self-selection of diet by healthy infants led to new studies of eating behavior, including sensory-specific satiety.*

This experiment may be described briefly as that of (1) allowing newly weaned infants to choose their own foods in such quantities as they may desire from a fairly wide range of commonly used natural food materials, unmixed, unseasoned and unaltered except, in the case of some, by cooking in the simplest manner, and (2) assembling data on the food consumed and the condition of the infants.

It was hoped by this experiment to obtain information on the following points:

1. Whether infants of weaning age could and would when removed from the breast choose their own foods from those placed before them, without aid, as do adults, and in sufficient quantities to maintain themselves.

2. If they did so choose, would they eat few or many of the large number of articles offered, and would they eat indiscriminately what was nearest at hand, governed only by their caloric needs or would they show definite preferences, and if so, would these preferences tend toward a vegetarian, a carnivorous or an omnivorous type of diet?

3. Would such infants maintain themselves in a state of digestive health or would they suffer impaired digestion with general discomfort, vomiting, diarrhea or undigested food in the stools?

4. Would their growth, eruption of teeth, gain in weight and general well-being equal those of infants fed in the usual way on the diets commonly prescribed for this age?

It was further hoped that this experiment might throw some light on the question of whether the infant at this age has any instinctive means of handling either qualitatively or quantitatively the problem of nice adjustment of the various food elements, organic and mineral, necessary to optimal nutrition.

In considering the relations of such an experiment to current dietary investigation and practice, it is perhaps not amiss to call to mind at this point that the period of infancy from birth to weaning affords unique conditions for dietary experimentation. Here one still has the natural model, the breast-fed infant living on the one natural food provided for it, a food known to be adjusted with exquisite nicety to its optimal nutrition. His characteristic appearance, how fast he should grow and develop, are matters of common knowledge. And for years this natural model has been studied from every angle by pediatricians, and its optimal food, woman's milk, has been subjected to searching investigation and analysis, while countless experiments have been made with modifications of other milks in the attempt to reproduce or equal it, the results always being checked against the natural models. The success of direct human dietary experiment in this age group and the approach to the optimal in the planned diets now used for infants when breast feeding cannot be had are attested by the reduction in the death rate of artificially fed infants from causes connected with feeding and by the fact that no extramedical cult has ever successfully invaded this field.

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Thus far, three infants have been subjects of the self-selected diet experiment, two of them, Earl H. and Donald R., for periods of six months each, and the other, Abraham G., for one year. In each case, the procedure was as follows:

The infants, 7 to 9 months of age and exclusively breast fed since birth, were admitted to the children's ward of Mount Sinai Hospital, and for the first three days were exclusively breast fed by their mothers. During this time the history was taken, and a physical examination, a blood count and examination of the urine was made, as well as a roentgenogram of the bones and a determination of blood calcium and phosphorus (Kramer and Tisdall method) and at least three determinations of the *pH* of the gastric contents after breast feeding. A psychometric examination was made later after the infant had become accustomed to his surroundings. On the fourth day, breast feeding was discontinued and the experiment proper begun.

The list of foods used was made up with these considerations in mind: It should comprise a wide range of foods of both animal and vegetable origin that would adequately provide all the food elements, amino-acids, fats, carbohydrates, vitamins and minerals known to be necessary for human nutrition. The list included cereals, meats, seafood, bone marrow, eggs, milk, fruits, vegetables, and salt.

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The amounts of the various foods eaten by one infant during the six-month experimental periods are shown in table 16.

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Table 16.—*Average Per Day Per Kilogram of Weight*
Earl H.—First Six Months—173 Days—1926

Number of Days	Month	Calories g. per Kg. per Day	Fat g. per Kg. per Day	Carbohydrate g. per Kg. per Day	Protein g. per Kg. per Day
21	February	106.40	4.66	11.60	4.93
26	March	121.00	6.42	11.00	4.65
30	April	95.09	5.06	9.30	3.48
19	May	109.57	5.50	11.19	4.11
30	June	115.80	5.65	11.72	4.56
31	July	118.28	7.30	8.01	5.43
16	August	107.01	5.90	8.47	5.38

* * *

The infants' appetites were uniformly good. They often greeted the arrival of their trays by jumping up and down in their beds, showed impatience while their bibs were being put on, and, once placed at the table, having looked the tray over, devoted themselves steadily to eating for fifteen or twenty minutes. Then, their first hunger satisfied, they ate intermittently for another five or ten minutes, playing a little with the food, trying to use the spoon and offering bits to the nurse.

* * *

CONCLUSIONS

From the results obtained with these three infants it appears that:

1. The self-selected diet of simple, natural foods offers a safe means of dietary experimentation with breast-fed infants of weaning age.

2. Thus far, support is not given to the prevailing belief that the infant of this age cannot, because of his age, digest or use any of these simple natural foods of adult life, or that glands or muscle cuts of meat which have been shown to be especially valuable proteins in the variety and combinations of their amino-acids should be excluded from their diet.

3. From the standpoint of digestion and as far as could be judged by the criteria mentioned, the diet selected by these infants was optimal, since in only one, and then only in the presence of an acute infection, was there any deviation from digestive conditions that at the present time are generally considered to be optimal.

4. From the standpoint of nutrition, conclusions as to the success of the self-selected diet for these infants are not warranted from a continuance of it for periods of only six (two infants) and twelve (one infant) months. The immediate results appear to be equal at least to the best results obtained by commonly prescribed diets in growth, weight, bone development, musculature, general vigor and appearance of health and well-being.