Food Habits and Food Consumption of Jews from Cochin in Israel

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THE JEWISH population of Israel, now approaching two million, has come from over seventy countries. The new immigrants, differing in their social and cultural patterns, are in the process of merging with the "old settlers," those who have been living in the country since before 1948, the year of the establishment of the State of Israel. It is true that most of the old settlers themselves or their parents immigrated during the last two generations, mainly from Europe. But in the minds of many of the new immigrants, as well as in their own, they represent that element of the nation which is settled, stabilized and deep-rooted. This mutual attitude affects many facets of cultural life in Israel. Thus, the old settlers, although numerically a minority, are expected to "absorb" the new immigrants, both economically and culturally.

Naturally, many new foods and food habits have been introduced. Some "oriental foods" have been readily accepted and their use is now widespread among all ethnic groups. Many food habits, however, are preserved in specific ethnic communities and have not yet become popular with the general population. Since food habits often represent the emotional ties which link the new immigrant with his country of origin, they often tend to be preserved as far as possible in the new environment. This possibility is frequently limited in Israel. Economic factors, as well as the non-availability of certain foodstuffs, often frustrate this tendency of preserving food habits, especially in smaller ethnic groups. A new problem arises: how do new immigrants manage to obtain a satisfactory diet under these conditions, where the choice of food is limited and the consumer is compelled to use food to which he is not accustomed? This problem has been studied in one of the smallest ethnic groups of immigrants, which differs much in its food habits from those of the rest of the population, i.e., Jews from Cochin, south India.

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ETHNIC AND SOCIAL BACKGROUND

The Jews from Cochin form a distinct ethnic group of the Jewish people. They are believed by some to be descendants of Jews exiled to Babylon by Nebuchadnezzar (586 B.C.). They themselves maintain that soon after the destruction of the Second Temple by the Romans (70 A.D.) ten thousand Jews escaped and landed on the Malabar coast.[1] There are indications that toward the end of the second century A.D. several thousand persecuted Jews from Yemen, Southern Arabia, emigrated to India. These early Jewish settlers probably intermingled with the Hindu natives and later, possibly with Portuguese, Dutch and British settlers.[2,3] Thus, they differ in their blood group distribution from other Jewish groups.[4] Their once large and flourishing community has been reduced by now to some 3,000 people. Previously, most of them lived in small towns and villages in Cochin and a few in Bombay. They have preserved their Jewish religious belief and their distinct cultural institutions, thus attempting

to avoid assimilation. Driven by the Zionist ideal they prepared themselves for immigration to Israel after the establishment of the State in order to assist in the development of the country. In 1954 some 2,500 immigrated.

In their new homeland the Jews from Cochin started a different way of life. Most of them turned to development areas and joined in founding new villages. Former shopkeepers, small merchants and clerks became farmers. The life in Israel constitutes for them "a complete transformation of our life," as one of their leaders put it. Naturally, the process of adjustment is accompanied by many difficulties. Those who have settled in the hill regions of Galilee and Judea suffer from the unaccustomed hardship of the winter. They all had to learn Hebrew. Being in their present homeland a small minority again, although among co-nationals, they have had to adapt themselves to prevailing economic and social conditions as well as to a new cultural pattern, including different food habits.

Jews from Cochin living in two villages near Jerusalem were studied with the intention of obtaining information on the prevalence of the major types of heart disease, blood cholesterol levels and food intake. In this paper we report on food habits and food consumption, summarizing an inquiry which was conducted from October to November 1958.

The economic basis of most of the families is poultry farming and the growing of vegetables. Some of the adults are engaged as teachers, policemen or clerks of the village administration. The composition of the population sample studied is shown in Table I.

TABLE I

Composition of the Population Sample Studied

No. of households	82
No. of persons	462
Persons per household	5.6
Men:	
18–40 years old	63 (14%)
41–60 years old	33 (7%)
Over 60 years old	7 (2%)
Women:	
18–40 years old*	75 (16%)
41–60 years old	35 (8%)
Over 60 years old	10 (2%)
Infants, 0–12 months old	19 (4%)
Children, 1–12 years old	190 (41%)
Boys, 13–17 years old	9 (2%)
Girls, 13–17 years old	21 (4%)

* Sixteen pregnant women in the second half of pregnancy and eleven lactating women included.

METHODS

Daily record forms of food consumption were distributed to the families. All foods eaten and their quantities in ordinary household measures were recorded on these forms for each meal and each between-meal period. These quantities were carefully analysed by the nutritionist who supervised the recording daily, with the exception of Saturday. The records were checked for accuracy by observation in the kitchen and pantry. No correction could be made for table waste. Amounts of food provided to children in schools were calculated by dividing the weekly quantities delivered by the number of partaking children.

The detailed entries in the record forms were tabulated on calculation sheets in which food items and quantities were listed in a standardized manner. Nutritive values were calculated throughout from a specially prepared table which was generally derived from the tables of Albritton,[5] and Watt and Merrill.[6] The vitamin and mineral contents of vegetables and fruits were calculated according to the figures of Halevy, Koth and Guggenheim,[7] which are based on analyses of locally grown products. Representative samples of some unusual foods, for which no data are found in the tables, and of some foods of considerable dietary importance, which may differ in their composition in different countries, such as bread, some flour products and different kinds of cheese, were analysed in our laboratory.

Corrections were made for vitamin losses in cooking according to the data of Moore, Purdy, Gibbens, Hollinger and Goldsmith.[8]

The average daily consumption of nutrients by each family was compared with the Recommended Dietary Allowances.[9] Intake per unit was computed according to the procedure proposed by LeBovit and Stiebeling.[10] The

diet of any family was rated as "excellent" in a specific nutrient if the average daily intake of that nutrient per unit was 100 per cent or more of the Recommended Dietary Allowances; "good" if the average intake was 80 to 99 per cent of the allowance; "fair" if 60 to 79 per cent; "poor" if 50 to 59 per cent, and "very poor" if below 50 per cent. A mean dietary rating for each nutrient was then calculated by assigning the following numbers to each rating: excellent, 4; good, 3; fair, 2; poor, 1; and very poor, 0. These numbers were added together and an average obtained for each family diet which was designated as the mean dietary rating.

RESULTS

Food Habits in Cochin and in Israel

It has been very difficult, for obvious reasons, to study accurately the food habits of these people in India before they immigrated to Israel. It was, however, possible to obtain some information on the subject by interviewing housewives about their previous food habits. The daily menu in Cochin included rice, gram, fish, eggs, goat's milk, bananas, watermelon, tomatoes, onions, mangoes, coconuts, sugar and, on the Sabbath, raisin wine. Coconut oil was the main fat used. The following may be regarded as a typical daily menu: Breakfast: rice bread, gram, spiced vegetable salad and coffee; lunch: rice, eggs and fish, fried in tomato sauce with added lemon juice; four o'clock: coffee, cookies and fried sugared bananas; supper: fish in a piquant sauce and rice. Many families ate fish and rice three times a day. Fruits, such as mangoes and bananas, as well as coconut cakes were very popular in the afternoon. The pattern in Bombay was very similar. The staple foods were likewise rice and fish and the menu included potatoes, tomatoes, cauliflower, lemons, mangoes, bananas, ghee and sugar. However, in contrast to Cochin, wheat flour products were consumed too. At breakfast rice or wheaten bread was eaten with gram or potatoes in oil, onion and mustard. Lunch consisted mainly of rice and fish which was stewed in tomato sauce, and at supper leftovers were used from lunch as well as various vegetables. Fruits were consumed between meals. Wheat products other than bread, such as macaroni or semolina, were not widely used, and margarine, cow's milk, cheese and certain vegetables and fruits, such as carrots, beets or olives, were almost unknown.

TABLE II

Daily per Capita Food Consumption (in gm.)

Cereals:	
Bread	256
Other wheat products	98
Rice	60
Total	414
Fruits and vegetables:	
Potatoes	71
Tomatoes and tomatoe puree	84
Citrus (fruits and juices)	106
Bananas	32
Onions	55
Others	54
Total	402
Pulses	10
Nuts and seeds	5
Sugar and sweets	71
Margarine and edible oils	46
Meat, poultry, fish and eggs:	
Meat	2
Poultry	29
Fish	24
Eggs	55
Total	110
Milk and milk products:	
Milk	211
Cheese	8
Cream	11
Total	230
Alcoholic beverages:	
Beer	67
Wine	14
Brandy	4
Total	85

This pattern has changed considerably during the last few years since their arrival in Israel. Table II shows the daily average consumption of foods per capita.

The average daily menu contains considerable amounts of wheat products, and it includes also 60 gm. rice per person. It provides over 400 gm. potatoes, vegetables and fruits, mainly citrus fruits and juices, tomatoes and tomato puree, which is a very popular

TABLE III
Number and Per Cent of Families Using Certain Foods

Food	No.	Per cent
Cereals:		
Dark bread	76	93
White bread	78	96
Flour and flour products	82	100
Rice	82	100
Fruits and vegetables:		
Potatoes	82	100
Tomatoes and tomatoe puree	82	100
Onions	82	100
Citrus, fruits and juices	82	100
Bananas	57	70
Olives	51	62
Pulses	71	87
Nuts and seeds:		
Sunflower seeds	74	90
Coconut	20	24
Sugar and sweets:		
Sugar	82	100
Sweets	76	93
Margarine and edible oils:		
Margarine	82	100
Edible oils	82	100
Meat, poultry, fish and eggs:		
Meat	14	17
Poultry	61	74
Fish	73	89
Eggs	82	100
Milk and milk products:		
Milk	82	100
Cheese	65	79
Cream	50	61
Alcoholic beverages:		
Beer	71	87
Wine	77	94
Brandy	25	29

spice, onions and bananas. Among animal products it contains over 200 gm. milk and milk products, approximately one egg per day, 24 gm. fish and 29 gm. poultry but only 2 gm. of beef. As to consumption of milk, it should be noted that relatively small amounts are used in the households, the greater part being provided as milk powder to children in school. Similarly, consumption of cheese was found to be low. Another feature of the menu is a considerable consumption of beer, which was unknown in India, of wine, used mainly on the Sabbath, and of small amounts of brandy. Table III shows figures on the frequency of use of certain foodstuffs. It can be seen that most of the families studied now use bread and other wheat products, cheese and margarine, which were not used in India. Olives and certain fruits and vegetables, like carrots and beets, with which some of the newcomers were not acquainted in India, are also very popular. It should be noted that the consumption of dark bread (made from flour of 52 to 78 per cent extraction) amounts to 135 gm. per capita per day as against 121 gm. white bread (52 per cent extraction). This is in contrast to the strong preference of white bread shown by Jewish immigrants from other Oriental countries. One foodstuff appears to be used to a much larger degree by Jews from Cochin than by other Jewish inhabitants of Israel, i.e., rice. According to a dietary survey comprising over 1,000 families of the wage-earning urban population of Israel and conducted by Bavly[11] in 1951, daily consumption of rice averaged from 3.6 to 11.3 gm. according to different ethnic and economic strata. The last Food Balance Sheet of Israel[12] gives 12 gm. rice as available per capita per day in 1956–1957. According to these sources, average per capita consumption of eggs, olives and bananas was much lower than that found in our survey on Jews from Cochin, whereas that of meat and cheese was much higher.

If food selection of immigrant families reflects strong emotional ties with their native land, this holds even more so as far as spices are concerned. Jews from Cochin continue to use spices such as mustard, fenugreek (Trigonella foenumgraecum L.), black pepper (Piper nigrum L.), red pepper (Capsicum sp.), turmeric (Curcuma sp.), coriander (Coriander sativum L.) and cardamon (Elletaria cardamonum Mat.) to which they were accustomed in India. Most of them are not popular among communities of immigrants from Western countries, but they are characteristic of the food habits of Jews from Oriental countries.

Nutritional Value of Diet

Table IV presents figures on the nutritional value of the per capita consumption of nutrients and Table V, on the contribution of various food groups to the total supply of

TABLE IV

Daily Per Capita Consumption of Nutrients

Food Groups	Calories	Protein (gm.)	Calcium (mg.)	Iron (mg.)	Vitamin A (I.U.)	Thiamine (mg.)	Riboflavin (mg.)	Nicotinic Acid (mg.)	Ascorbic Acid (mg.)
Cereals	1,214	39.2	345	5.31	—	0.83	0.68	5.70	—
Fruits and vegetables	187	4.3	87	2.88	1595	0.21	0.09	1.75	59
Pulses	46	2.6	10	0.12	21	0.01	0.01	0.63	—
Nuts and seeds	21	0.8	3	0.07	—	0.01	0.01	0.49	—
Sugar and sweets	272	0.3	8	0.14	5	0.01	0.01	0.04	—
Fats and edible oils	385	—	—	—	780	—	—	—	—
Meat, poultry, fish and eggs	179	13.7	34	1.80	560	0.06	0.15	2.18	—
Milk and milk products	148	8.6	265	0.24	268	0.09	0.34	0.23	2
Alcoholic beverages	50	—	3	—	—	—	0.02	0.16	—
Total	2,502	69.5*	755	10.56	3229	1.22	1.31	11.18	61

* 22.3 gm. animal protein and 47.2 gm. vegetable protein.

nutrients. It can be seen that cereals provide about one-half of the total calories, protein, calcium, iron, riboflavin and nicotinic acid, and more than two-thirds of thiamine. About one-third of the total protein is derived from animal foods and two-thirds from vegetable sources. Carbohydrates provide 1,609 calories (64 per cent of total), protein 278 (11 per cent) and fats 615 (25 per cent) calories. It should be mentioned that 53.3 gm. fat (78 per cent of total) are derived from vegetable sources, mainly from soya oil and margarine, and 15.0 gm. (22 per cent) from animal foods.

The relatively high amounts of calcium and riboflavin contributed by cereals are partially the result of the enrichment of flour which is controlled by the government. At present all flour milled in this country is fortified with 30 gm. heat-processed soya meal, 2.5 mg. riboflavin and 2.5 gm. calcium carbonate per kg. Flour fortification contributes 0.54 mg. riboflavin and 267 mg. calcium to the daily diet of the population studied, or 41 and 35 per cent, respectively, of total consumption. Since margarine is enriched with 3,000 I.U. vitamin A and 30 I.U. vitamin D per 100 gm., this source provides 780 I.U. vitamin A per head or 25 per cent of total consumption.

Figures on consumption of nutrients per unit as well as dietary rating of households are pre-

TABLE V

Contribution of Various Food Groups to the Total Supply of Nutrients (in %)

Food Groups	Calories	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Nicotinic Acid	Ascorbic Acid
Cereals	49	56	46	52	—	68	52	51	—
Fruits and vegetables	8	7	12	27	49	17	7	16	97
Pulses	2	4	1	1	1			6	—
Nuts and seeds	1	1	—	—	—	2	2	4	—
Sugar and sweets	10	—	1	1	—			—	—
Fats and edible oils	15	—	—	—	24	—	—	—	—
Meat, poultry, fish and eggs	7	20	5	17	18	5	12	20	—
Milk and milk products	6	12	35	2	8	8	26	2	3
Alcoholic beverages	2	—	—	—	—	—	1	1	—
Total	100	100	100	100	100	100	100	100	100

TABLE VI
Consumption of Nutrients and Dietary Rating of Households

	Calories	Protein (gm.)	Calcium (mg.)	Iron (mg.)	Vitamin A (I.U.)	Thiamine (mg.)	Riboflavin (mg.)	Nicotinic Acid (mg.)	Ascorbic Acid (mg.)
Average consumption per capita	2,502	69.5	775	10.56	3,229	1.22	1.31	11.18	61
Consumption of households									
Mean per unit	3,518	84.6	631	12.98	3,885	1.79	1.59	16.68	76
Median per unit	3,518	80.5	592	12.45	3,843	1.74	1.58	17.01	72
25th percentile	3,114	70.2	524	10.58	3,100	1.51	1.30	12.91	51
75th percentile	4,191	100.1	784	15.00	4,940	2.07	1.89	20.30	93
Dietary Rating of Households (in %)									
Excellent	68	89	15	52	16	66	45	49	45
Good	26	8	24	36	30	26	34	28	25
Fair	5	2	48	12	32	7	17	20	12
Poor	1	1	11	0	10	1	3	2	11
Very poor	0	0	2	0	12	0	1	1	7

sented in Table VI. It can be seen that both mean and median consumption of calories, protein, iron, thiamine and nicotinic acid are above those of the Recommended Dietary Allowances, whereas those of vitamin A and calcium are appreciably lower. Figures for riboflavin and ascorbic acid are similar to the Recommended Dietary Allowances. Dietary rating of most households is excellent or good for all nutrients except vitamin A and calcium. Thirteen per cent of households have a poor or very poor rating for calcium, 22 per cent for vitamin A and 18 per cent for ascorbic acid.

Total dietary rating of 4 per cent of all households was excellent; good could be attributed to 65 per cent of all families, and fair to 23 per cent, whereas the diet of 7 per cent of all families was poor and of 1 per cent very poor. Mean dietary rating of all households was good.

COMMENTS

Generally, nutritional conditions of the community studied appear to be satisfactory in spite of the fact that most of the foods consumed in Israel by Jews from Cochin were unknown to them a few years ago or were used in limited quantities in their country of origin. The acceptance of wheat products as a staple food seems to be remarkable. The relatively high consumption of rice as well as the frequent use of bananas and certain spices, however, is reminiscent of food habits to which they had adhered in India and which have been preserved in their new homeland. The extremely low consumption of meat, which falls much below the Israeli average,[12] in contrast to a level of fish consumption which may appear rather high in an agricultural population, may also be characteristic of a community which immigrated from the sea shores of Malabar. The extensive use of poultry and eggs is understandable in a population subsisting mainly on poultry farming.

Calorie consumption was found to be rather high, which is appropriate in an agricultural and hard working community. However, it should be noted that our figures include table waste. Actual intake of calories as well as of other nutrients would appear to be somewhat lower.

Calcium and vitamin A were the nutrients consumed in the most inadequate amounts. In only 39 and 46 per cent of the families, respectively, was the consumption of these nutrients considered as good or excellent (Table II). It should be noted that the survey was performed at a time when fruits and vege-

tables were not plentiful. It is probable that the consumption of fruits and vegetables, which falls markedly below the Israeli annual average[12] would have been higher if the survey had been conducted at a different season, i. e., the summer. Consumption of carotene and ascorbic acid would probably have been somewhat higher at another time.

Calcium intake was found to be inadequate as a result of a relatively low consumption of milk and milk products. This is characteristic of the Israeli population[11] and of Jews from Oriental extraction more so than of Jews of European or American origin. Actually this is the main reason for calcium fortification of flour in Israel. But even this fortification, which provides a considerable part of total calcium intake, leaves consumption of calcium of 13 per cent of families in poor or very poor brackets. More extensive use of milk and milk products should be encouraged. Provision of milk and milk powder in schools and Mother and Child Welfare Stations represent an important step in this direction.

SUMMARY

A dietary survey has been conducted of eighty-two families of Jews from Cochin living in two agricultural settlements in Israel. The evidence presented shows that a considerable change of food habits has taken place, since these people immigrated to Israel. Most conspicuous is the acceptance of wheat products, replacing rice to a large extent as a staple food. The relatively high level of rice and fish consumption in the diet, the extremely low consumption of meat, as well as the use of certain spices, are characteristic of the dietary pattern of the community.

In spite of changing food habits, the general level of consumption of nutrients is satisfactory, although the intake of calcium, vitamin A and ascorbic acid is inadequate in 13 to 22 per cent of households, if judged accordingly to Recommended Dietary Allowances. Mean dietary rating of all households, however, is good.

Enrichment of flour with soya meal, calcium and riboflavin and of margarine with vitamins A and D significantly contributes to the supply of calcium, riboflavin and vitamin A of the community studied.

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