ENGLISH-SPEAKING CARIBBEAN

REGION REPORT

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Introduction

Since its inception in 1967, the Caribbean Food and Nutrition Institute, a specialized center in food and nutrition of the Pan American Health Organization (PAHO/WHO), has been the principal resource for compiling data on food composition. The need for accurate data on food composition of raw, processed, and cooked food has long been recognized as essential to the food and nutrition planning and implementation process. These data could be used by agricultural planners, food import regulators, nutritionists, dietitians, food service personnel, physicians and many others in a wide range of food and nutrition endeavors.

In 1974, CFNI published the *Food Composition Tables for Use in English-Speaking Caribbean.* This publication contained data on the composition of raw or processed foods in 100 g edible portion and edible portion in one pound as purchased. The data were presented for 12 food categories, as detailed in Table 1.

The food items included in the Tables are those commonly found in municipal and parish markets and supermarkets. The agricultural statistical reports published by different governments have provided valuable information and the food consumption surveys in Barbados, Jamaica, Trinidad & Tobago, and recently Guyana gave further guidance in the selection of food items for the Tables.

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TABLE 1

FOOD CATEGORIES AND NUMBER OF ENTRIES

Food categories	No. of entries
1. Cereals	71
2. Starchy fruits, roots and tubers	24
3. Sugars and syrups	27
4. Pulses nuts and oil seeds	54
5. Vegetables	89
6. Fruits	82
7. Meet and poultry	86
8. Eggs	11
9. Fish and shellfish	92
10. Milk and milk products	48
11. Fats and oils	19
12. Miscellaneous foods	71
Total	674

2. Constituents

The food constituents addressed include water, energy, crude protein, fat, carbohydrate, fiber, calcium, iron, vitamin A, thiamine, riboflavin, niacin, vitamin C and refuse, as purchased. For selected foods, amino acid content, fatty acids and cholesterol are listed.

2.1 *Water content* — The water content of food may vary considerably depending on the season of harvest, stage of maturity, and the duration and environment of storage. A significant deviation in the water content of a given food from the value in the Tables would require adjustments in the energy and nutrient values.

2.2 *Food energy* — The energy factors used in the calculation of the caloric value of foods were based on the physiological energy factors published in the USDA Handbook No. 74. Where data were taken from other tables in which other factors were used, they were recalculated using the USDA factors.

2.3 *Protein* — Since the nitrogen content of most protein is approximately 16o/o, the 6.25 factor was used in most foods to convert nitrogen content to protein, except for the following foods:

Foods	Conversion factor
Cereals	
Barley, oats and rye	5.83
Rice	5.95
Wheat flour, refined	5.70
Wheat flour, whole kernel	5.83
Beans and nuts	
Almonds	5.18
Peanuts	5.46
Soybeans	5.30
Milk and milk products	6.38

These conversion factors estimate "crude protein" which for some foods, include non-protein nitrogenous constituents; accordingly, protein levels may be over-valued.

2.4 *Fat* — The values for fat represent those food components soluble in ethyl ether, including true fats, fatty acids, lecithin, and some pigments. They may be referred to as "crude fat", "total fat" or "ether extract".

2.5 *Carbohydrate and fiber* — The values for carbohydrate represent "total carbohydrate" and are obtained by substracting the sum of water, protein, fat, and ash content from 100. Thus, fiber is included in the total carbohydrate. Since the crude fiber has very low digestibility, data for it are also presented.

2.6 *Calcium* — The values give the total calcium content without adjustment for any of the unavailable portion.

2.7 *Iron* — The values represent the total iron, without adjustment for any unavailable portion.

2.8 *Vitamin A* — The values in the publication are expressed in retinol equivalents (R.E.). The relation between the units is as follows:

International Units (I. U.)

1 I.U. = 0.3 mcg retinol
0.6 mcg beta-carotene

Retinol Equivalents (R.E.)

1 R.E. = 1 mcg retinol
= 6 mcg beta-carotene
= 12 mcg other provitamin A carotenoids

The conversion factors used to relate International Units to Retinol Equivalents are:

1 R. E. = 3.33 I.U. retinol (vitamin A in animal sources)
= 10 I.U. carotene (in plant sources)

The values reported for vitamin A are rounded to the nearest whole number ending in 0 or 5.

2.9 *B-Vitamins* — In the publication, values are expressed in mg. As the enrichment of wheat flour and other cereal products is not universally practiced in the area, values of B-vitamin complex as well as iron are given in a few selected items, both in non-enriched and enriched foods.
The values for niacin do not include the niacin equivalent of tryptophan present in food.

2.10 *Vitamin C* — The values in the publication are given mostly in terms of total, instead of reduced ascorbic acid.

2.11 *Refuse* — Food purchased from market or collected from field is not necessarily all edible. The values for "refuse" expressed in percentage of weight of food as purchased are simple estimates. The variation could be very large depending on the quality of food and preparation practice in different households. Where possible, the actual weight of refuse should be obtained.

2.12 *Raw and cooked food* — Except where specified, values in this publication are for raw foods. When food is cooked or otherwise prepared, there may be a considerable change of weight and loss of nutrients.

2.13 *Amino acid content* — Data were taken from *Amino Acid Content of Foods and Biological Data on Proteins* published by FAO, Rome, in 1968. The values for 10 essential amino acids, expressed in mg per g of nitrogen, were obtained by analysis using column chromatography. The values for tryptophan in parentheses ( ) were obtained using microbiological assays. Chemical score was calculated according to the method recommended in the above publication. This table is included for use in the assessment of protein value of a composite diet and in the formulation of food mixtures.

2.14 *Fatty acids* — Fatty acids constitute an important fraction of the total fat in a food and are usually present as neutral fats, in combination with glycerol. The values were adapted from *USDA Handbook No. 8*, with the necessary adjustments according to the fat content of foods. For instance, the fat content of dressed young chicken (Item 0743) is 10.2o/o while that in the USDA Table is 4.9o/o. The fatty acids were adjusted in proportion to the difference in fat content of the two Tables.
The saturated fatty acids include butyric, palmitic, and stearic acids. The unsaturated fatty acids include those of C-18 series with one double bond such as oleic acid, and those with two double bonds such as linoleic acid.

2.15 *Cholesterol* — Cholesterol occurs only in foods of animal origin, particularly in organ meats, eggs, and some shellfish. Data on cholesterol content of foods were taken directly from *USDA Handbook No. 8.*

3. Limitations of the Data

Since most of the values used in the Tables were taken from other food composition tables, the data may not be as representative of the area as desired, particularly in relation to the moisture content of staple foods and vitamin content of processed foods and fresh vegetables and fruits. Many edible plants and fish species used in this area could not be found in other food composition tables as shown in the following Table.

TABLE 2

EXAMPLES OF FOOD SOURCES NOT LISTED IN FOOD COMPOSITION TABLES

Scientific name	Local name (Country)
Musa sp.	Bluggo (Grenada) Bugament (Antigua) Moko (Trinidad & Tobago) Bullfrog Plantain (Jamaica)
Bos Bubalis	Buffalo (Buffalyso) Trinidad & Tobago
Dioscorea esculenta	Chinese Yam (Grenada) Fancy Yam (Grenada)
Artocarpus altilis var. seminifera	Breadnut (Grenada)
Gracilaria debilis	Seamoss (Grenada)
Cocoloba uvifera	Seaside Grape (Grenada)
Spondias purpurea	Plum (Grenada)
Didelphis marsupialis	Opossum, Manicou (Grenada)
Dasypus sp.	Armadillo, Tattoo (Grenada)

The sources cited are based on analyses conducted in the fifties and sixties and, thus, do not reflect the advances in current analytic techniques.

The focus on raw and industrially-processed foods omits consideration of composition of a food as consumed after preparation along with traditional Caribbean cooking methods.

Nutritionists and dietitians have also requested composition on a per portion basis, and have expressed the need for including other elements such as sodium, potassium, zinc, copper and so on.

4. Proposal

The Caribbean Food and Nutrition Institute is currently giving active consideration to a proposal designed to address these problems. The first phase which is largely completed, deals with updating the Tables using the most current material from North America, Britain, Africa and the Far East. This updating also includes an expansion of the entries as far as is possible.

The next phases are designed to provide data on the effects on nutrient composition of traditional Caribbean cooking styles, and the complementary nutritional aspect of the ingredients. The issue of food portions could then be addressed.

CFNI does not have a laboratory to carry out the required analyses but maintains links with institutions in the region which conduct limited analyses. Through this Meeting, it is hoped that CFNI would establish appropriate links mutually beneficial for the advancement of food composition analyses and dissemination throughout the world.