Food Composition Table for the countries of the Congo Basin

1st Edition

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User guide

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Abbreviations and acronyms

CCBs	Countries of the Congo Basin
CIFOR	Center for International Forestry Research
DRC	Democratic Republic of Congo
ECA	Economic Commission of Africa
EP	Edible Portion on fresh weight basis
EuroFIR	European Food Information Resource
FAO	Food and Agricultural Organization of the United Nations
FCDB	Food Composition Database
FCT	Food Composition Table
FOLDFE	Folate expressed as Dietary Folate Equivalents
g	gram
INFOODS	International Network of Food Data Systems
kcal	kilocalories
KE18	Kenyan Food Composition Table, version 2018
KE19	Kenyan Food Composition Table, version 2019
kJ	kilojoules
mg	milligram
NI17	Nigerian Food Composition Table, version 2017
RAE	Retinol Activity Equivalents
RE	Retinol Equivalents
RF	Nutrient Retention Factor
SOP	Sum of Proximates
Tr	Trace
ug	microgram
US19	United States Food Composition Database, released 2019
WA19	West African Food Composition Table, version 2019
YF	Yield Factor

Acknowledgements (to be completed)

This is the first food composition table (FCT) for the countries of the Congo Basin (CCBs), initiated by the Center for International Forestry Research and partners notably, the University of Yaounde 1 (Cameroon) and the University of Kisangani (Democratic Republic of Congo). This work was funded by the European Union as part of the project "Governing Multifunctional Landscapes (GML).

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Food Composition Table for the Congo Basin countries

1. Introduction/Background

Food composition tables or databases are a collection of the nutrient, phytochemical, anti-nutrient and toxic components content of foods, ideally representative of a country or region. Of the countries in the Congo Basin (Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon and the Republic of Congo), only Cameroon and the Democratic Republic of Congo have had food composition tables in the past. The first food composition table (FCT) for Cameroon was made available by Bergeret & Masseyeffin in 1957, entitled "Table Provisoire de Composition des Aliments du Sud-Cameroun". The second FCT for Cameroon was published in 1966 by Pele & Le Berre and entitled "Les Aliments d'Origine Végétale au Cameroun". The FCT for the Democratic Republic of Congo was published in 1966 by Degroote and entitled "Tables de composition alimentaire pour la République Démocratique du Congo". These FCTs did not cover the food biodiversity of the respective countries and did not include mixed dishes.

From 1966 to the present, to the best of our knowledge, no FCT or database for any country in the region has been published. Under the initiative of AFROFOODS (African Network of Food Data Systems) as part of the International Network of Food Data Systems (INFOODS), CAFOODS (Central Africa Food Data Systems) was founded with the aim to support and harmonize the national collection and management of food composition data for the African Countries: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo Brazzaville, Democratic Republic of Congo, Gabon, Mozambique, Rwanda and Seychelles. To the best of our knowledge, there is no recent food composition table or database for the Central African countries or for any single country of the region (Kouebou et al., 2013), contrary to East (Kenya for instance (FAO/Government of Kenya, 2018), South (SAFOODS, 2017) and West African (Vincent et al. 2020) regions. Since 2009, food composition compilation activities have been undertaken in Cameroon and led to the publication of a review on the proximate and mineral composition of traditional dishes in Cameroon (Kouebou et al. 2013). The evolution in diets coupled with the introduction of new crop varieties, food processing and fortification, along with changes in food analysis and nutritional sciences point to the need for updating or developing a new FCT considering the current diets in the Congo Basin region.

2. Motivation and objectives

The idea to compile the FCT for the Congo Basin countries stemmed from the need for food composition data to assess the dietary nutrient intake of households in Cameroon and the Democratic Republic of Congo following a two-season nutrition survey during 2018 and 2019 as part of a project "Governing Multifunctional Landscapes" funded by the European Union. When the nutrition team searched for food composition data to analyze the foods consumed by respondents in the project, no recent FCT or food composition database (FCDB) was publicly available for the two countries nor for the other Congo Basin countries sharing similar food system characteristics. Apart from Cameroon which had a review of the proximate and mineral composition of traditional dishes (Kouebou et al. 2013), no other country in the Congo Basin after our literature search had a current food composition table. As such, we were inspired by this review and many other published analytical data cited in the review like Ponka et al. (2005 and 2006) and Kana sop et al (2008 a&b). The compilation of the present FCT began by considering foods and available nutrient information from all the six countries of the Congo Basin: Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon and the Republic of Congo. One of the major challenges faced in the course of the compilation was the lack of information on foods and cuisines for the Central African Republic, Equatorial Guinea and the Republic of Congo. Information for Cameroon, DRC and Gabon was assessed through a review of literature from published sources (scientific articles, theses and reports).

From the literature searches, it appears that Cameroon, DRC and Gabon share the same staples and many other foods without any major distinctions in their food systems (FAO, 2020). This in part may be a reflection of the common origin of the main staples, the existence of similar agroecological systems fostering similar agricultural production (cassava, maize, plantain, sorghum, millet, groundnuts, etc.). In addition, the free movement of food items across the borders, hunting and exploitation of non-wood forest products for human consumption from the Congo Basin forest that is shared by these countries may explain similarities in food patterns in the region (World Bank, 2018; ECA, 2021). As such, we did not indicate food source by country in the food composition table.

2.1. Objectives

The overall objective of compiling this FCT was to render available relevant and high-quality nutrient information according to international standards for foods consumed in the Congo Basin. More specifically, we aimed to:

- Make available food composition data (energy, proximate components, minerals and vitamins) for raw, processed and cooked foods and recipes consumed in the Congo Basin region;
- Develop a user-friendly FCT, in compliance with international standards to serve as a tool to assess the dietary intake of populations in the region;
- Incorporate as much as possible analytical data for foods of the regions from published sources including institutional reports, theses, and scientific papers;
- Borrow data from FCTs, prioritizing data from countries in proximity to the Congo Basin to cover foods lacking nutrient information or those with low quality analytical data;
- Cover as much as possible foods commonly consumed in the Congo Basin region in terms of origin, preparation method and state/form;
- Document the compiled FCT while presenting the constraints encountered in developing a standardized FCT for the region.
- Identify foods with incomplete or missing nutrient information together with constraints and gaps in food composition analysis to allow future updates of the current FCTs for the region.

3. Overview of the compilation process

The compilation of this food composition table consisted of:

1. Sorting and classifying the foods recorded during the dietary survey (multiple-pass 24-hours recall method, food frequency questionnaire over 7 days period) into different food groups (Cereals, roots and tubers, green vegetables, vitamin A rich vegetables, fruits, nuts/seeds, spices, sweets, beverages and drinks, meat and fish);
2. Defining the components to be used using the FAO/INFOODS component identifiers (tagnames) considering energy, macronutrients, minerals and vitamins;
3. Searching for nutrient composition data from published sources such as already existing FCTs, journal articles, MSc. and PhD theses, reports and analytical data;
4. Reviewing the compiled data following the INFOODS international standards (The FAO/INFOODS tools that were used are: INFOODS compilation tool Version 1.2.1

(FAO/INFOODS, 2011), INFOODS food component identifiers or tagnames (FAO/INFOODS, 2019), guidelines for converting units, denominators and expressions version 1.0 (FAO/INFOODS, 2012b), guidelines for food matching Version 1.2 (FAO/INFOODS, 2012c), guidelines for checking food composition data prior to publication of a user table/database version 1.0 (FAO/INFOODS, 2012a);

5. Data from already existing FCTs was compiled by matching the complete food description from the tables to the foods sorted and classified from the survey;
6. Preparing the data documentation as required with the inclusion of an annex covering foods with incomplete nutrient profiles (mostly lacking some important nutrients like water, ash, some minerals and all vitamins).

4. Foods and Food groups

The foods included in the Congo Basin Food Composition Table were derived from the food list obtained following the administration of the multiple-pass 24-hours recall method and food frequency questionnaire in over 1000 households in Cameroon and over 1000 households in the Democratic Republic of Congo during 2018 and 2019. We then added foods to this list other foods common to the cuisines of the six Congo Basin countries as retrieved from published sources including from Ponka et al. (2005, 2006), Kana Sop et al. (2008 a & b), Djulde et al. (2012), Termote et al. (2012), Kouebou et al. (2013), Loh et al. (2017), Fungo et al. (2015, 2019).

The present FCT for the Congo Basin countries presents data for 410 raw and processed (cooked, smoked, dried roasted and recipes) food entries classified into 12 food groups and coded as shown in the following table. We also have mixed dishes with data presented for the dishes as consumed and not computed as a function of the constitutive ingredients. Food group 5 (other vitamin A rich foods) represent some very common foods from the survey reputed for high vitamin A content.

Table 1. Food groups, codes and food entries

Code	Food Group	Food entries
1	Cereals and cereal products	44
2	Roots and Tubers	47
3	Dark green leafy vegetables	40
4	Vegetables	41
5	Other vitamin A rich foods	09
6	Fruits	36
7	Meat, poultry, eggs	72
8	Legumes, nuts and seeds	24
9	Oil and Fats	10
10	Sweet and beverages	14
11	Spices and herbs	19
12	Fish and seafood	54
Total		**410**

Food names are given in the local language (if available), French and English languages as well as with the scientific name where possible. A complete food description in English and French is included to underline properties (color, maturity, processing method/state, cooking method) that may affect nutrient values.

5. Data Sources

The data included in the FCT for the countries of the Congo Basin were compiled from published scientific articles and institutional reports (including theses) that met the quality criteria defined in the FAO/INFOODS standards and guidelines. In addition, data from several FCTs were used either to add foods where data were not published for the region or to complete the missing data. The FCTs used are listed in Table 2.

Table 2. Reference FCTs and respective codes used in the compilation of the CBCs FCT

Code	Bibliography
BA13	Shaheen N., Rahim A.T.M.A., Mohiduzzaman Md., Banu C.P., Bari Md. L., Tukun A.B., Mannan M.A., Bhattacharjee L., Stadlmayr B. 2013. Food Composition Table for Bangladesh. Institute of Nutrition and Food Science, Centre for Advanced Research in Sciences, University of Dhaka.
BR11	Nucleo de Estudos e pesquisas em Alimentacao (NEPA). Brazilian Food Composition Table (TACO), 4th ed., 2011. https://www.nepa.unicamp.br/taco/tabela.php?ativo=tabela
FNDDS19	U.S. Department of Agriculture, Agricultural Research Service. 2018. USDA Food and Nutrient Database for Dietary Studies 2015-2016. Food Surveys Research Group Home Page, www.ars.usda.gov/nea/bhnrc/fsrg
IN17	Longvah, T., Ananthan, R., Bhaskarachary, K. & Venkaiah, K. 2017. Indian Food Composition Tables. Hyderabad, India, National Institute of Nutrition. Available at http://www.ifct2017.com/frame.php?page=home.
JA15	MEXT. (2015). The Standard Tables of Food Composition in Japan 2015 (SeventhRevised Edition). Official Gazette Co-operation of Japan. Japan. Available at http://www.mext.go.jp/a_menu/syokuhinseibun/1365451.htm/
KE18	FAO & Government of Kenya. 2018. Kenya Food Composition Tables [online]. Nairobi. [Cited December 2018]. http://www.kilimo.go.ke/wp-content/uploads/2018/10/KENYA-FOOD-COMPOSITION-TABLES-2018.pdf
KE19	Stadlmayr B, McMullin S, Jamnadass R (2019): Priority Food Tree and Crop Food Composition Database: Excel database file. Version 1. World Agroforestry, Nairobi, Kenya. Available at: http://apps.worldagroforestry.org/products/nutrition/
NI17	Nigerian Food Composition Table, 2017. http://nigeriafooddata.ui.edu.ng
UF16	FAO. 2016. FAO/INFOODS Global Food Composition Database for Fish and Shellfish. Version 1.0 – uFiSh1.0. Rome. (also available at http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/).
UP17	FAO. 2017. FAO/INFOODS Global Food Composition Database for Pulses Version 1.0 - uPulses 1.0. Rome, FAO.

US19	US Department of Agriculture (USDA), Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Legacy. Version Current: April 2019. Internet: http://www.ars.usda.gov/nutrientdata
WA19	Vincent, A., Grande, F., Compaoré, E., Amponsah Annor, G., Addy, P.A., Aburime, L.C., Ahmed, D., Bih Loh, A.M., Dahdouh Cabia, S., Deflache, N., Dembélé, F.M., Dieudonné, B., Edwige, O.B., Ene-Obong, H.N., Fanou Fogny, N., Ferreira, M., Omaghomi Jemide, J., Kouebou, P.C., Muller, C., Nájera Espinosa, S., Ouattara, F., Rittenschober, D., Schönfeldt, H., Stadlmayr, B., van Deventer, M., Razikou Yiagnigni, A. & Charrondière, U.R. 2020. FAO/INFOODS Food Composition Table for Western Africa (2019) User Guide & Condensed Food Composition Table / Table de composition des aliments FAO/INFOODS pour l'Afrique de l'Ouest (2019) Guide d'utilisation & table de composition des aliments condensée. Rome, FAO.

6. Components

This FCT contains 40 components expressed in units per 100 g edible portion of fresh weight basis (EP). A standardized format with a fixed number of decimals has been adopted for each component used throughout the FCT. The component names, definitions and INFOODS component identifiers (*tagnames*), units and relevant comments are presented in Table 3. Some of the components like energy, available carbohydrates, vitamin A, beta-carotene equivalents, niacin equivalents and folate were recalculated for standardization.

Table 3. Components included in the CBCs FCT with corresponding INFOODS tagnames, units, maximal decimal places and denominators

Component	INFOODS tagname	Unit	Maximal decimal places	Denominator	Additional information
Energy	ENERC	kJ	0	/100 g edible portion	Energy (kJ/100 g EP) = total protein (g/100 g EP) × 17 + total fat (g/100 g EP) × 37 + available carbohydrate (g/100 g EP) × 17 + total dietary fibre (g/100 g EP) × 8 + alcohol (g/100 g EP) × 29
	ENERC	kcal	0	/100 g edible portion	Energy (kcal/100 g EP) = total protein (g/100 g EP) × 4 + total fat (g/100 g EP) × 9 + available carbohydrate (g/100 g EP) × 4 + total dietary fibre (g/100 g EP) × 2 + alcohol (g/100 g EP) × 7
Water	WATER	g	1	/100 g edible portion	
Protein, total	PROTCNT	g	1	/100 g edible portion	Protein, total; calculated from total nitrogen and the nitrogen conversion factor (XN)
Fat	FAT-	g	1	/100 g edible portion	Fat, variable method: includes both total FAT (fat, total; mixed solvent extraction; preferred tagname) and FATCE (fat, total; derived by analysis using continuous extraction)
Carbohydrate, available	CHOAVLDF	g	1	/100 g edible portion	Carbohydrate, available; calculated by difference (g/100 g EP) = 100 – (water + total fat + total protein + ash + total dietary fibre + alcohol) (g/100 g EP)

Fibre, total, dietary	FIBTG or [FIBC]	g	1	/100 g edible portion	AOAC Prosky method (AOAC 991.43) or [crude fiber]
Alcohol	ALC	g	1	/100 g edible portion	
Ash	ASH	g	1	/100 g edible portion	
Calcium	CA	mg	0	/100 g edible portion	
Iron	FE	mg	1	/100 g edible portion	
Magnesium	MG	mg	0	/100 g edible portion	
Phosphorus	P	mg	0	/100 g edible portion	
Potassium	K	mg	0	/100 g edible portion	
Sodium	NA	mg	0	/100 g edible portion	
Zinc	ZN	mg	2	/100 g edible portion	
Cooper	CU	mg	2	/100 g edible portion	
Vitamin A	VITA	µg	0	/100 g edible portion	Vitamin A in retinol equivalents (µg/100 g EP) = retinol (µg/100 g EP) + beta-carotene equivalents (µg/100 g EP) / 6
	VITA_RAE	µg	0	/100 g edible portion	Vitamin A in retinol activity equivalents (µg/100 g EP) = retinol (µg/100 g EP) + beta-carotene equivalents (µg/100 g EP) / 12
Retinol	RETOL	µg	0	/100 g edible portion	
Beta-carotene equivalents	CARTBEQ or [CARTB]	µg	0	/100 g edible portion	Beta-carotene equivalents (µg/100 g EP) = beta-carotene (µg/100 g EP) + alpha-carotene (µg/100 g EP) / 2 + beta-cryptoxanthin (µg/100 g EP) / 2 or [beta-carotene only]
Vitamin D	VITD	µg	1	/100 g edible portion	Vitamin D = Vitamin D2 + Vitamin D3

Vitamin E	VITE	mg		/100 g edible portion	Vitamin E expressed in alpha-tocopherol equivalents (mg/100 g EP) = alpha-tocopherol (mg/100 g EP) + 0.4 × beta-tocopherol (mg/100 g EP) + 0.1 × gamma-tocopherol (mg/100 g EP) + 0.01 × delta-tocopherol (mg/100 g EP)
Alpha-tocopherol	TOCPHA	mg	2	/100 g edible portion	
Beta-tocopherol	TOCPHB	mg		/100 g edible portion	
Delta-tocopherol	TOCPHD	mg		/100 g edible portion	
Gamma-tocopherol	TOCPHG	mg		/100 g edible portion	
Alpha-tocotrienol	TOCTRA	mg		/100 g edible portion	
Thiamine	THIA-	mg	2	/100 g edible portion	Thiamin, mix of different tagnames: includes both THIA (vitamin B1 analysed and expressed as thiamin) and THIAHCL (vitamin B1 analysed and expressed as thiamin hydrochloride)
Riboflavin	RIBF	mg	2	/100 g edible portion	
Niacin	NIA	mg	1	/100 g edible portion	Niacin, preformed
Tryptophan	TRP	mg	0	/100 g edible portion	

Niacin Equivalents	NIAEQ	mg	1	/100 g edible portion	Niacin equivalents (mg/100 g EP) = niacin (mg/100 g EP) + tryptophan (mg/100 g EP) / 60 or [HPLC, microbiological]
Vitamin B6	VITB6-	mg	2	/100 g edible portion	Vitamin B-6, mix of different tagnames: includes both VITB6A (Vitamin B6, total; determined and expressed as pyridoxine) and VITB6C (vitamin B-6, total; calculated by summation)
Vitamin B12	VITB12	µg	2	/100 g edible portion	
Folate, total	FOL	µg	0	/100 g edible portion	Folate, total
Folic acid	FOLAC	µg	0	/100 g edible portion	Folic acid (synthetic)
Folate, natural	FOLFD	µg	0	/100 g edible portion	Folate food, naturally occuring food folates (microbiological method)
Dietary folate equivalents (DFE)	FOLDFE	µg	0	/100 g edible portion	Dietary folate equivalents (µg/100 g EP) = naturally occurring food folates (µg/100 g EP) + 1.7 × synthetic folic acid (µg/100 g EP)
Vitamin C	VITC or [ASCL]	mg	0	/100 g edible portion	Vitamin C, total (includes ascorbic acid and dehidroascorbic acid) or [ascorbic acid only]

6.1.Component standardization

1. Energy

The metabolizable energy of each food was calculated based on the protein, fat, available carbohydrate, dietary fiber and alcohol content in combination with their respective energy conversion factors. The derived energy values from the equations in table 3 (additional information) were both expressed in kilojoules (kJ) and kilocalories (kcal). The expression in kJ made use of the general Atwater factors 17 (protein and available carbohydrates), 37 (fat), 8 (dietary fiber) and 29 (alcohol) while in kcal, the Atwater factors 4, 9, 2 and 7 were respectively applied for protein and available carbohydrates, fat, dietary fiber and alcohol.

2. Available Carbohydrates

The content of available carbohydrates for all the foods were calculated by difference as shown in Table 3. For some foods in the meat, poultry, egg and fish and seafood groups, the content of available carbohydrates was assumed as zero.

3. Vitamin A

The content of vitamin A was expressed both as Retinol Equivalents (RE) and as Retinol Activity Equivalent (RAE). The values were derived using retinol and beta carotene equivalents (Table 3). Beta carotene equivalents were derived from beta-carotene, alpha-carotene and beta-cryptoxanthin as shown in Table 3.

4. Folate

Folate was either expressed as dietary folate equivalents (FOLDFE) or as total folate, both derived from naturally occurring folate in foods and synthetic folate or folic acid added in fortified foods. The equation used to calculate dietary folate equivalents is shown in Table 3 and total folate is the sum of naturally occurring folate in food and folic acid (found in fortified foods). In unfortified foods, the folic acid content is assumed as zero.

7. Food Matching and Compilation Criteria

Data from published articles in the region were prioritized. As such, wherever there was need to use data from FCTs, priority was given to the FAO/INFOODS Food Composition Table for Western Africa (WA19) the Nigerian FCT (NI17) and to the FCTs from Kenya (KE19 and KE18) for their proximity to the Congo Basin region. Where data from an original source (e.g. scientific article or thesis) was presented in a different unit or denominator (e.g. dry weight basis), conversions and/or adjustments were done according to the FAO/INFOODS *guidelines on*

converting units, denominators and expression. Version 1.0. (FAO/INFOODS 2012b available at https://www.fao.org/3/i3089e/i3089e.pdf). At the nutrient level, indicators such as the sum of proximate (column SOP) was used to verify the quality of proximate data which should fall at the interval of 95–105, the ideal value being 100. At the component level, data sources with SOP out of this range was excluded from the database.

Missing values were completed using the West African Food Composition database 2019 or the Kenyan Food Composition Tables (2018 and 2019). When data were lacking for foods in the African FCTs, we used data from other FCTs from around the world (Table 2) like the U.S. food composition database (US19), the FAO/INFOODs global food composition database for pulses, and the Brazilian food composition database, prioritizing the best match available. The best match was based on food name, food description, scientific name (at both genus and species level and to a lower level at the family (mostly for the fish and seafood group).

The food matching criteria was guided by the FAO/INFOODS guidelines on food matching (FAO/INFOODS Guidelines for Food Matching - Version 1.2 (2012) available at http://www.fao.org/docrep/017/ap805e/ap805e.pdf). The local, French, English and scientific names of the food were considered and special attention was given to details that affect the composition of foods, processing state, color, part of the food and maturity level. Another tool exploited during the compilation process was the FAO/INFOODS guideline for checking food composition data prior to publication of Table/Database. Version 1.0 (FAO/INFOODS 2012a available at
https://www.fao.org/fileadmin/templates/food_composition/documents/pdf/Guidelines_data_checking2012.pdf).

For components with multiple data points, the average nutrient value, the number of data sources (n) and the minimum and maximum values (min-max) were also presented. For some components, for instance alcohol and available carbohydrates, zero was assumed to fill the missing value. Except for alcoholic beverages, alcohol was assumed as zero in the foods from all the other food groups while available carbohydrates and dietary fiber were assumed as zero for some foods of the meat, poultry, eggs and fish ad seafoods. The symbol tr (for trace) was used to indicated that a component occurred in a given food in such low (trace) amounts that it could not be quantified and was approximated to zero should the component be used in any calculation. The symbol "[]" was use to indicate components with low quality data. This was common for

fiber when only crude fiber was available, vitamin A when the other individual carotenoids were lacking and vitamin C when only L-ascorbic acid was available.

In the countries of the Congo Basin, mandatory food fortification programs are underway, as such, data from other countries for fortified foods were used "as is" (without subtracting the added nutrient e.g. folic acid). For instance, we compiled wheat-based processed foods (beignet, doughnut, crackers etc.) fortified with folic acid. Therefore, fortification data should be used with caution since it may not reflect all the foods available in the Congo Basin region.

In the case of mixed dishes, recipes were matched to descriptions containing all the ingredients in the data sources. For some cooked foods (single-ingredient recipes) a few nutrient values were completed by applying the yield factor (YF) for the cooked food and the respective nutrient retention factors (RF). Nutrient retention factors were taken from the EuroFIR technical report (Vásquez-Caicedo et al. 2008) while yield factors were estimated based on the moisture content of the raw and respective cooked food.

8. Quality Considerations

For each food, the complete description was matched as much as possible with the original data source and the source and food code are given in the BiblioID column (the complete references are presented in sheet 6. BiblioID). Almost all of the analytical data from the region did not report the vitamin content of the foods and in most cases, some mineral components were also missing. The missing data were borrowed from already existing FCTs with priority for the African FCTs (WA19, KE18, KE19 and NI17). Where missing data needed to be completed, only data from referenced FCTs was used. Also, foods with a large number of missing data points were included in the annex with the components for which data was available. Data sources with the SOP within the interval of 95 to 105 were included in the database together with some summary statistics, co-notations and assumptions for some components (e.g. alcohol). At the end of the compilation process, several rounds of scrutiny were done and corrections accompanied to match the data values with the food description, compared the data points to international referenced FCTs.

9. The Annex

The foods classified in the annex are commonly consumed foods in the region like cassava sticks (bobolo, baton de manioc), *Gnetum Africana* (Eru/koko), with incomplete or missing data for important nutrients like water, ash, some minerals and vitamins. Some of the foods in the annex

are nutrient-dense foods and used in the management of acute malnutrition in children (for instance plumpynut) but lacking many important components thus these should be considered a priority for future updates.

10. Recommendations for future work

First and foremost, we recognize that this is the first FCT for the Congo Basin region. As such, most of the data in this edition has been borrowed from neighboring regions and countries. Secondly, we note that analytical data for mixed dishes from the countries are lacking. Additionally, most analytical data published for foods from the Congo Basin countries did not meet the criteria for quality as in the FAO/INFOODS guidelines. For instance, in many cases data available in the literature showed a SOP outside the acceptable range (95-105), were lacking information on moisture content or did not clearly define the denominator resulting in the exclusion of the data. We therefore recommend that authors publishing food nutrient data should use appropriate analytical methods, report the water content and clearly define the units and the denominators of components. For the foods in the annex, we recommend the analysis and publication of the vitamin content. Although the food list is representative of the region, it is worth noting that most of the data in the present FCT from the region (from the journal articles and theses), largely came from Cameroon, the DRC and rarely from Gabon. No data were used from the Central African Republic, the Republic of Congo or Equatorial Guinea because we did not find in published literature. We therefore urge food scientists in the region to collect data on foods consumed in these countries that are underrepresented in the published literature. Information on nutrient content of foods consumed in a country or region is necessary for evaluating nutrient intake and for the development of reliable nationally relevant dietary intake guidelines. High quality nutrient composition data reflective of a country or region is the basis for effective nutrition programs for the management of malnutrition. It is also our wish that this fct should aid in the compilation of national fcts in the region especially for Cameroon and the DRC.

11. References

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