



A review of composition studies of Cameroon traditional dishes: Macronutrients and minerals

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ARTICLE INFO

Article history:

Available online 23 January 2013

Keywords:

Nutrient
Dishes
Compilation
Central Africa

ABSTRACT

This paper reviews published data that contributes to the knowledge of the ingredients and nutrients of Cameroon traditional dishes. Macronutrient (energy, carbohydrates, protein, total fat, fibre and ash) and mineral (iron, zinc, magnesium, calcium, phosphorus, copper, manganese, potassium, sodium and selenium) data are presented for 117 commonly consumed dishes from three eco-regions. Tables providing an overview of the main ingredients and nutrient values (range of means per 100 g edible portion) are presented. Considerable variability in nutrient values has been reported among dishes. Water contents range from 29.8 to 95.9 g/100 g edible portion while energy values range from 12 to 403 kcal/100 g. Energy yielding-constituents are the major nutrients recorded in published data, followed by iron, zinc and magnesium.

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1. Introduction

Nutrition plays an integral role in the optimal functioning of the body compared to malnutrition (including under nutrition and over nutrition) that is a health impairment resulting from a deficiency, excess or imbalance of nutrients. Most developing countries are faced with the double burden of persisting under nutrition as well as the growing epidemic of obesity, diabetes and non-communicable diseases, and Cameroon is no exception. Although consumption statistics are more and more available through national investigations (INS, 2002), studies determining associations between diet and nutrition are limited, in part because of the deficit of data on nutritional composition of commonly consumed foods and a lack of knowledge of the dietary habits. A recent study in Cameroon highlighted a lack of knowledge of the composition of healthy diets as a barrier to healthy dietary behaviours (Kiawi et al., 2006). Information to link nutrition and chronic diseases is necessary to inform consumers on healthier food choices, as consumers are becoming more health conscious and are increasingly focusing on food safety as well as their eating habits and

nutrient intake (Tanya & Bah, 2009, Section 1). The consumer's involvement influences agricultural production, food chain as well as research and development programs. It is established that food choices can have a positive or negative impact on the consumer's health status (Buttriss et al., 2003; Tanya, 2009). These studies emphasise the need for greater knowledge on the composition of foods that is essential to understanding the function of nutrients in the diet.

Food composition tables or databases (FCDBs) give information on the portion, composite sample, collection and analysis of the composition of foods (Greenfield & Southgate, 2003, chap. 1) and can be used to evaluate a person's food intake and compare it to the Dietary Reference Intake. FCDBs are resources providing detailed information on the nutritional composition of foods commonly eaten, usually from a particular country. Some of the data analysed in one country could also be used in the FCDBs of other countries. Incompatibilities arise where the different countries use different sampling and analytical methods as well as different measuring units and cooking treatments. Due to these differences in nomenclature and procedures, it is obvious that these FCDBs are not international and it is important that each country has their own FCDB (Deharveng, Charrondièrre, Slimani, Southgate, & Riboli, 1999). Currently there is no FCDB in Cameroon and Central Africa contrary to East, South and West Africa (CTA/ECSA, 1988; FAO/

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Table 1
Usual names, types and main ingredients of traditional dishes reported in Cameroon.

Code	Usual names	Type	Main ingredients	References
1	Banane-malaxée	m	Banana (<i>Musa sapientum.</i>), groundnut (<i>Arachis hypogea</i>), fish, garlic, green herbs, ginger, pepper, salt	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
2	Bean-stew	s	Red bean (<i>Phaseolus vulgaris</i>), tomato, crayfish, onions, palm oil.	Sharma et al. (2007)
3	Bouillie-maïs	m, sn	Maize flour (<i>Zea mays</i>), roasted groundnut, sugar, tamarind pulp extract, rice (<i>Oriza sativa</i>)	Ndjouenkeu et al. (1989), Kouebou et al. (2008),
4	Bouillie infantile 1	m	Maize flour, sugar, milk, groundnut, egg yolk	Leroy (2000)
5	Bouillie infantile 2	m	Maize paste, sugar, milk, groundnut, egg yolk	Leroy (2000)
6	Cassava-fufu	c	Fermented cassava flour (<i>Manihot esculenta</i>)	Sharma et al. (2007)
7	Cassava-pudding	m, sn	Raw cassava, palm oil, salt	Sharma et al. (2007)
8	Chicken-stew	s	Chicken, tomato	Sharma et al. (2007)
9	Condres	m	Unripe banana (<i>Musa spp.</i>), palm oil, groundnut, salt, pepper, cow meat, smoked fish	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
10	Corn chaff	m	Maize grains, red bean, palm oil, salt	Ponka, Fokou, Fotso, et al. (2005)
11	Corn/groundnut-pudding	sn	Maize flour, roasted groundnut, spices	Sharma et al. (2007)
12	Coucouma	s	Groundnut (<i>Arachis hypogea</i>), palm oil, onion, tomato, smoked fish, <i>Amaranthus</i> leave, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
13	Couscous/gombo	m	Maize, tomato, okra, green herbs, garlic, pepper, cow meat, spices	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
14	Dried fish-groundnut soup	s	Fish, groundnut, salt, onion, spices, pepper	Sharma et al. (2007)
15	Ebobolo	c	Cassava tuber	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
16	Egusi seed pudding	sn	Melon seed (egusi), dried fish, spices	Sharma et al. (2007)
17	Eru	s	<i>Gnetum africanum</i> leave, cow skin, cow meat, dried fish, crayfish, palm oil	Sharma et al. (2007)
18	Eru/fufu	m	Fermented cassava paste, <i>Gnetum africanum</i> leave	Sharma et al. (2007), Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
19	Etondo-non-Salé	s	Groundnut, palm nut pulp, onion, tomato, smoked fish, garden eggplant leave	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
20	Etondo-Salé	s	Groundnut, palm oil, onion, tomato, smoked fish, garden eggplant leave, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
21	Fian-Ngon	s	Egusi seed, palm oil, onion, tomato, smoked fish, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
22	Fian-Ongoualik	s	Egusi seed (small), palm oil, onion, tomato, smoked fish, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
23	Fian-Owondo	s	Groundnut, palm oil, onion, tomato, smoked fish, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
24	Fian-tomate	s	Tomato, palm oil, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
25	Fish-stew	s	Raw fish, tomato	Sharma et al. (2007)
26	Fufu-corn	c	Maize flour	Sharma et al. (2007)
27	Gniri/Follere	m	Cereal flour, <i>Hibiscus sabdariffa</i> leaves, groundnut, cowpea, dried cow meat, fish, onion, potash (<i>kilbu</i>) cotton oil, groundnut oil	Teugwa et al. (1992), Teugwa et al. (1996), Yadang et al. (2009)
28	Gniri/Lalo	m	Cereal flour, <i>Corchorus olitorius</i> leave, dried groundnut, cowpea, dried cow meat, fish, onion, potash (<i>kilbu</i>) cotton oil, groundnut oil	Teugwa et al. (1992), Teugwa et al. (1996), Yadang et al. (2009)
29	Gniri/Tasba	m	Cereal flour, <i>Cassia tora</i> leave, dried groundnut, cowpea, dried cow meat, fish, onion, potash (<i>kilbu</i>) cotton oil or groundnut oil	Teugwa et al. (1992), Teugwa et al. (1996), Yadang et al. (2009)
30	Green vegetable sauce	s	Green vegetable, cow meat, tomato, onion, spices, melon seed	Sharma et al. (2007)
31	Groundnut-pudding	sn	Roasted groundnut, spices	Sharma et al. (2007)
32	Groundnut-soup	s	Roasted groundnut, tomato, onion, spices (fish, meat)	Sharma et al. (2007)
33	Huckleberry-pumpkin leaves soup	s	Leafy vegetable (huckleberry and pumpkin leaves), tomato, onion, spices, groundnut, fish, cow meat	Sharma et al. (2007)
34	Huckleberry-sauce	s	Huckleberry leave, tomato, onion, spices, groundnut, fish	Sharma et al. (2007)
35	Igname-malaxé	m	Yam tuber (<i>Discorea spp.</i>), tomato, paper, garlic, green herbs, dried fish	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
36	Ikouan	c	Plantain (<i>Musa spp.</i>)	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
37	Keleng-keleng	s	Green leafy vegetable, groundnut, dried cow meat, fish	Sharma et al. (2007)
38	Koki-beans	m, sn	Cowpea, palm oil, salt, onion	Sharma et al. (2007)
39	Koki-corn	m	Fresh maize, palm oil, salt, onions, green leafy vegetable	Sharma et al. (2007)
40	Koki/plantain	m	Cowpea, red palm oil, pepper, salt, banana	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
41	Kon	s	Red bean, palm oil, tomato, salt, pepper	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
42	Kpem	s	Cassava leave, palm nut pulp, groundnut, pumpkin seed	Sharma et al. (2007)
43	Kwem/manioc	m	Cassava leave, fresh palm nut, cassava tuber, salt	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)
44	Kwemp-non-salé	s	Palm nut pulp, onion, tomato, smoked fish, cassava leave	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
45	Kwemp-salé	s	Cassava leave, groundnut, palm oil, onion, tomato, smoked fish, salt	Ponka, Fokou, Leke, et al. (2005), Ponka et al. (2006)
46	Legumes sauté/manioc	m	Dried fish, green herbs, garlic, onion, pepper, cassava tuber, tomato, vegetable (<i>Amaranthus sp.</i>)	Kana Sop, Fotso, et al. (2008), Kana Sop, Gouado, et al. (2008)

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