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Phytochemical and Nutritional Composition of Commonly used Medicinal Plants during Pregnancy in Kwara State, Nigeria.

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Abstracts

Ethnobotanical investigation has revealed that *Azadirachta indica*, *Alstonia boonei*, *Enantia chloranthia*, *Harungana madagascariensis*, *Khaya ivorensis*, *Mangifera indica*, *Tetracera alnifolia*, *Theobroma cacao* and *Xylopia aethiopica* are commonly used medicinal plants during pregnancy in Kwara State. Proximate and phytochemical analyses of the ethnobotanicals were carried out using standard laboratory methods. The result of the phytochemical analysis revealed that all the studied samples contained polyphenol, terpenoids and saponin. Six of them contained alkaloids, five of them contained cardiac glycosides, four of them contained anthraquinones, eight of them contain flavonoids and tannins present in only nine of studied plant parts. The dry matter content of the samples ranged between 78.78% and 98.51%, crude protein, 1.23% and 16.40 %, crude fiber, 10.49% and 33.33%, crude fat, 1.04% and 13.45%, ash content 2.83% and 19.37 %. Mineral element analysis showed that the selected plant parts contained low levels of chromium (2.63-8.97 mg/100g) and high level of zinc (18.47-89.73 mg/100g), manganese

(11.00-273.67 mg/100g), iron (65.67-478.03 mg/100g) and moderate level of copper (6.73-27.13 mg/100g). All the studied plant parts have potential of serving as supplementary sources of antimicrobial drugs and essential nutrients to man and livestock.

Keywords: Proximate, Pregnancy, Ethnobotanicals, Phytochemicals.

INTRODUCTION

Medicinal Plants have significant role during pregnancy, birth and postpartum care in many rural areas of the world (Lamxay *et al.,* 2011). Drug use during pregnancy may be harmful according to the reports of various researchers (Ali and Egan, 2007; Mahadevan, 2007; Misri and Kendrick, 2007). Indications for drug use during pregnancy range from chronic illness such as epilepsy, depression and rheumatoid arthritis to those commonly associated with pregnancy such as hypertension, urinary tract infections and gastrointestinal disorders (Ali and Egan, 2007).

The safety of herbal therapies is particularly important in some groups of people such as pregnant women who are more vulnerable to the side effects of drugs. The use of herbal supplements increases as pregnancy progresses. Herbal medicine use during pregnancy may be in order to treat disorders related to pregnancy such as nausea, vomiting and gastro-esophageal reflux or conditions like common cold and respiratory illnesses unrelated to pregnancy (Forster, *et al.,* 2006; Hemminki, *et al*., 1991).

The medicinal value of plants lies in some chemical substances that produce a definite physiological action on the human body (Himal *et al*, 2008). The most important of these bioactive compounds of plants are alkaloids, flavonoids, tannins, and phenolic compounds. The phytochemical research based on ethno-pharmacological information is generally considered an effective approach in the discovery of new infective agents from higher plants (Duraipandiyan *et al*, 2006).

Macronutrients and trace elements have an important influence on the health of both mother and foetus. Deficiency of micronutrients (trace elements) during pregnancy may give rise to complications such as anaemia and hypertension, as well as impairing foetal function, development and growth (Allen, 2005; Nath, 2000). For instance, Iron is one of the major trace elements required during pregnancy (Dawson and McGarity, 1987).

In view of the complications associated with orthodox medicines during pregnancy, this study screened nine ethnobotanicals for their proximate and phytochemical constituents to provide scientific details accountable for their traditional use during pregnancy and also to give scientific insights to the use of these plants as alternative to orthodox drugs.

MATERIALS AND METHODS

Ethnobotanical Investigation

The ethnobotanical investigation was carried out using semi-structured method which involves interview using local language (Yoruba). The respondents were female herb-sellers in three local herbal markets in Ilorin. They were interviewed on their traditional knowledge of the protective measure during pregnancy. Recipes were documented. The local names, parts of plant used, method of preparation and mode of administration were also recorded using the method of Sofowora (1993).

Collection and Identification of Plant Materials

The dried and healthy plants materials were used for this study. The plant-parts of *Harungana madagascariensis* (Stem barks), *Tetracera alnifolia* (Stem barks), *Khaya ivorensis* (Stem barks), *Theobroma cacao* (Stem barks), *Xylopia aethiopica* (Pods), *Enantia chlorantha* (Stem barks) were purchased from a local herb market (Oja tuntun) in Ilorin, Nigeria. *Mangifera indica* (Stem barks), *Azadirachta indica* (Leaves), *Alstonia boonei* (Stem barks) were collected

from the wild in Ilorin, Nigeria. The plants were identified and authenticated at the Department of Plant Biology Herbarium, University of Ilorin.

Preparation of Plant Materials

The plant samples collected were air dried at room temperature for about three weeks, while the samples bought at the market were dried for one week to ascertain thorough dryness. The dried samples were chopped into smaller pieces samples, ground into uniform powder using mortar with pestle and electric blender and stored in glass container prior to use.

Phytochemical Screening

The phytochemacal screening of the samples was carried out using standard procedures (Harbbone, 1984; Sofowora, 1993; Evans, 1996; Raaman, 2006; Tiwari *et al.*, 2011; Gbadamosi *et al*., 2012).

Proximate Analysis of Plant Samples

The proximate analysis of the powdered plant samples for protein, fat, fiber, ash and dry matter was determined using the methods described in AOAC (1990) at the Department of Plant Biology, Faculty of Life sciences and Department of Chemistry, Faculty of Physical Sciences, University of Ilorin.

Micronutrients analysis of plant samples

The selected micronutrients contents of the plant parts, namely Cu, Mn, Fe, Cr and Zn, were determined using dry ashing procedure as described by Association of Official Analytical Chemists (AOAC, 1990). About 2g of the sample was pre-ashed in a crucible for 1 - 2 h until the sample was completely charred on a hot plate. The pre-ashed sample was then placed on a muffle furnace and ashed at 500°C for about 3 h or until the ash was white. After ash, the sample was cooled and weighed. This was transferred into a 50 ml volumetric flask by carefully washing the crucible with 5 ml of 30% HCl. The solution was diluted to volume with iodized water. The solution was then used for individual

mineral determination; Atomic Absorption Spectrophotometer (AAS) Model 210 VGP produced by Buck Scientific was used.

Statistical Analysis

Analysis of variance (ANOVA) and comparison of means were carried out on all data of proximate analysis of the plant samples using Statistical Package for Social Science (SPSS). Differences between means were assessed for significance at $p<0.05$ by Duncan's Multiple Range Test (DMRT).

RESULTS AND DISCUSSION

The indigenous recipes are presented in Table 1. Preparation of decoction from plant materials formed all the common method of preparation in protective measure during pregnancy. The preference in preparation method may depend on potency of the herbal remedy. Interestingly, given dosages or metric measures is part of the culture of respondents encountered and no incantation was recorded in this work. Furthermore the use of spices such as *Xylopia aethiopica* as part of recipes was documented. The spice may serve as immune booster and in the improvement of blood circulation (Gbadamosi *et al*., 2012).

The profile of plant samples used in this study is presented in Table 2. Their habit is tree except for *Harungana madagascariensis* that is a shrub.

Table1. Herbal recipes commonly used during pregnancy in Ilorin, Kwara state, Nigeria

S/N	Recipes and Dosage	Method of Preparation
1.	The barks of *Tetracera alnifolia, Harungana madagascariensis, Khaya ivorensis, Enantia chlorantha*, barks and leaves of *Mangifera indica* and *Alstonia boonei*, the roots and leaves of *Morinda lucida* and *Nauclea latifolia*, leaves of *Azardiractha indica*, pods of *Xylopia aethiopica*, the seeds of *Gossypium barbadense* and the whole plants of *Momordica charantia* are boiled in the water for 1 hour using earthen pot. 5ml thrice daily.	Decoction
2.	The barks of *Khaya ivorensis, Alstonia boonei, Theobroma cacao, Harungana madagascariensis, Enantia chlorantha, Tetracera alnifolia,* barks and leaves of *Mangifera indica*, the roots of *Sphenocentrum jollyanum*, the leaves of *Azardiractha*	Decoction

	indica, the pods of *Xylopia aethiopica* and *Tetrapleura tetraptera* are boiled in the water for 1 hour using earthen pot. 5ml cup twice daily.	
3.	The barks of *Khaya ivorensis, Lophira alata, Axonopus compressus, Daniella oliveri, Bridelia ferruginea, Anogeissus leiocarpus, Harungana madagascariensis, Enantia chlorantha, Alstonia boonei, Theobroma cacao, Tetracera alnifolia,* barks and leaves of *Mangifera indica*, the pods of *Xylopia aethiopica*, and *Tetrapleura tetraptera* and the leaves *Azardiractha indica* are boiled in the water for 1 hour using earthen pot. 5ml thrice daily.	Decoction
4.	The barks of *Theobroma cacao Harungana madagascariensis Tetracera Alnifolia, Khaya ivorensis Enantia chlorantia Alstonia boonei Lophira alata*, the bark and root of *Piliostigma reticulatum*, the bark and leaves of *Mangifera indica*, the pods of *Xylopia aethiopica*, the roots of *Nauclea latifolia Morinda lucida*, the leaves of *Azardiractha indica* and the whole plant of *Momordica charantia* are boiled in the water for 1 hour using earthen pot. 5ml twice daily	Decoction
5.	The barks of *Tetracera alnifolia Bridelia ferruginea Lophira alata Alstonia boonei, Harungana madagascariensis Theobroma cacao, Khaya ivorensis, Enantia chlorantia*, the barks and leaves of *Mangifera indica*, the rhizomes of *Zingiber officinale*, the bulbs of *Allium sativum*, the pods of *Xylopia aethiopica*, and *Tetrapleura tetraptera*, and the leaves of *Azadirachta indica* are boiled in the water for 1 hour using earthen pot. 5ml twice daily.	Decoction

Table 2: Profile of Commonly used plants during pregnancy in Kwara State, Nigeria.

S/N	Botanical Name	Family	Common Name	Plant Habit	Parts Used	Voucher Number
1	*Alstonia boonei*	Apocynaceae	Ahun (Y)*	Tree	Stem bark	UIH004/960
2	*Azadirachta Indica*	Meliaceae	Dongoyaro (Y)	Tree	Leaves	UIH002/613
3	*Enantia Chlorantha*	Annonaceae	Dokita igbo (Y)	Tree	Stem bark	UIH005/1013
4	*Harungana madagascariensis*	Hyperiaceae	Amuje (Y)	Shrub	Stem bark	UIH008/1133
5	*Khaya ivorensis*	Meliaceae	Oganwo (Y)	Tree	Stem bark	UIH007/1132
6	*Mangifera indica*	Anarcardiaceae	Mangoro (Y)	Tree	Stem bark and Leaves	UIH003/943
7	*Tetracera alnifolia*	Dilleniaceae	Opon (Y)	Tree	Stem bark	UIH009/1134
8	*Theobroma cacao*	Sterculiaceae	Koko (Y)	Tree	Stem bark	UIH001/145
9	*Xylopia Aethiopica*	Annonaceae	Eeru Alamo(Y)	Tree	Fruit (pod)	UIH006/1089

***Y – Yoruba**

The Phytochemical screening is presented in Table 3. The phytochemical screening of the test plants indicated that Terpenoids, Saponins, and Polyphenols were present in all the tested samples. *Xylopia aethiopica, Theobroma cacao, Harungana*

madagascariensis, and *Alstonia boonei* revealed the presence of Anthraquinone, while it was absent in *Tetracera alnifolia, Enantia chlorantha* (leaf), *Mangifera indica* (leaf and bark), *Khaya ivorensis* and *Azadirachta indica* (leaf). Cardiac glycosides were present in *Tetracera alnifolia, Theobroma cacao, Harungana madagascariensis, Khaya ivorensis, Mangifera indica* (bark) while it was absent in *Enantia chlorantha* (Stem barks), *Mangifera indica* (leaf), *Xylopia aethiopica, Azadirachta indica* (leaf) and *Alstonia boonei.* Nine of the tested samples revealed the presence of Tannins while it was absent in *Tetracera alnifolia.* Eight of the tested samples revealed the presence of Flavonoids while it was absent in *Theobroma cacao* and *Azadirachta indica. Alstonia boonei, Mangifera indica* (bark), *Azadirachta indica* (leaf), *Enantia chlorantha, Theobroma cacao*, and *Xylopia aethiopica* revealed the presence of Alkaloids, while it was absent in *Harungana madagascariensis, Tetracera alnifolia, Khaya ivorensis* and *Mangifera indica* (leaf). The phytochemical present in the studied ethnobotanicals corroborates the previous studies of Gbadamosi *et al*. (2012) and Ogbe *et al*. (2012).

Ogbe *et al*. (2010) reported that alkaloids and flavonoids protect cells by acting as powerful antioxidants which prevent or repair damage done to red cells by free radicals or highly reactive oxygen species which prevent loss of blood during delivery of the baby. The presence of saponins and antioxidants in plant extracts reverse the damaging effect of phenyl hydrazine and prevent hemolytic anemia and prevent loss of blood in pregnant women. Yakubu *et al.* (2005) reported that the presence of saponins, polyphenols and cardiac glycosides may be responsible for the acclaimed anti-anemic potential of plants used in traditional medicine. Saponins are expectorants and cough suppressants and

this would fight against discomforts during pregnancy (Sofowora, 1993; Okwu, 2005; Borokini and Omotayo, 2012). Flavonoids are significantly recognized for their anti-oxidant, anti-carcinogenic, antimicrobial and antitumor properties (Manikandan *et al.*, 2006), while cardiac glycosides act on the heart muscles and increase renal flow and this is an ability to fight against inter-currents diseases during pregnancy. Tannins are used in the treatment of wounds emanating from varicose ulcers and hemorrhoids (Njoku and Akumufula, 2007). Apart from their potential antibacterial activity, phytochemicals present in this study such as alkaloids are known as anti-malarial agents, analgesics and can act as stimulants. Glycoside moieties such as saponins, anthraquinones, cardiac glycosides and flavonoids can inhibit tumor growth, act as an anti-parasitic agent, and can be used as an antidepressant (Ajayi and Ojelere, 2013). The presence of appreciable amounts of terpenoids, suggests that the plant may be useful as an anti-cancer and anti-ulcer agent, a claim that seem to support the traditional use of the leaves for ethno-medicinal purposes. Hence, better therapeutic effects are obtained by combination of active principles in each plant than by single isolated substance (Abdulrahaman *et al.*, 2012).

Table 3: Phytochemical Screening of the Studied Ethnobotanicals

Sample	Alkaloids	Saponins	Terpenoids	Tannins	Cardiac Glycosides	Anthraquinones	Polyphenols	Flavonoids
Alstonia boonei (Barks)	+	+	+	+	_	+	+	+
Azardirachta indica (Leaves)	+	+	+	+	_	_	+	-
Enantia chloranthia (Barks)	+	+	+	+	-	-	+	+
Harungana madagascariensis (Barks)	-	+	+	+	+	+	+	+

Khaya ivorensis (barks)	_	+	+	+	+	-	+	+
Mangifera indica (Barks)	_	+	+	+	-	-	+	+
Mangifera indica (Leaves)	+	+	+	+	+	-	+	+
Tetracera alnifolia (Barks)	-	+	+	-	+	-	+	+
Theobroma cacao (Barks)	+	+	+	+	+	+	+	-
Xylopia aethiopica (Pods)	+	+	+	+	_	+	+	+

+ = Present - = Absent

As shown in table 4, the percentage ether extract of *Xylopia aethiopica* (13.45±0.42) is high. There was no significant difference ($P < 0.05$) in *Alstonia boonei, Theobroma cacao* and *Khaya ivorensis* though low in volume. There is no significant difference in value between *Mangifera indica* (bark), *Harungana madagascariensis* and *Azadirachta indica* and the least value was recorded in *Alstonia boonei* (1.04±0.06). The value of percentage dry matter content in *Tetracera alnifolia* (98.51±0.35) was significantly high and there was no significant difference recorded between *Mangifera indica* (bark) and *Azadirachta indica.* Also there was no significant difference between *Harungana madagascariensis* and *Xylopia aethiopica* and least value was recorded in *Enantia chloranthia* (78.78±1.03).

The percentage crude fiber content in *Tetracera alnifolia* (33.33±4.93) was significantly high but there was no significant difference between *Theobroma cacao* and *Enantia chloranthia,* while the least value was observed in *Azadirachta indica* (3.57±0.40). The percentage ash content in *Tetracera alnifolia* (19.37±0.57) was significantly high and there was no significant difference between *Khaya ivorensis* and *Mangifera indica* (bark), also there was no significant difference between *Mangifera indica* (leaf), *Azadirachta indica* and *Alstonia boonei* and the least value was

recorded in *Khaya ivorensis* (2.83±0.19). The percentage crude protein content in *Mangifera indica* (leaf) (16.40±0.59) was significantly high, although, there was no significant difference between *Mangifera indica* (bark) and *Tetracera alnifolia*, and least value was observed in *Tetracera alnifolia* (1.23±0.13). Ash content which was an indicator for minerals element present in the samples was high in *Tetracera alnifolia* (19.37±0.57) which was an indication that *T. alnifolia* contains high amounts of some minerals elements. *Xylopia aethiopica* was high in percentage of total fat, which might be responsible for its use as tonic for women (Burkill, 1985). The total fat in *Xylopia aethiopica* if further analyzed may contain essential fatty acids as well as vitamins. The result from the proximate analysis also showed that *Tetracera alnifolia* was high in crude fiber content compared to the other nine samples which corroborates the findings of other researcher (Abolaji *et al*., 2007). The dry matter contents of 70% and the low-moisture content obtained in the plant is in agreement with the finding of Gbekele-oluwa (2013).

The micronutrients contents of the samples (Table 5) reports the concentration of five (5) micro (trace) elements [Chromium (Cr), Copper (Cu), Iron (Fe), Manganese (Mn) and Zinc (Zn)]. It was observed that the leaf of *Mangifera indica* had the highest concentration of Manganese (Mn) 237.67±5.86 mg/100g and the lowest concentration was in *Khaya ivorensis* with an average value of 11.00±1.00 mg/100g and relatively high in all the others except in *Khaya ivorensis* and *Alstonia boonei*. *Xylopia aethiopica* had the highest concentration of Copper (Cu) has the highest concentration in 27.13±1.10 mg/100g and lowest concentration was in *Mangifera indica* (bark), though it was relatively low in all the samples. *Xylopia aethiopica* had the highest concentration of Iron (Fe) 478.03±89.83 mg/100g, there was no significant difference in values between

Enantia chloranthia, Mangifera indica (leaf), *Khaya ivorensis* and *Alstonia boonei*, also there was no significant difference in values between *Harungana madagascariensis, Tetracera alnifolia, Mangifera indica* (bark) and *Theobroma cacao* and lowest concentration was observed in *Enantia chloranthia*. *Theobroma cacao* had the highest concentration of Zinc (Zn) 89.73±0.25 mg/100g and there was no significant difference in values between *Mangifera indica* (bark), *Xylopia aethiopica*, *Enantia chloranthia, Tetracera alnifolia* and *Mangifera indica* (leaf), the lowest concentration was in *Khaya ivorensis* 18.47±0.01 mg/100g. The concentration of Chromium (Cr) in *Azadirachta indica* 8.97±1.05 mg/100g was significantly high while there was no significant difference in values between *Xylopia aethiopica*, and *Tetracera alnifolia*, also there was no significant difference in values between *Theobroma cacao* and *Azadirachta indica*, the values detected in *Xylopia aethiopica* and *Tetracera alnifolia* were almost the same, the lowest value was in *Alstonia boonei* while the values observed in *Harungana madagascariensis, Mangifera indica* (bark), *Enantia chloranthia* and *Mangifera indica* (leaf) were Below Detection Limit (BDL).

The zinc contents of the samples ranges from 18.47±0.04 to 89.73±0.25mg/100g. The Recommended Dietary Allowance (RDA) for zinc is 13mg/kg (Jone *et al*., 1985). Zinc is essential in the activation of certain enzymes. These include dehydrogenase, alkaline phosphatase and carboxy-peptidase. Zinc containing organic compounds is employed as astringent and anti-fungal agents. It aids wound healing and metabolism of nucleic acid and insulin. Zinc in excess causes anemia and if deficient in the body can lead to dermatitis (Akpabio and Ikpe, 2013). The manganese contents of the samples ranges from 11.00±1.00 to 237.67±5.86mg/100g. The

Recommended Dietary Allowance (RDA) for manganese varies between 2mg/kg to 8mg/kg (Jones *et al*., 1985). Certain trace elements such as copper, iron, and manganese constitute essential part of any balanced diet. Some of them are micronutrient to the plants and if not present in the right proportion may have adverse effect on human and plants (Akpabio and Ikpe 2013). The content of copper of the samples ranges from 6.73±1.62 to 27.13±1.10mg/100g. Copper is very vital in diet because it is involved in the proper usage of iron (Fe) and especially for the synthesis of cytochrome oxidase, which contains both iron (Fe) and copper (Cu) (Akpabio and Ikpe 2013). The iron contents of the samples ranges from 65.67±4.51 to 478.03±89.83mg/100g. Iron is very important in the formation of hemoglobin in red blood cells and deficiency of iron leads to anemia. *Xylopia aethiopica* could be used to improve the anemic condition of a patient because it is rich in iron (Akpabio and Ikpe 2013). Chromium is a trace, but again, essential mineral that helps with the performance of insulin in the body. Insulin is a hormone produced by the pancreas. It is important in how sugars are processed in the body. Chromium enhances the activity of insulin and helps to maintain the necessary levels. When people lack chromium, a condition much like diabetes can develop (Kathleen *et al*., 2009). Thus, the concentration of chromium ranges from 2.63±0.55 to 8.97±1.00 mg/100g. The study showed that the samples could serve as a good dietary source nutraceutical for essential micronutrients. Since their deficiency or toxicity in humans may result in severe consequence (Abdulrahaman *et al.*, 2012).

Table 4: Result of the proximate analysis of powdered plant samples.

S/N	Plant Samples	Ether Extract (%)	Dry Matter (%)	Crude Fibre (%)	Ash (%)	Crude Protein (%)
1	*Alstonia boonei* (Barks)	1.04 ± 0.06^{a}	84.16 ± 0.34^{b}	29.00 ± 2.65^{fg}	6.80 ± 0.26^{d}	2.82 ± 0.17^{bc}
2	*Azardirachta indica* (Leaves)	2.34 ± 0.32^{b}	90.73 ± 0.05^{d}	3.57 ± 0.40^{a}	6.75 ± 0.34^{d}	14.92 ± 1.27^{g}
3	*Enantia chloranthia* (Barks)	9.57 ± 0.35^{d}	78.78 ± 1.03^{a}	25.13 ± 3.45^{f}	6.02 ± 0.05^{c}	12.20 ± 0.90^{f}
4	*Harungana madagascariensis* (Barks)	2.23 ± 0.35^{b}	96.03 ± 0.42^{f}	18.00 ± 3.61^{cd}	6.57 ± 0.40^{cd}	2.31 ± 0.36^{ab}
5	*Khaya ivorensis* (barks)	$1.46\pm0.46^{a*}$	87.50 ± 0.20^{c}	24.10 ± 2.65^{fg}	2.83 ± 0.19^{a}	9.87 ± 0.30^{e}
6	*Mangifera indica* (Barks)	2.13 ± 0.16^{b}	91.04 ± 1.54^{d}	19.41 ± 2.04^{de}	3.06 ± 0.07^{a}	1.37 ± 0.49^{a}
7	*Mangifera indica* (Leaves)	3.99 ± 0.34^{c}	94.32 ± 0.55^{e}	14.03 ± 2.59^{bc}	6.95 ± 0.36^{d}	16.40 ± 0.59^{h}
8	*Tetracera alnifolia* (Barks)	5.70 ± 0.31^{d}	98.51 ± 0.35^{g}	33.33 ± 4.93^{g}	19.37 ± 0.57^{f}	1.23 ± 0.13^{a}
9	*Theobroma cacao* (Barks)	1.48 ± 0.20^{a}	93.237 ± 1.46^{e}	27.49 ± 2.13^{f}	13.27 ± 0.55^{e}	4.10 ± 0.81^{d}
10	*Xylopia aethiopica* (Pods)	13.45 ± 0.42^{f}	96.62 ± 0.41^{f}	10.49 ± 1.85^{b}	4.98 ± 0.16^{b}	3.52 ± 0.41^{cd}

*Legend.

Value is the Mean of three Replicates ± Standard error of mean (SEM).

Values having different letter(s) along the same column are significantly different ($p < 0.05$)

Table 5: Micronutrients composition present in powdered plants samples (mg/100g).

S/N	Plant Samples	Mn (mg/100g)	Cu (Mg/100g)	Fe (mg/100g)	Zn (mg/100g)	Cr (mg/100g)
1	*Alstonia boonei* (Barks)	$14.67\pm1.53^{ab*}$	13.33 ± 2.08^{ef}	77.50 ± 2.50^{a}	20.37 ± 0.71^{ab}	2.63 ± 0.55^{a}
2	*Azardirachta indica* (Leaves)	40.87 ± 1.29^{c}	11.33 ± 1.26^{cde}	295.83 ± 10.15^{c}	33.67 ± 2.22^{c}	8.97 ± 1.05^{d}
3	*Enantia chloranthia* (Barks)	16.43 ± 1.40^{b}	15.10 ± 1.15^{f}	65.67 ± 4.51^{a}	22.50 ± 0.90^{b}	BDL*
4	*Harungana madagascariensis* (Barks)	162.13 ± 3.80^{g}	9.47 ± 0.55^{bc}	194.17 ± 4.28^{b}	39.60 ± 3.12^{d}	BDL
5	*Khaya ivorensis* (barks)	11.00 ± 1.00^{a}	9.00 ± 1.00^{b}	95.50 ± 2.29^{a}	18.47 ± 0.55^{a}	3.67 ± 1.53^{bc}
6	*Mangifera indica* (Barks)	96.37 ± 1.70^{d}	6.73 ± 1.62^{a}	178.10 ± 2.13^{b}	21.73 ± 0.86^{b}	BDL
7	*Mangifera indica* (Leaves)	237.67 ± 5.86^{i}	10.40 ± 0.96^{bcd}	107.00 ± 3.46^{a}	21.27 ± 0.87^{b}	BDL
8	*Tetracera alnifolia* (Barks)	118.50 ± 1.32^{e}	13.47 ± 0.55^{ef}	187.37 ± 0.96^{b}	21.67 ± 1.53^{b}	4.43 ± 0.50^{c}
9	*Theobroma cacao* (Barks)	193.00 ± 1.00^{h}	12.17 ± 1.04^{de}	182.50 ± 2.18^{b}	89.73 ± 0.25^{e}	8.00 ± 1.00^{d}
10	*Xylopia aethiopica* (Pods)	123.17 ± 1.04^{f}	27.13 ± 1.10^{g}	478.03 ± 89.83^{d}	22.77 ± 1.97^{b}	4.40 ± 0.56^{c}

*Legend
Value is the Mean of three Replicates ± Standard error of mean (SEM).
Values having different letter(s) along the same column are significantly different ($p< 0.05$).
*BDL implies Below Detection Limit.

Conclusion

This study has provided information to explain the basis of the ethnomedicinal use of some plant in pregnancy. The presence of phytochemical and the nutrient in these plants can add to its therapeutic and nutritional values. Further studies are therefore needed for the isolation and characterization of the specific phytochemical compounds responsible for sound health during pregnancy despite that situation warrant to be sick.

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