Plants Used As Anti-Anaemic and Haematinic Agents among Indigenes in Ijero Local Government Area, Ekiti State, Nigeria

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ABSTRACT

The central discourse of this work is on the plants used by the indigenes of Ijero Local Government Area of Ekiti State for the prevention and treatment of blood disorders such as anaemia and haemolysis (the breakdown of red blood cells and their haemoglobins). Mention is made of plants used as anti-sickling agents for the treatment of sickle-cell anaemia. Herbal treatment of other forms of anaemia such as microcytic and megaloblastic anaemia were discussed. The research design for this study is Survey design. Materials and method for the study include the use of interviews (two-way communication), semi-structured questionnaire matrix and normal field technique for plant collection. In the study, 46 botanicals that have anti-anaemic and haematinic properties were discussed. The treatise includes the general descriptions of the plants, their local and scientific names and the parts of the plants used. Their methods of preparation were enumerated as well as the medicinal significance of all enlisted botanicals. Consequent upon the findings, the justification for this study includes that the use of haematinic plants would help rural and urban dwellers to overcome problems of anaemia and haemolysis, caused by constant malaria attack on children and adults which is prevalent in the study area. Rural and urban dwellers in the study area would be able to identify and learn to use anti-anaemic and blood-building plants already left un-utilized due to people's ignorance and lack of ethnobotanical education. It is therefore submitted that The State Department of Health should encourage research into the use of medicinal plants to supplement orthodox medications available.
Keywords: *Anti-anaemic, haematinic botanicals*

INTRODUCTION

One of the agents that destroy human blood over the years in tropical Africa in general is the malaria parasite (*Plasmodium spp*). The parasite is a notorious blood destroyer that damage Red Blood Cells resulting in breakdown of health and death, mostly of children (Moronkola and Fabiyi, 2001; Mader, 2004; Omotayo, 2007; Adeniran, 2007). Culturally, medicinal plants have been in use from ancient times for prevention and cure of illnesses and diseases (Bakhru 1990; Farnsworth 1998;

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Anselm 2001; Adeniran 2015b). The use of medicinal botanicals to prevent and [or] cure blood related illness such as anaemia and haemolysis has been in practice from ages especially in naturopathic medicine (Balick and Cox, 1996; Bakhru 1990; Anselm 2001; Adeniran 2011; Anonymous, 2014). Both Microcytic and megaloblastic anaemia (mainly caused by deficiencies of folates, iron and pyridoxine (B6 vitamin) could be cured or prevented by the use of appropriate medicinal plants, herbs and vegetables (Cobley 1976; Taylor 1984; Anselm 2001; FAO 2004; Srivastava S., Srivastava V. and Srivastava P., 2008; Ogunlade 2015; Torimiro, Eiler, Nwoke, Alao, Ayinde, and Olosunde 2015).

Ijero Local Government Area, comprising 13 villages and towns is the largest in the whole of Ekiti State. It has vast forest and farmland and numerous rural dwellers. Anaemia and haemolysis are prevalent in this area because malaria infestation occurs at a very high rate. This is in consonance with the assertion made by Omotayo (2007), Adeniran (2007), Provan and Henson (1999), Moronkola and Fabiyi that anaemia and haemolysis are prevalent in the tropics among the black races where malaria infestation is a constant phenomenon. Anaemia (though not a diseases) is a condition in which the haemoglobin concentration falls below the normal range (Taylor, Green and Stout, 1984; Omotayo, 2000; Mader, 2004). Haemolysis is a condition and product of the attack of haemoglobins of Red Blood Cells by agents such as chemicals or toxins produced in the blood during infestations – in this wise, the haemoglobins are broken down and become non-functional (Omotayo, 2007; Srivastava S., Srivastava V. and Srivastava P., 2008; Adeniran, 2015a).

MATERIALS AND METHOD

This study adopts survey research design. Eight communities were randomly selected in the study area and were visited. In each community, ten people (making a total of Eighty [80] indigenes) who had maintained continuous domicile for a period of fifteen years and above were selected and interviewed using semi-structured questionnaire matrix. The interviews were conversational and involved two-way communication adapted according to Kayode (2005). Normal field technique for plant collection and herbarium development were used for vegetable sampling and plant collection (Stohlgren, Falkner and Shell, 1994).

RESULTS AND DISCUSSION

In this study, informants and survey reports reveal 46 different plants used as anti-anaemic and haematinic agents. A total of 25 different angiosperm families were represented including 34 genera. Of these, 23 species (50%) were trees, 2 species (4.35%) were shrubs, 9 species (19.56%) were climbers, 12 species (26.09%) were herbs. The following plant families had only 1 species each: Periplocaceae,

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Arecaceae, Portulacaceae, Poaceace, Lauraceae, Tiliaceae, Piperaceae, Moringaceae, and Papillionaceae. The families Solanaceae, Euphorbiaceae, Malvaceae, Amaranthaceae, and Basellaceae had 2 species respectively. Fabaceae, had 3 species, Rutaceae had 4. The family Cucurbitaceae ranked highest with 7 species. The plant parts used include the leaves, stem and roots. The plants are used either individually or jointly. Preparation methods were either by decoction, infusion or as soup. Significant improvement in haemoglobin count and blood level of patients was noticed few days after administration. The symptomatic paleness in the conjunctiva and of the skin (dermis) became abated (Bakhru, 1990; Anselm, 2001; Omotayo, 2000, 2007; Kayode, 2005; Adeniran, 2015b).

Table 1: The botanicals used in the treatment and prevention of anaemia and haemolytic conditions in the study area

	Plant Species and Family	English common names	Nigerian Vernacular names	Part of Plant used	Methods of Preparation	Medicinal value
1	*Parquetina nigrescens* (Alfzel) bullock (Periplocaceae)	Parquetina	Yoruba-Ogbo, Ewe Ogbo	Fresh leaves	Decoction, or soup ingredient	Blood tonic
2	*Luffa cylindrica* L. M.J. Roem. Syn. L. *aegyptiaca* Mil syn L. *acutangula* L Roxb (Cucurbitaceae)	Sponge vine	Yoruba-kankaneru, kankan ayaba	Tender/foliage leaves	Cold infusion	Iron and Folic acid deficiency
3	*Zanthoxylum gilletti* DC ylum, wild waterm (Rutaceae)	Zantho-Fagara, Spiny tree	Yoruba- Igi ata, Hausa-Faba Kuwari Igbo-akukunkita uko	Root	Decoction, infusion, as chewing stick	Anti-sickling agent
4	*Pterocarpus soyauxii*. Taub (Fabaceae)	Red heart wood, Cam wood.	Yoruba- Orosun, osun pupa Binin: Akume Igbo: Awo	Inner bark	As soup ingredient, Decoction	Blood tonic
5	*Pterocarpus Osun* Craib (Fabaceae)	Forest Osun, lesser Cam wood.	Yoruba: Osun, igi Osun Binin: Ume Igbo: Ubie	Inner bark	Decoction, soup	Blood tonic
6	*Pterocarpus midbraedii* Harms. (Fabaceae)	Vermillion Wood	Yoruba: Ure, Ire Binin: Urebe Igbo: Oha, osisi oha	Green leaves	As soup ingredient	For iron, folic acid deficiency
7	*Telfaira occidentalis* Hook. f(Cucubitaceae)	Fluted pumpkin	Yoruba: Efo apiroko, efo Ugu, Binin: Umwenkhen Igbo: Ugwu, ugu, Ula	Green leaves	Cold infusion, As soup ingredient	For iron and folic acid deficiency
8	*Cocos nucifera* L (Arecaceae)	Coconut, coconut palm.	Yoruba: Agbon, Igi agbon, Igbo: alo beke Hausa: Attagara kwakwar	Ripened Fibrouspericarp	Decoction	For iron and folic acid deficiency
9	*Corchorus olitorius* L.(Tiliaceae)	Jute plant, Jew's mallow	Yoruba: Oyoyo Ewedu Hausa: Malafiya Igbo: Aturara	Fresh green leaves	Cold infusion, soup ingredient	For Iron and folic acid deficiency
10	*Cola nitida* (Vent) Schott and Engl.(Sterculiaceae)	Cola, kolanut	Yoruba: Obi Obi gbanja Hausa: Goro Binin: Eube Igbo: Oji	Stem Bark	Decoction	Blood tonic

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11	*Cola acuminata* (P. Beauv) Schott and Engl. (Sterculiaceae)	Cola, traditional kola-nut	Yoruba: Obi abata Obi-obi Igbo: Oji Binin: Evbe Efik: Ibong	Stem bark	Decoction	Blood tonic
12	*Alchornea laxiflora* (Beth) Pax and K. Hoffim. (Euphorbiaceae)	Arithmetic stick.	Yoruba: Igi pepe Ewe iya pepe Urobo: Erievwu	Younger or tender leaves	Cold infusion, with malt or milk.	Blood tonic supplies iron and protein
13	*Ipomea batatas* L (Malvaceae)	Sweetpotato	Yoruba: anamo kukunduku Hausa: Dankali Igbo: Ji oyibo,Jibeke, Ekomako	Fresh green leaves	Soup ingredients	Blood tonic
14	*Talinum triangulare* L. (Portulacaceae) Hydrophyllaceae	Water leaf	Yoruba: Gbure Efo gbure Hausa: Genyi:	Fresh leaves	As soup ingredients, cold infusion.	Blood tonic
15	*Solanacio biafrae* L. (Solanaceae)		Yoruba: Worowo, Efo worowo	Fresh leaves	As soup ingredient, cold infusion	Blood tonic
16	*Solanum nigrum* L (Solanaceae)	African night shade	Yoruba: Oduefo odu	Fresh leaves	As soup ingredients	Blood tonic
17	*Sorghum bicolor* L Beth/Hook (Poaceae)	Guinea corn, Great millet, sorghum	Yoruba: Oka baba Hausa: Dawa, Igbo: OkiliInari, Ajata	Upper dried Leaves and Shoot	Decoction	Blood tonic
18	*Theobroma Cacao* L(Sterculiaceae)	Cacao, cocoa	Yoruba: Igi koko, Igi owo, koko	Dried inner bark	Decoction	Blood tonic
19	*Persea americana* Mill. Syn. *P. gratissima*. Gaertnf (Lauraceae).	Avocado pear, Alligator pear.	Yoruba: Pia, Igi pia. Ewe pia, Binin: Orumwu Igbo: Ube beke	Leaves	Decoction, cold infusion	Blood tonic
20	*Piper guineense* Schum and Thonn(Piperaceae)	West African native pepper	Yoruba: Iyere, Ata iyere Hausa: Masoro Igbo: Oziza	Leaves	cold infusion, decoction	Blood tonic
21	*Vitellaria paradoxum* Gaertn f Syn: *Butyrospermum paradoxum* (Gaertn F)Hepper *Butyrospermumparkii* (Sapotaceae)	Shea butter tree	Yoruba: Emi, Emi-emi,Igi Ori	Young reddish leaves	cold infusion, decoction	Blood tonic, for iron and folic acid deficiency
22	*Basella alba, syn. Basella rubra* L(Basellaceae)	Indian spinach Malabar spinach	Yoruba: Amu-nututu Toromoganna	Leaves	As soup ingredient	For iron deficiency anaemia
23	*Telfairia pedata* (Smith ex sims) Hook.(Cucurbitaceae)	Telfairia, oyster nut, Lesser telfairia	Yoruba: Iroko Apiroko	Young/tender leaves	cold infusion, as soup ingredient	For iron and folic acid deficiency
24	*Ficus sur* Forsck syn. *Ficus capensis* Thunb (Moraceae)	Zamzibar oil vine, fig tree.	Yoruba: Opoto, Odan, Opeya Hausa: Uwaryara Fulani: Rima bichechi	Leaves	As herbal soup or taken with palm wine	Blood tonic
25	*Hibiscus surattensis* L (Malvaceae)	Spiny Climber Hibiscus	Yoruba: Akonimora, Ewe emu, sirikimindi	Leaves and shoot	Decoction	Blood tonic
26	*Taraxacum officinale* L (Asteraceae)	Wild Lettuce, Dandelion-greens	Yoruba: Efo Yarin, Efo-Ibadan	Leaves	As soup ingredient	Blood tonic, iron supplement
27	*Amaranthus sp* L (Amaranthaceae)	Amaranthus	Yoruba: Tete ajemuwo	Whole leaves and fruits/seeds	As soup ingredients	Blood tonic
28	*Moringa oleifera* Lamsyn. *M. Pterygosperma* Gaertn (Moringaceae)	Moringa	Yoruba: Ewe Igbale	Leaves/seeds	Decoction, seed as food ingredient	Blood tonic Iron supplement
29	*Colocasia esculenta* L. Schott. Dasheen(Araceae)	Cocoyam (pink type)	Yoruba: Koko pupa, Igbo: Ede	Tender, Foliage leaves	As soup ingredient	Iron supplement

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30	*Celosia argentia* L (Amaranthaceae)	Lagos spinach, Quail grass	Yoruba: Sokoyokoto	Leaves	As soup ingredient	For folic acid and iron deficiencies
31	*Musa paradisiaca* L(Musaceae)	Plantain	Yoruba: Ogede nla, Ogede agbagba Hausa: Ayaba	Fresh Leaves, Fruit	Decoction, as food ingredient	For iron deficiency
32	*Entandrophragma angolense* Welw C.C. Berg(Meliaceae)	Cedar mahogany	Yoruba: Ijebo Igebo, Igebu Igbo: Owura	Bark	Decoction as soup ingredient	Blood tonic
33	*Entandrophragma candollei* Harms (Meliaceae)	Ceda mahogany	Yoruba: Ijebo, Igbo: Owura	Bark	Decoction or as soup ingredient	Blood tonic
34	*Entandrophragma cylindricum* – Sprague(Maliaceae)	Sapele wood	Yoruba: Ijebo IgeboIgebu Igbo: Owura	Bark	As soup ingredient or by decoction	Blood tonic
35	*Entandrophragama utile*. Dawe andSprague (Meliaceae)	Utile	Yoruba: Ijebo Igebo Igebu Igbo: Owura	Bark	As soup ingredient or by decoction	Blood tonic
36	*Momordica balsamina* L (Cucubitaceae)	Africa cucumber, Bitter gourd	Yoruba: Ejinrin Igbo: alo-ese	Leaves	Cold infusion	For iron and folic acid deficiency
37	*Momordica Charantia* L.(Cucurbitaceae)	African cucumber	Yoruba: Ejinrin wewe	Leaves	Cold infusion	For iron and folic acid deficiency
38	*Momordica foetida* Schum and thorn (Cucurbitaceae)	African cucumber	Yoruba: Ako Ejinri	Leaves	Cold infusion	For iron and folic acid deficiency
39	Cnidoscolus aconifolium L (Euphorbiaceae)	Tree spinach, Chilite rubber	Yoruba: Iyana Ipaja	Leaves	Cold infusion	For iron and folic acid deficiency
40	*Okoubaka aubrevillei* pellegr and Normand (Santalaceae)	Death tree, king of trees, Great tree	Yoruba: Asorin, oba igi, Modarikan	Bark	Decoction	Blood tonic
41	*Waltheria indica* LSyn. *Waltheria americana* L(Sterculiaceae)	Velvet bush, Tonic leaf, Waltheria.	Yoruba: Korikodi ewe oogun eje, Opa emere, Ewe efin, opa esure	Dried leaves + shoot + bark of okou-banka aubrevillei + potash	Decoction	Blood tonic
42	*Zanthoxylum leprieurii* Guill and Perr. Syn *Fagara leprieuii* Guill and Perr Engl (Rutaceae)	Zantho-fagara Spiny tree	Yoruba: Igi ata, Hausa: FalaKuwari, Igbo: Aku-kunkita	Root	Decoction, infusion, as chewing stick	Anti-sickling agent
43	*Zanthoxylum rubescens* Plaunch ex. Hook f. Syn: *Fagara rubescens* Planch ex Hook f (Rutaceae)	Zanthofagara, Spiny tree	Yoruba: Igi ata, Hausa: FalaKuwari, Igbo: Aku-kunkita	Root	Decoction, infusion, as chewing stick	Anti-sickling agent
44	*Zanthoxylum zanthoxyloides* (Lam) Waterham. Syn. *Fagara zanthoxyloides* lam (Rutaceae).	Zantho-fagara Spiny tree	Yoruba: Igi ata Hausa: Fasa kuwari Igbo: Akukunkita	Root	Infusion, Decoction	Anti-Sickling agent
45	*Parkia biglobosa* (Wild) Benth, Syn. *Parkia filicoidea* Welw (Papillionaceae)	African Locust bean	Yoruba: Iru Ibo: Ogili Hausa: Dawadawa	Cooked fermented seeds or beans	As soup ingredient	For iron and protein deficiency
46	*Cucurbita Pepo* L(Cucurbitaceae)	Marrow, Pumpkin,	Yoruba: Agbeje Elegede,	Cooked fruit, Leaves.	As food ingredient, cold infusion of leaves	For iron - deficiency anaemia

Sources: Adapted from Cobley (1976), Anselm (2001), Omotayo (2007), Anonymous (2014), Ogunlade (2015), Adeniran, 2015b)

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CONCLUSION AND RECOMMENDATIONS

In our contemporary society, most people patronize foods that are too rich in calorie with low mineralization and very little vitamin content. Consumption of junk foods and chemically preserved foods is the order of the day. This poor dietary pattern in conjunction with high incident of diseases like malaria has made people mostly susceptible to anaemia and haemolytic conditions (Anselm, 2001; FAO/WHO, 2004; Adeniran, 2001; Anonymous, 2014). The justification for this study are that the use of haematinic plants would help rural and urban dwellers to overcome problems of anaemia and haemolysis, caused by constant malaria attack on children and adults which is prevalent in the study area. Rural and urban dwellers in the study area would be able to identify and learn to use anti-anaemic and blood-building plants already left un-utilized due to people's ignorance and lack of ethnobotanical education. It is therefore opined that rural and urban dwellers in the study area in particular, and Ekiti State in general, should form the habit of utilizing the abundant blood-building plants and medicinal vegetables in their vicinity to enhance good health and promote total wellness. This will (at little or no costs) complement whatever medications are provided for the people by the Primary Health Care Department in the State. The State Department of Health should encourage research into the use of medicinal plants to supplement orthodox medications available. Botanical gardens or cultural botanies should be created in each Local Government Area to raise and conserve rare and near-to extinction medicinal botanicals as observed by Kayode (2005) this will make these medicinal plants to be within the reach of the people. Public lectures and seminars should be organized by the Ministry of Health to enlighten people on the usefulness of neglected beneficial botanicals due to people's ignorance and illiteracy. Government should encourage research in natural medicinal forest products. Local ethnobotanical seminars should be encouraged among indigenous people of each local government in the State for public enlightenment on the use of herbs to enhance better health and general wellness.

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