



UTILISATION DES PLANTES MEDICINALES EN AUTO-MEDICATION DANS LA REGION D'AGONLIN AU BENIN

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RESUME

Des interviews ont été réalisées afin de collecter des informations sur la première étape d'un itinéraire thérapeutique. Le questionnaire examine l'étendue et les types de plantes médicinales utilisées en automédication par la population de la région d'Agonlin. Mille femmes ont été interviewées en les soumettant à un questionnaire semi-structuré. La prévalence d'utilisation des plantes médicinales en automédication est estimée à 47.6%.

114 plantes appartenant à 69 familles botaniques différentes ont été reportées, avec leurs noms locaux, méthodes de préparation et la partie utilisée. Les indications médicales ont été reportées pour chacune de ces plantes utilisées. Les indications les plus fréquentes sont : fièvre, céphalées, douleurs abdominales et vomissement. Le paludisme reste la pathologie contre laquelle les plantes sont fréquemment utilisées dans la région (22%). La partie la plus utilisée des plantes médicinales est la feuille. Cette étude montre que l'utilisation des plantes médicinales en automédication constitue une part importante des soins de santé dans la région.

Mots clés : Plantes médicinales, automédication, Bénin

The use of medicinal plants in self-care in the Agonlin region of Benin

ABSTRACT

The interview was carried out to collect information on the first stage of the therapeutic itinerary. The questionnaire survey examined the extent and type of medicinal plants used in self-care by the Agonlin community. One thousand mothers were interviewed using a semi-structured questionnaire. The prevalence of the use of herbal drugs in self-care was found to be **47.6%**. 114 plant species belonging to 69 families were reported, each with local names, methods of preparation, and parts used. Medical indications were reported for the use of these plants in traditional medicine. The most frequent ailments reported were fever, headache, abdominal pain, and vomiting. The highest usage was reported for the treatment of malaria (22%). The part of the plants most frequently used was the leaves. This study showed that self-care using medicinal plants is a major part of health care in the Agonlin area.

Keywords: Medicinal plants; Self-care; Agonlin; Benin

INTRODUCTION

The use of plants as medicines predates written human history. Almost all cultures in the world have a body of expertise concerned with therapeutic properties of the local flora (Houghton, 1995).

Traditional medicine in Benin is composed of a number of specific skills mainly the use of plants, animal products, and minerals as well as magic and superstition. The main body, however, is based on the use of ethnobotany (Vicchiato, 1993).

Though most herbal medicine practices and treatments require specialists or professionals, generally herbalists, a self-care using plants is as common in Benin as in Ethiopia (Kitaw, 1987 & Gedif, 1995). Although few studies on the medicinal plant resources of Africa particularly of Benin have been conducted

(Abebe and Ayehu, 1993; Tadesse and Demissew, 1992; Abebe, 1986; Jansen, 1981), the extent and types of herbs used in self-care by the vast majority of the population, particularly in rural and highly animist areas have not been documented.

However, the understanding of herbal medicines using causes could help health service planning to incorporate herbal medicine in a country's health care delivery system.

Mothers in most rural communities of developing countries, including Benin, are the de facto healers of the family, treating accidents and ailments with medicinal plants (Lambert *et al.*, 1997).

This research, therefore, attempted to document the medicinal plants used in self-care in a rural and highly animist Beninese community using mothers as informants.

MATERIALS

Subjects and methods

Description of study area

The survey took place in a BENIN area called Agonlin. Located in 180 km from Cotonou, the economic capital of Benin (Fig.1), the area of Agonlin is composed of three districts (Covè, Ouinhi, Zagnanado).

The population size, extrapolated from the 2003 census, is estimated to be **109, 517**. Generally the demographic pattern is typical of developing countries where children below the age of 15 constitute the majority (Berhane, 2000).

The dominant ethnic group is Mahi. Farming is the main economic activity, the main cash crops being maize. The estimated size of region is **1758 km²**. At the time of the study, that region had one hospital, two health centres, twelve health posts, seven private clinics, and three drug store depots. The hospital was the highest health institution and could only manage surgical and obstetric emergencies. Communicable diseases including malaria, ARI, and diarrhoeal diseases are the major public health problems in that area.

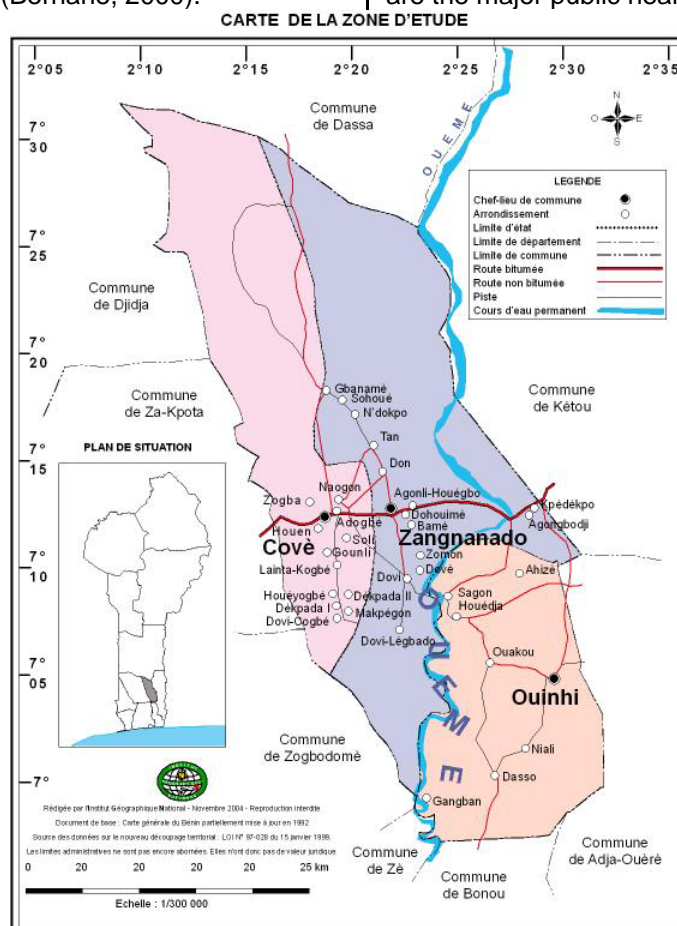


Figure 1 : Localisation of Agonlin area in Republic of Benin.

Data collection and analysis

Information on demographic characteristics, history of perceived illness, the extent and type of herbs used in self-care; and factors associated with the choice of treatment options were collected by using a semi-structured questionnaires from mothers (or woman who assumed the role of a mother) in 1000 households. The 1000 households were selected using systematic random sampling technique. Two days of training on the data collection instrument were given for investigators. Before the initiation of the interview, oral consent was obtained from each respondent who participated in the study. SPSS version 11.0 statistical software was used for data entry and analyses.

RESULTS

Perceived illness

The distribution of illness and the corresponding action taken against the illness by background factors was presented in Table 1. Seven hundred sixty-eight (768) objects were reported to have an illness

episode during a four weeks recall period preceding the interview date. Children, too young to be literate, have the most morbidity (30.5%). Children of primary school were associated, in second order, with a high morbidity (28.7%). Globally, being children was associated with high morbidity.

Table 1 : Self-care with herbal drugs and factors associated with it in Agonlin community, 2004.

Category	Number of ill	Self-care with herbs (%)	Chi-square	d.f	P-value
Sex			0.86	1	0.3534
Male	346	52.89			
Female	422	49.52			
Age in years			16.09	3	0.0011
0 - 4	224	36.6			
5 - 14	251	53.78			
15 - 54	240	51.25			
55+	53	45.28			
Marital status			0.15	1	0.7009
Married	113	48.67			
Others	179	46.36			
Education			1.72	1	0.1898
Illiterate	165	52.72			
Literate	386	46.63			

Health care options

The overall action taken for those with reported perceived illness was 99.3%; out of which 47.6% used herbal medicine in self-care, 24.9% self-medicate with modern drugs, 24.6% went to modern health service units, 2.2% consult traditional medicine practitioners.

Proportions of those with perceived illness and of those who use herbal medicine in self-care were compared between subgroups (e.g. among different ages, males versus females, illiterate versus literate, etc.) using chi-square tests (Table 2). No statistically significant difference was observed between females and males. Age was found to have a significant association with the use of herbal medicine ($P < 0.001$). Our results indicated that the tendency to use herbal medicine among children (0-5 years) is the lowest. Literates used herbal medicines as illiterates (who could not read and write) ($P=0.18$). No statistical significant difference was found between married and single.

Self-care with herbal drugs

The prevalence of self-care with herbal drugs in the Agonlin community in four weeks recall period showed that 114 species belonging to 69 families were claimed to be used in self-care.

(*Caesalpiniaceae*), (*Euphorbiaceae*), (*Burseraceae*), (*Liliaceae*), (*Bombacaceae*), (*Annonaceae*), (*Sitaceae*), (*Euphorbiaceae*), (*Verbenaceae*), (*Rubiaceae*), (*Mimosaceae*), (*Labiaceae*), (*Papilionaceae*), (*Anacardiaceae*), (*Caricaceae*), (*Solanaceae*), (*Combretaceae*), (*Labiaceae*), (*Lamiaceae*), (*Mimosaceae*), (*Bromeliaceae*), (*Apocynaceae*), (*Rubiaceae*), (*Caesalpiniaceae*), (*Myrtaceae*), (*Anadiaceae*), (*Rutaceae*), (*Moraceae*), (*Arécaceae*), (*Cucurbitaceae*), (*Bignoniaceae*), (*Poaceae*), (*Moraceae*), (*Meliaceae*), (*Aristolochiaceae*), (*Moringaceae*), (*Olacaceae*), (*Caesalpiniaceae*), (*Papaveraceae*), (*Irvingiaceae*), (*Papilioaceae*), (*Combretaceae*), (*Crassulaceae*), (*Caesalpiniaceae*), (*Piperaceae*), (*Euphorbiaceae*), (*Sterculiaceae*), (*Capparidaceae*), (*Apilionaceae*), (*Agavaceae*), (*Arécaceae*), (*Boraginaceae*), (*Caesalpiniaceae*), (*Rosaceae*), (*Bignoniaceae*), (*Liliaceae*), (*Apocynaceae*), (*Malvaceae*), (*Lauraceae*), (*Connaraceae*), (*Sapindaceae*), (*Caesalpiniaceae*), (*Portulacaceae*), (*Maliraceae*), (*Zingiberaceae*), (*Menispermaceae*), (*Zygophyllaceae*), (*Musaceae*)

Leaves were the part of the plant commonly used (55%) followed by roots (22%) and bark (11%).*

Traditional use

The most frequent ailments reported were shivers, headaches, transit disorders, dyspeptic disorders, fever, anaemia, aphorize,

The most used botanic families:

The result showed that the most used plants were Caesalpiniaceae, Europhorbiaceae and Papilionaceae. However Rubiaceae and Anarcadiaceae were fairly used whereas Mimosaceae and Compositaceae were less used (Figure 2).

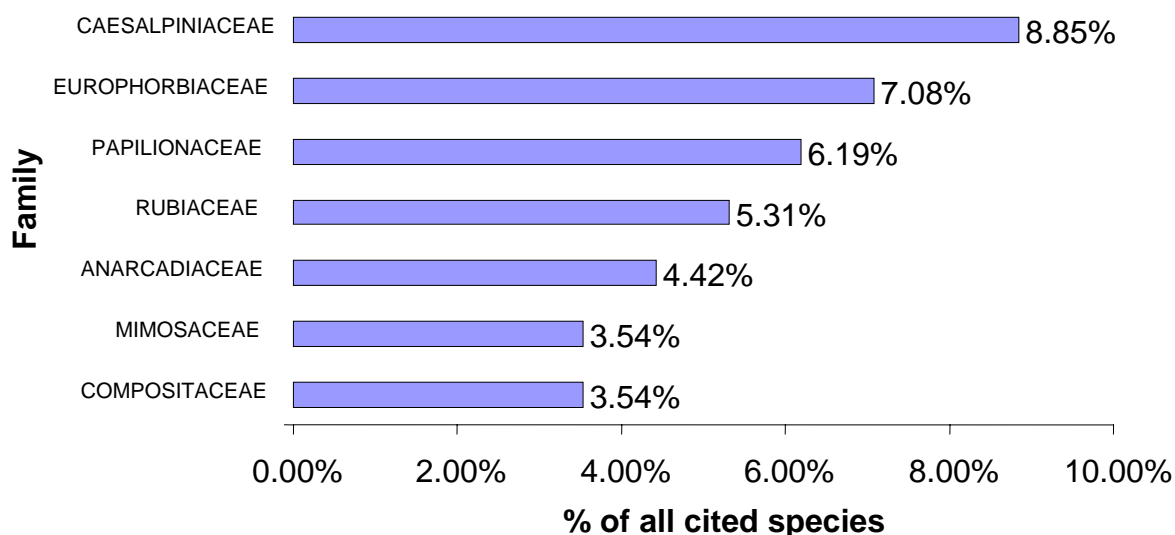


Figure 2 : Most cited species

DISCUSSION AND CONCLUSIONS

The morbidity pattern reported in this study is similar with what was reported by Shamebo *et al.* (1994), Gedif T *et al.* (2003). Malaria remained the most murderous tropical disease at less 5 years old child in Benin (Fourn L *et al.*, 2001).

The Agonlin community people's first option was traditional self-medication which was followed by modern drug self-medication. Consequently, self-medication was the common habit among this community. This result could be confirmed by Ouendo EM *et al.*, 2005 who found that the most patients' first choice (63.9% to 66.4%) in Benin was modern or traditional self-medication. The choice of self-medication as first choice was also noticed by Monteilet (1999) who proved the prevalence of 43.3% among Cameroonian patients. In many developing countries, the use of official health services often remained low despite great efforts to improve quality of care (Diallo D, Graz B, Falquet J *et al.*, 2005). Few mothers in rural used modern cares services when their children were feverish. Therefore, with the habit to use TM, there was a need for all health professionals to ask about and document TM use when taking a medication history.

Consequently the omission of Traditional medicine from medication histories is common as previously described in other countries (Cockayne NL *et al.*, 2005).

Moreover, this survey aimed also at selecting risk factors associated *with* the under-utilization of care services in child fever situation in Benin. We conducted a cross sectional study including 360 mothers recruited randomly in villages. From 76% of feverish child counted two last weeks preceding the survey, 6% of them used, in first intention, health centres. Relatives of the others child preferred self-medication (leaves infusion or drugs bought without medical prescription) despite their perception of child malaria fever severity.

Multivariate analysis selected showed that expensiveness cares (OR = 1.47 IC = 0.95-2.25) and mothers' perception (OR = 1.22 IC = 0.72-2.07) aren't the main factors for the therapeutic choice. In contrast **husband decision (OR = 1.59 IC = 1.36-1.91)**, **inappropriateness of work schedules of the health services (OR = 3.19 IC = 1.41-7.02)** and traditional relative practices (OR = 1.31 IC = 1.00-1.68) are determinants.

Agonlin was a region where the level of health education was lower than some urbanised regions like Cotonou and Porto-Novo (National institute of Statistics and Economic Analysis (INSAE) and ORC Macro 2002). The income also per person within this region was weaker than other urbanised regions of Benin. Besides, Agonlin remained a region where animism and traditional methods were very practised. That local context (socio-anthropologic and cultural aspects, general level of poverty), could explain, as Ouendo EM *et al* (2005) thought earlier, the first therapeutic itinerary choice. Indeed the data we collected in comparison to Ouendo EM *et al* proved it: 47.6vs 23.1%. Self-medication as first rescue could be explained by the traditional recipes using and the proliferation of medicine sellers and of those who prescribed drugs without any qualification in all the regions of Benin.

This study seemed to show that in the Agonlin community, perceived efficacy, economic and geographic accessibility were the main reasons for popularity of herbal medicine and its practitioners and met Gedif and Hahn (2003)'s research.

Females were more likely found to use herbal medicine in self-care than males but the difference was not statistically significant. This is consistent to the previous study data done in rural central Ethiopia about the use of medicinal plants in self-care (Gedif T *et al.*, 2003). The mothers' proportion that consumed native herbs was 12.08%. The use of native medication was more prevalent among nulliparous mothers (41.82%). Native herb consumption decreased with increase in parity. Both educated and illiterate mothers consumed herbal medications. Less than 1% of the mothers smoke cigarettes. Many reasons could such results. In Benin City, drug use in pregnancy was characterized by a pattern of low consumption except folic acid and native herbs. This could be

a major setback for any program of drug intervention, as in chemoprophylaxis for malaria in pregnancy. Many resources will be needed for patients' education for successful implementation of any planned program in the community.

It was also interesting to mention that age had a significant association with the use of herbal medicine. In this regard, herbal medicine was less used among babies (0-5 years) than older ages.

Comparison with study conducted in rural Tanzania (Satimia *et al.*, 1998).

In contrast to many studies (Gedif T *et al.*, 2003; Satimia *et al.*, 1998), no significant association was found between education and the use of herbal medicine. The prevalence of use of medicinal plants in self-care in the Agonlin community was very high so the difference among different levels of education was slightly diminished. The lack of this association could also be due to the high animist character of this region. Consequently the parents' conscience reinforcement on advantages of the modern care was necessary. These results could meet a previous urge (Fourn L *et al.*, 2001): Reinforcement of the awareness of relatives on advantages of precocious modern cares, appropriate work schedules for rural population and promotion of the insecticide-impregnated bed nets for child.

Recognising their frequent use, there was a need to promote phytochemical and pharmacological investigations on these plants in order to substantiate the traditional medical knowledge. People, and especially the traditional practitioners, should be informed of the benefits, risk and limitation of the plants they use for medical purposes. In other respects, appropriate work schedules for rural population and promotion of the modern health unit must be planned.

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Table 2 : Traditionally medicinal plants used in self-care by Agonlin community, Republic of Benin

Medicinal plants used by the Angolin people

Family names			
and Scientific name	Local name	Parts used	medicinal use
<i>AGAVACEAE</i>			
Sansevieria Senegambica	Kponyia	roots	icterus
<i>AMARANTHACEAE</i>			
aerra lanata	Akwema	leaves	diarrhoea
<i>ANACARDIACEAE</i>			
Anacardium occidentale	Akajütün	bark	malaria
Spondias mombin	Akikontin	leaves	malaria
Lannea microcarpa / L. kerstingii	Zuzu	bark	anaemia
Sorindeia warueckeii	Fatonomadu	leaves + cassiaman (leaves)	fever
Mangifera indica	Mangatin	barks	malaria
<i>ANNONACEAE</i>			
Uvaria chamae	Zinho Kokwé	roots	malaria & Infection
Xylopia aethiopia	Kpejèlékuntin	roots (eau du tronc de palmier à huile (Adihlassi))	menstrual pains
<i>APOCYNACEAE</i>			
Carissa Spinorum	Ahanzo	roots	Stomach ache dysentery
Picalima nitida	Ay Ckp ?	seeds	Diabetes
<i>ARECACEAE</i>			
Cocos nucifera	Agonketin	roots; coque + un peu de potasse + un peu de sucre	Asthma & anaemia
Elaeis guineensis, Var Virescens	S? D'E ou Kisse ?dé	leaves	tiredness
<i>ARISTOLOCHACEAE</i>			
Aristolochia albida	Fonwlè	roots	stomach illness
<i>BALANOPHORACEAE</i>			
Thon,ingia sanguinea	Atin Mawud C	roots	cough
<i>BIGNONIACEAE</i>			
New Bouldia laevi	Désregué	leaves	diarrhoea & malaria
Stereopermum kunthianum	Wunsadifun	leaves	fever
<i>BOMBACACEAE</i>			
Adansonia digitata	Zunzontin- Kpassatin	barks	Malnutrition
Ceiba pentendra	Huntin	barks	stomach ache
Bombax brevicuspe	Kpatin-Dèhun	leaves	Eyes illness
<i>BORAGINACEAE</i>			
Heliotropium indicum	Koklosu D ?npaja	Leaves + salt	icterus & mouth ulcer
<i>BROMELIACEAE</i>			
Ananas comosus	Ag Cndé	Peau	malaria
<i>BURSERACEAE</i>			
Comphora africana	Liji	leaves	urinary, diarrhoea
<i>CAPPARIDACEAE</i>			
Gynandropsis gynandra	Akaya	leaves	anaemia

Table 2 : Traditionally medicinal plants used in self-care by Agonlin community, Republic of Benin

Family names and Scientifique name	Local names	Parts used	medicinal use
<i>CARICACEAE</i>			
Carica papaya	Jikpentin	mature fruit, roots, dried seeds in powder added to gruel	icterus, intestinal worm
<i>CAESALPINACEAE</i>			
Caesalpinia bonduc	Ajikuntin	roots	stomach ache
Cassia tora	Kpanhoun	leaves (NB. : Triturer et prendre le jus)	Palpitation
Cassia mimosoides	Atabu	leaves, bark	malaria, diarrhoea
Cassia Siamea	Cassiatin	leaves	fever
Cynometra mégalophylla	Botin	leaves	Stomach infection
Cassia occidentalis	Kinikiniba	roots	icterus
Cassia rotundifolia	Asima	leaves	fever
Caesalpinia Pulcherrima		roots , leaves , seeds	Infection Intestinale
Cassia alata	Amasu	leaves	diarrhoea - tetter
Daniellia ogea	Zaxaya	leaves (NB : + leaves de goyarier)	dysentery
<i>COMBRETACEAE</i>			
Terminalia glaucescens	Alotoun	stem	stomach illness
Anogeissus leiocarpus	Hilih C n ou Hlih C n	roots	icterus
Pteleopsis Suberosa	Kulu kuli	(roots) ; (barks)	Spot & body infection
<i>COMPOSITACEAE</i>			
Vernonia colorata	Aloma Klu GBLE	leaves	stomach illness
Tridax procumbens	Azuman ou WENMI	leaves	fever
Vernonia cinerea	Hunsikus ?	leaves	malaria
Acanthospermum hispidum	Kpon ?	bark	anaemia
<i>CONNARACEAE</i>			
Connarus africanus	Ganganlisé	leaves	haemorrhage
<i>CRASSULACEAE</i>			
Kalanchoe crenata	Tèsu	leaves	fever - cough
Bryophyllum Pinnatum	JCmaku	leaves	vomiting
<i>CUCURBITACEAE</i>			
Momordica charantia	Nyinsinkin	leaves	cough
Colocynthis citrullus	Gusi	leaves	fever Thyphoïde
Luffa aegyptiaca	Kouvitotekan	leaves	vomiting - diarrhoea
<i>EUPHORBIACEAE</i>			
Croton zambezicus	Jélélé	leaves	stomach Infection
Phyllanthus Amarus	Hlenwe	leaves	Infection
Spondianthus Preussii	Atakpla	bark	measles
Jatropha Curcas	Nyikpotin	leaves	fever
Manihot esculenta	Finyin	leaves	headache
Hymenocardia acida	Sotinve	young leaves	cough
Bridelia Ferruginea / B.Micrantha	H Cnsu Kokwé	root and leaves	diarrhoea
Phyllantus pentadus	Hlenwe	leaves	diarrhoea
<i>GRAMINEAE</i>			
Pennisetum Purpureum	Kusu	leaves	malaria , measles malaria
Cymbopogon Citratus	Tchaman	leaves	
Oxythenanthera abyssinica	Dawé	dry leaves	Hypertension

Table 2 : Traditionally medicinal plants used in self-care by Agonlin community, Republic of Benin

Family names and Scientific name	Local names (Fon)	Parts used	medicinal use
<i>IRVINGIACEAE</i>			
Irvingia gabonensis	Asl C tin	leaves	icterus
<i>LABIACEAE</i>			
Ocimum Canum Locimum gratissimum	Ciyayo	leaves	Infection - malaria
Hoslundia opposita	Hla Ciyayo	leaves	diarrhoea
<i>LAMIACEAE</i>			
Hyptis suaveolens	Hwéfloré	leaves	Infection
Persea americana	Avokatin	leaves	Hightension
<i>LILIACEAE</i>			
Glorisa superba	Akwema	leaves	diarrhoea
Allium cepa	Ayomantin	Bulle (NB :+ jus de citron+oignon)	asthma
<i>MALVACEAE</i>			
Gossypium hirsutum	Avokanfuntin	leaves	dysentery
Sida acuta	T ? gb ? T ? gb ? tin	leaves	measles
<i>MELIACEAE</i>			
Pseudocedrela Kotschy	Kininitin	leaves	malaria
Khaya senegalensis	Atinsu	roots	Candidose
	Zunzatin	bark	
<i>MENISPERMACEAE</i>			
Chasmanthera dependens	Tékan	leaves (+ sucre)	malaria
<i>MIMOSACEAE</i>			
Acacia pennata	Hlafèn	leaves	malaria
Dichrostachys glomerata	Abadawen	leaves	Infection malaria
Prosopis africana	Take	roots	tiredness
Entada abyssinica	Wando	roots barks	body Infection
<i>MORACEAE</i>			
Ficus ovata	Akwema	leaves	diarrhoea
Ficus ovata	Ak ? ma	leaves	diarrhoea
Ficus umbellata / F. Capensis	Vo	bark	Infection
<i>MORINGACEAE</i>			
Moringa Oleifera	yovokpatin	leaves	abscess
<i>MUSACEAE</i>			
Musa spp	Kokwétin	leaves sèches	malaria - Icterus
<i>MYRTACEAE</i>			
Eucalyptus Camaldulensis		leaves	cough
Eugenia aromatica	Atinkingbadota	Fruits	diarrhoea
Psidium guajava	Kekountin	dry leaves	dysentery
<i>OLACACEAE</i>			
Olax Subscorpioides	Mitin ou Mitun	roots	body infection (spot)
<i>PAPAVERACEAE</i>			
Argemone mexicana	Hweceny C n	leaves	malaria

Table 2 : Traditionally medicinal plants used in self-care by Agonlin community, Republic of Benin

Family names and Scientific name	Local names (Fon)	Parts used	medicinal use
<i>PAPILIONACEAE</i>			
Cajanus cajan	klwekuntin	leaves	malaria
Arachis hypogea	Aziin	leaves	malaria
Abrus precatorius	Vivima	roots	Diarrhea cough
Millettia thonningii	Asian sian	roots	measles
Desmodium velutinum	Tedavowun	roots	latent icterus
Pterocarpus erinaceus / P. S	antalinoides	leaves	dysentery
Pterocarpus erinaceus	Kozo	roots	tiredness
<i>PORTULACAEAE</i>			
Talinum triangulare	Aglaswe (Glasema)	leaves	fever
<i>ROSACEAE</i>			
Maranthes polyandra	Wantuwiwi	leaves et bark	diarrhoea
<i>RUBIACEAE</i>			
Nauclea latifolia	K C do	roots	malaria
Gardenia erubescens/ G.ternifolia	Dakpla	leaves	anaemia
Mitracarpus scaber	Godokwé	roots	tetanus
Macrosphyra longistyla	Zikiti Gowun	roots	ulcer
Pavetta corymbosa	Lohuma	leaves	fever
Ceffea arabica / c. robusta , c.arabusta	Kafetin	leaves	tiredness
<i>RUTACEAE</i>			
Zanthoxylum zanthoxyloides	Xetin	roots, leaves, malaria Fruits /Peau de citron	Infections & stomach illness/ painfull throat
Citrus aurantifolia	Klétin	(seule rendue en poudre + eau)	Pinea
Clausena anisata	Gbossou Zohwen	leaves	Infection
<i>SAPINDACEAE</i>			
Paullinia pinnata	Ganganlisé	leaves	haemorrhage
<i>SOLANACEAE</i>			
Schwenkia americana	Adagbonyanina	leaves	icterus
Solanum lycopersicum	Timantitin	leaves	abscess
<i>STERCULIACEAE</i>			
Cola acuminata	Vi	Fruit	Infection & malaria
<i>VERBENACEAE</i>			
Vitex doniana	Fontin	leaves	vomiting
Tectona grandis	xwletin	Jeunes leaves à sève rouge (NB : Triturer + sucre)	anaemia
<i>ZINGIBERACEAE</i>			
Zingiber officinale	Dotè	bulb	dysentery
<i>ZYGOPHYLLACEAE</i>			
	Kpon ?	bark	anaemia