ejpmr, 2021,8(3), 15-23

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

VALORISATION OF PLANT RESOURCES USED IN ALTERNATIVE MEDICINE IN THE TREATMENT OF LIVER DISEASES IN SOUTH BENIN: ETHNOPHARMACOLOGICAL CONTRIBUTION

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Article Received on 23/12/2020 **Article Revised on 13/01/2020** **Article Accepted on 03/02/2021**

ABSTRACT

Ethnobotanical prospecting was carried out on plants used in alternative medicine in the treatment of liver diseases in the communes of Kétou and Zagnanado in South Benin. The main objective of this study is to list the hepatoprotective medicinal plant resources of South Benin in order to valorize them. In the course of this study, a comparison of the results with those of the bibliographical data concerning the use of plants in the treatment of hepatic diseases was carried out. At the end of the study, 53 plants were listed with their modes of use. Different organs of: *Acanthospermum hispidum, Bridelia ferruginia, Combretum micrantum, Passiflora foetida* are widely used by traditional practitioners in South Benin in the treatment of liver diseases. Phyto-biochemical and pharmacological studies will enable us to develop these medicinal plants.

KEYWORDS: Ethnopharmacology, hepatoprotective plants, traditional practitioners, South Benin.

INTRODUCTION

Liver diseases are recurrent pathologies and constitute a real public health problem affecting both developed and developing countries. According to a WHO estimate, about 80% of African populations use traditional medicines to meet their primary health care needs (WHO Strategy, 2002). Thus, primary health care is largely dependent on medicinal plants and associated local knowledge (Fyhrquist, 2007). It is important to conduct ethnopharmacological studies to identify local uses of plant species (Betti, 2004).

There has been some work in the sub-region and in Benin on hepatoprotective medicinal plants, the most recent of which are those of Sangaré et al.,2012 and Guinnin et al.,2015. People use plant drugs without any scientific knowledge of the immediate, medium or long-term undesirable or even toxic effects, or of the pharmacodynamic properties of the active substances contained in them (Gupta et al., 2005). In this context, plants presumed to have beneficial effects on health, according to endogenous knowledge, should be the subject of in-depth pharmacological studies.

This prospective study is in line with the development of natural resources and could provide information on potential plants used as alternative medicine in the treatment of liver diseases in South Benin. Benin has a great floristic biodiversity, in addition to a centuries-old tradition of therapy with numerous plants considered to have hepatoprotective properties. Experience has shown that the richness of plant biodiversity and the knowledge of our therapists can help improve the treatment of diseases by opening up new scientific avenues for their treatment (Tounkara, 2008). A lot of efforts are being made nowadays to discover new actively therapeutic molecules of natural origin. Medicinal plants present themselves as an alternative for the research of these new active and therapeutic molecules.

MATERIAL AND METHODS

The ethnopharmacological survey was conducted on medicinal plants used by traditional practitioners in the treatment of liver diseases in South Benin. The questionnaire method was used to obtain the latest information on these medicinal plants. The approach used was the semi-direct or semi-structured interview. The identification of plant material was done using the Analytic flora of Benin (Akoègninou et al., 2006) and the species selected for in-depth pharmacological studies were then certified at the Herbier National du Bénin at the University of Abomey-Calavi (UAC), Benin.

Choice of localities, characteristics, setting and study population

The study took place from 26 August to 08 September 2019 in some districts of the communes of Kétou and Zagnanado. The parameters that justified our choices were the accessibility to information, the ease of communication, the number of tradi-therapists, demographics and their diverse geographical areas. The Districts prospected are located between 7° 10' 00" and 7° 41' 08" of North Latitude and 2° 22" 03" and 2° 37' 41" of East Longitude and the communes are in the Plateau and Zou departments as shown in Figure 1.

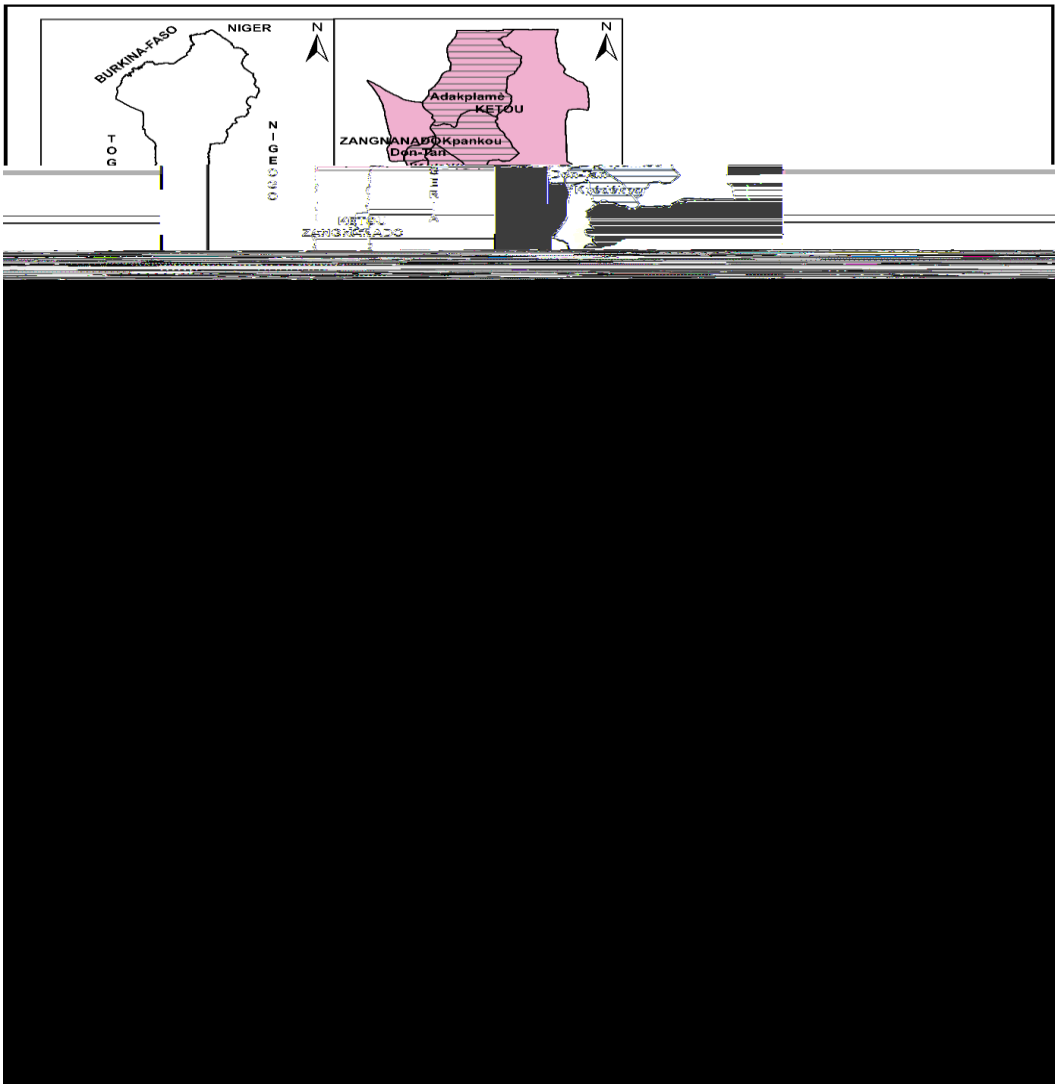

Figure 1: Localities surveyed during the study.

Surveys

The ethnopharmacological survey was carried out among 55 traditional practitioners in the presence of indigenous guides who knew both the language of the area and the plants. An individual interview was first conducted with the tradipractors who were available and who agreed to answer the questions from the interview guide. A second visit was made to most of them to assess the reliability of the information obtained from the interview. The survey tools consisted of a questionnaire and a thematic interview guide. During the survey, the information collected concerned the profile of the resource persons (age, sex, level of education) and ethnopharmacological data such as local names of species, parts of plants used, methods of preparation and use, routes of administration, dosage, prohibitions and side effects where known, frequency of administration and duration of treatment. The identity of the practitioner, the average number of patients treated monthly and their professional experience were not excluded during the interview. During the interviews, we also assessed the skills of these traditional therapists in the treatment of liver diseases. This anthropological approach made it possible to gather information on the plants used.

Statistical analysis of the results

Data analysis was carried out as follows: decoding of the survey forms after processing and statistical analysis of the results. Thus, the responses to the questionnaires were analysed, decoded, entered and processed using the EXCEL 2013 spreadsheet. The citation frequency (Fc) of each plant was determined by the following formula:

$$Fc = \frac{Nc}{Nt} \times 100$$

where Nc is the number of citations of the plant in question and Nt is the total number of citations of all plants.

RESULTS

The survey covered 55 male practitioners of traditional therapy, including 47 traditional healers (85.45%), all male, and 8 herbalists (14.55%), all male (Figures 2 and 4). From this survey, we note that almost all of the traditional healers surveyed have a good knowledge of medicinal plants with hepatoprotective properties. This observation is all the more true since the prospecting took place in rural areas. In particular, the traditional treatment applied by most of the traditional practitioners prospected is sympathetic. The youngest of the tradipractors surveyed was 34 years old and the oldest was 80 years old. The number of years of professional experience varied between 05 and 55 years (Figure 6). Of the 55 surveyed traditional therapists 12.73% are under 40 years old, 80% are between 40 and 70 years old, and 07.27% are over 70 years old (Figure 3). The majority of traditional therapists are analphabets, approximately sixty-seven percent (67.27%) (Figure 5). Different parts of medicinal plants are used in the preparation of traditional medicines namely leaves, bark, root, whole plant, leafy stem, fruits (Table I and Figure 8) with a preference for leaves (69.81%) and leafy stems (9.43%). Here bark comes last with 1.89%. Different methods of preparation are listed: decoction (43.39%), infusion (15.09%), maceration (24.52%), calcination (05.66%), spraying (07.54%) and crushing (03.77%) (Figure 7). At the end of this ethnopharmacological survey, a repertoire of 53 plant species used in the treatment of liver diseases was compiled (Table 1). These medicinal plants are grouped into forty-nine (47) genera and belong to thirty-one (31) botanical families, the most represented being the Euphorbiaceae (Table II). The figures and tables are presented as follows:

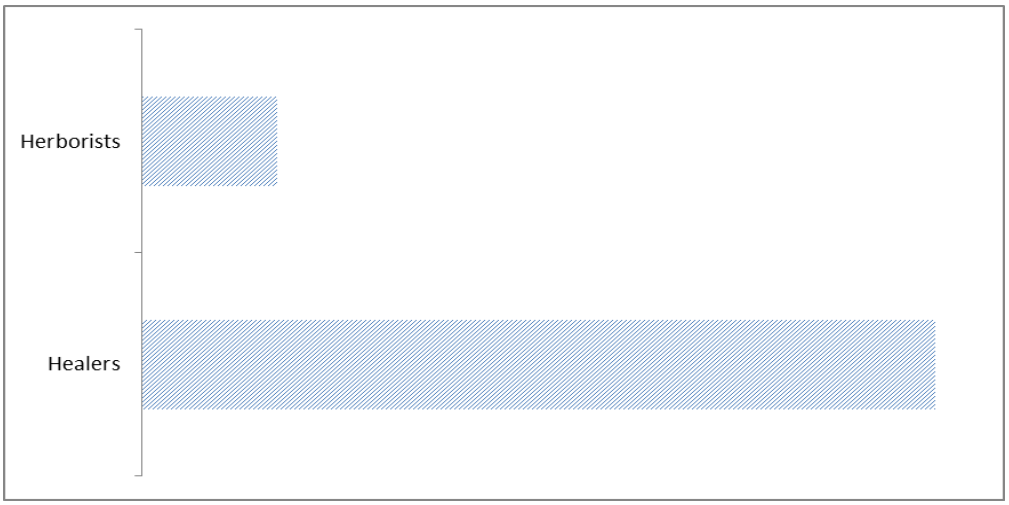

Figure 2: Distribution of respondents by occupational class.

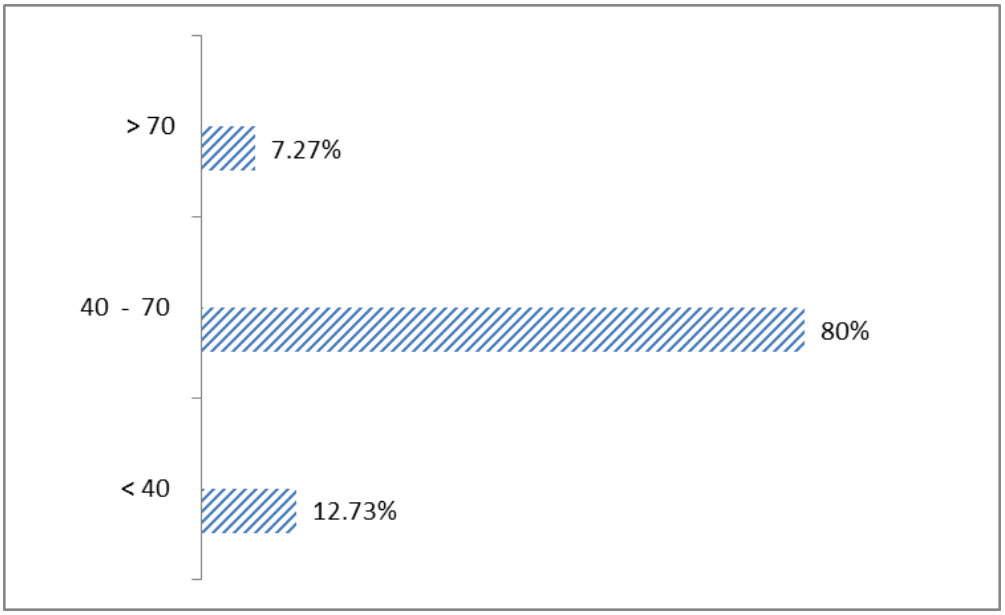

Figure 3: Distribution of respondents according to age groups.

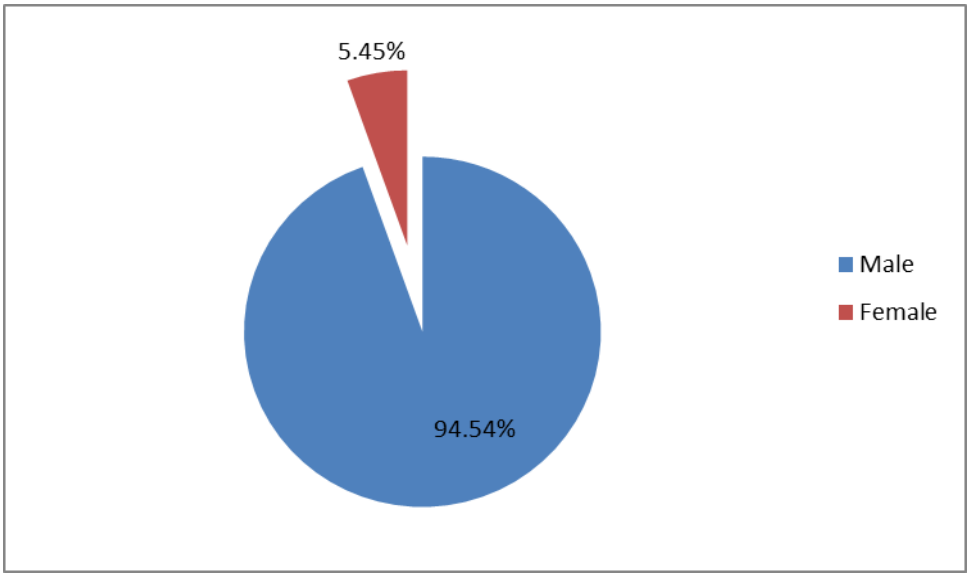

Figure 4: Distribution of respondents by gender.

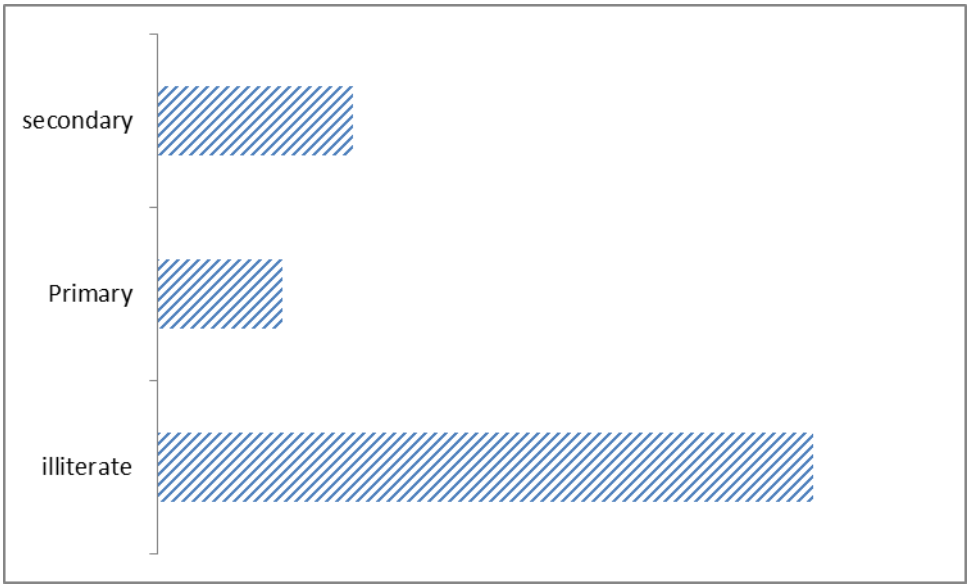

Figure 5: Distribution of respondents by education level.

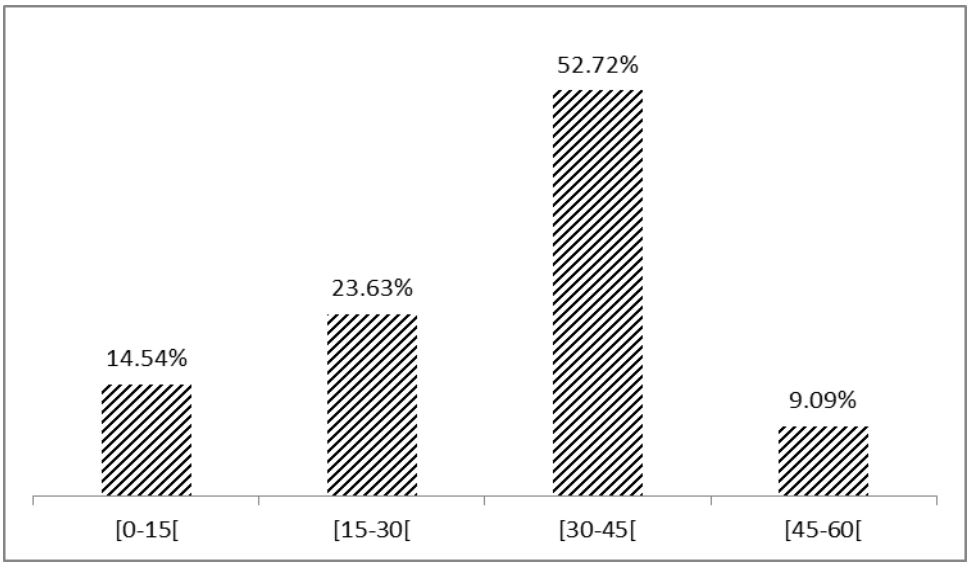

Figure 6: Distribution of respondents by professional experience.

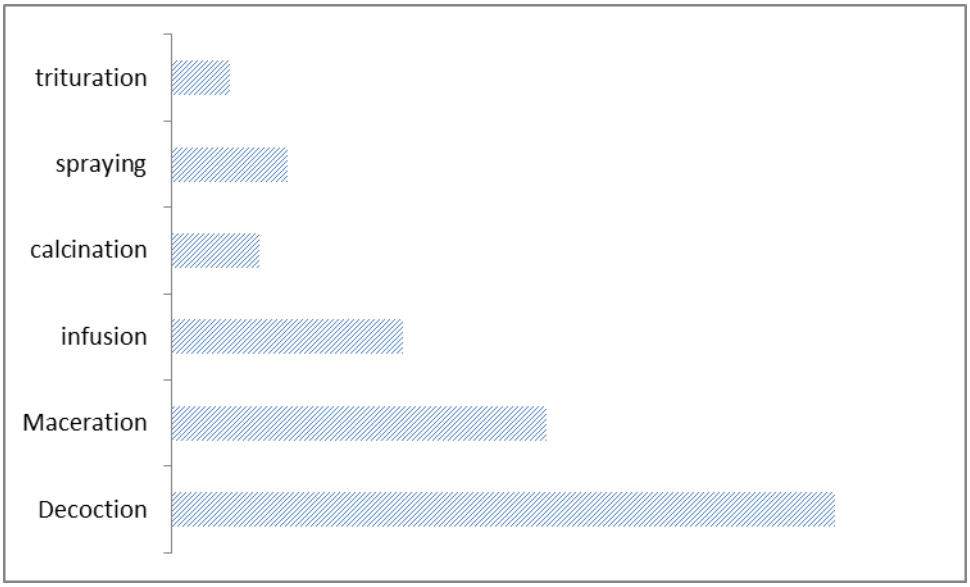

Figure 7: Modes of preparation of medicines for traditional treatment of liver diseases.

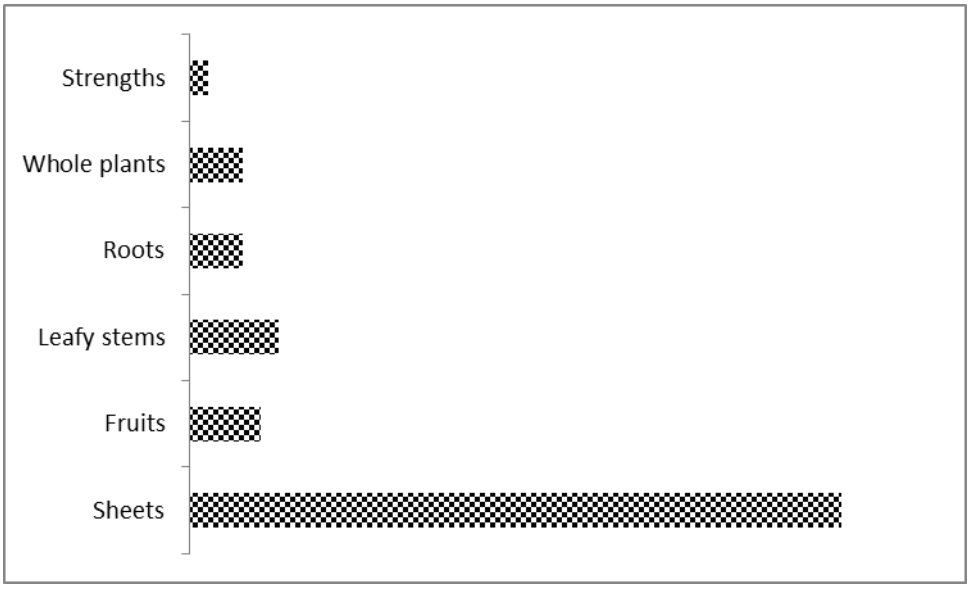

Figure 8: Plant organs used for the treatment of liver diseases.

Table I: Plants used by traditional practitioners in South Benin for the treatment of liver diseases.

Species	Botanical Families	Vernacular Names (Mahi or Fon)	Organs used	Citation frequency (%)
Acacia sieberiana	Mimosaceae		Sheets	0,4
Acanthospermum hispidum	Asteracea	Kponomi	Sheets	4,82
Aloe buetneri	Liliaceae	Zogah	Sheets	2,00
Ananas comsus	Bombecaceae	Agondé	Fruits	2,20
Amaranthus spinosus	Amaranthaceae	Tètè wunon	Leafy stems	01,00
Aspilia africana	Asteraceae	Fonxwènkan	Sheets	01,60
Azadiratai ndica	Meliaceae	Kininutin	Sheets	0,80
Boerhavia diffusa	Nyctaginaceae	Afokpadinwa	Racine	0,18

Parinari curatellifolia	Rosaceae	Kotama	Sheets	00,80
Passiflora foetida	Passifloraceae		Sheets	04,41
Phyllanthus amarus	Euphorbiaceae		Leafy stem	03,82
Phyllantus pentandus	Euphorbiaceae		Bark	01,80
Phyllantus discoïdeus	Euphorbiaceae		Sheets	03,41
Phyllantus ninuri	Euphorbiaceae		Whole plant	03,21
Piliostigma reticulatum	Caesalpiniaceae	Klonlonma	Sheets	03,21
Polycarpaea linearifolia	Caryophyllaceae	Amonritana	Sheets	01,00
Raphia sudanica	Areaceae	Mwetin	Leafy stem	02,20
Sapium grahami	Euphorbiaceae	Dobogo	Sheets	01,00
Terminalia albida	Combretaceae	Idi	Whole plant	0,80
Terminalia glaucescens	Combretaceae	Alotun	Sheets	02,00
Tetrapleura tetraptera	Mimosaceae		Whole plant	01,40
Uvaria chamae	Annonaceae	Agbanan	Sheets	01,40
Vernonia amygdalina	Asteraceae	Amavivè	Sheets	03,82

Table II: Frequency of botanical families of the plant species surveyed.

Botanical Families	Frequency (%)
Amaranthaceae	1,85
Annonaceae	1,85
Areacaceae	5,55
Asclepiadaceae	1,85
Asteraceae	3,70
Bignoniaceae	1,85
Bromeliaceae	1,85
Caesalpiniaceae	3,70
Cannaceae	1,85
Caricaceae	1,85
Caryophyllaceae	1,85
Cochlospermaceae	3,7
Euphorbiaceae	1,852
Gramineae	1,85
Liliaceae	1,85
Meliaceae	1,85
Mimosaceae	5,55
Moraceae	1,85
Moringaceae	1,85
Myrtaceae	1,85
Nyctaginaceae	1,85
Oleaceae	1,85
Opiliaceae	1,85
Passifloraceae	0 g( )]TJETQ0 0 0 rg /TMC /P <</MCID 2(8)-5P /

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