European Journal of Botany, Plant Sciences and Phytology
Vol.7, No.1, pp.7-27, 2022
Print ISSN: 2055-8139(Print)
Online ISSN: 2055-8147(Online)

Ethno pharmacology and Qualitative Phytochemical analysis of some Medicinal plants of Niyamagiri hill, Kalahandi, Odisha

Sangeeta Das[1], A. Leelaveni[*1]
[1]Department of Botany, Berhampur University, Berhampur,Odisha,760007, India

Citation: Sangeeta Das[1], A. Leelaveni (2022) Ethno pharmacology and Qualitative Phytochemical analysis of some Medicinal plants of Niyamagiri hill, Kalahandi, Odisha, *European Journal of Botany, Plant Sciences and Phytology*, Vol.7, No.1, pp.7-27

ABSTRACT: *The traditional knowledge of making drugs from medicinal plants have a major role in pharmaceutical industries. The objective of the present work is to find out how tribal peoples make use of plants as their medicine to prevent numerous diseases without having any modern medical science mastery. The structure of the research was based on four parts: 1. Ethnobotanical survey study.2.plants use value.3. Phytochemical screening.4. Ethnomedicinal uses. The research work developed in tribal community of Niyamagiri hills, Kalahandi district of Odisha, India. The duration of the research was one year. The collection of medicinal plants were done from tribal peoples of Niyamagiri hill region of Kalahandi district of Odisha. plant extraction was performed in the lab, followed by Phytochemical screening. The results reflects the rich diversity of medicinal plants of Niyamagiri hill with 50 plants species are used as herbal therapy for the healing of various ailments. Among them, 13 plants were trees, 12 plants were shrubs, and 25 plants were herbs. These were enumerated with their medicinal value. Out of the 50 plant species studied 43 were dicot and 7 were monocot. The study identified 50 medicinal plants belonging to 35 families used against 27 diseases categories such as, skin diseases, gastro intestinal disease, wound healing etc. treating various kinds of ailments between different ethnic communities in Niyamagiri hill. The plants use value Show that the most frequently used plant species was B. laciniosa, Z.oenoplia, T. bracteata giving the highest use value of 1.33. B. laciniosa is recognized to its use in the treatment of different ailments and it is well renowned by all informants as the plant having the maximum medicinal value. The extracts phytochemical screening revealed the presence of Alkaloid, Flavonoids, phenols, Tannins, Saponins Terpenoids in all plants approximately .G.sylvestre contain all of these secondary metabolites except Saponins.*

KEYWORDS: Ethno pharmacology, Qualitative phytochemical analysis, Medicinal plants, Niyamagiri hill, Kalahandi, Odisha

INTRODUCTION

Since from the birth of human beings, there has been a intricate relationship between life, disease, plants and surroundings. From the evolution of society, people started study diseases and treatment (Lyons AS, Petrucelli J,1987). After they faced diseases, There is no reflect that people of ancient set interest on synthetic medicament for their aliments due to their civilization but they tested to make could easily procure, Which they could find from their surroundings. (Singh VK, Abrar M,1990).This mystic nature has hidden resources of Biodiversity and use of flowering plants to manage diseases. Many traditional medicines in use are derived from medicinal plants, minerals and organic matters. The world Health Organization (WHO) has listed 21,000 plants which are used for medicinal purposes around the world. Among them 2500 species are found in India, out of which 150 species are used commercially on a fairly

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

large scale. India is the largest producer of medicinal herbs and study this medicinal herbs called ethnobotany. They embarked on using plants and establish that the majority of plants were suitable as food, where as other were either poisonous or medicinally useful (Fuller JL, Ginsburg BE, 1954).
This Ethnobotany which refers the immediate connection between plants and the man. From "ethno" signifies the investigation of individuals and "herbal science" signifies the investigation of plants. The expression "Ethnobotany" was first used by Harshberger in 1895, to the investigation of plants utilized by crude and native individuals. Jones, V.H., (1941) characterized it as, the investigation of the interrelations of crude men and plants, Schultes (1962) viewed ethnobotany as an exploration of connections between crude society and their plant condition. 80% of the world population are using the medicinal plants as the main available drugs (El-Kamali and El- Amir, 2010), the utilization of therapeutic plants is exceptionally boundless in numerous pieces of the world since it is generally viewed as that herbal medications are less expensive and more secure in contrast to man-made medications and may be used without or least side effects. Plants utilized for crude medication restrain an ample scope of substances that can be utilized to regard endless just as irresistible infections. Clinical microbiologists have an incredible enthusiasm for the screening of medicinal plants for new therapeutics (Periyasam *et al.*, 2010). The real standard of numerous medications begin in plants are optional metabolites. The antimicrobial exercises of plant concentrates may occupyin the scope of various parts, including aldehyde and phenolic mixes (Lai and Roy, 2004).

Kalahandi (locally pronounced Kalahani) is a district of Odisha in India. The region had a glorious past and great civilisation in ancient time. The Kutia Kondhs are a particularly vulnerable tribal groups in Kalahandi district, Odisha. They live in Lanjigarh, Thuamul Rampur, Madanpur Rampur and Bhawanipatna blocks. In Lanjigarh, where over 90 per cent residents are Kondhs, every sixth household experiences severe food insecurity and hunger.Phytochemicals are chemicals of plant origin. (Breslin, Andrew,2017) Phytochemicals (from Greek phyto, meaning "plant") are chemicals produced by plants through primary or secondary metabolism (Molyneuxet al.,2007)(Harborne et al.,1999) They generally have biological activity in the plant host and play a role in plant growth or defense against competitors, pathogens, or predators. (Molyneuxet al.,2007).Phytochemicals generally are regarded as research compounds rather than essential nutrients because proof of their possible health effects has not been established yet(Heneman Phyt et al.,2008). Phytochemicals under research can be classified into major categories, such as carotenoids and polyphenols, which include phenolic acids, flavonoids, and stilbenes/lignans. Flavonoids can be further divided into groups based on their similar chemical structure, such as anthocyanins, flavones, flavanones and isoflavones and flavanols. Flavanols further are classified as catechins, epicatechins and proanthocyanidins. In total, there has been over 25,000 phytochemicals discovered and in most cases, these phytochemicals are concentrated in colourful parts of the plants like fruits, vegetables, nuts, legumes, and whole grains, etc.("Flavonoids". Micronutrient Information Center, Linus Pauling Institute, 2017)

Phytochemists study -phytochemicals by first extracting and isolating compounds from the origin plant, followed by defining their structure or testing in laboratory model systems, such as cell cultures, in vitro experiments, or in vivo studies using laboratory animals. Challenges in that field include isolating specific compounds and determining their structures, which are often complex, and identifying what specific phytochemical is primarily responsible for any given biological activity (Molyneux et al.,2007).
Antioxidant means "against the oxidation". These compounds are important due to sharing their own electrons to free radicals. When a free radical receives the electron form these compounds they are no longer require to attack the cell and it breaks the oxidation chain reaction. As the antioxidants have the

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

ability to control the sharing in electrons without becoming reactive so in this state they are not harmful (Sies, 1997; Selah *et al.,* 1995).

Oxidation is a compound retort that exchanges electrons or hydrogen from a substance to an oxidizing operator. Oxidation responses can deliver free radicals. Thus,these radicals can begin chain responses. At the point when the chain response happens in a framework, it can make harm to the framework. Antioxidants stop these chain responses by expelling free extreme intermediates and lessen other oxidation responses. They do this by being oxidized themselves, so cell reinforcements are alleged lessening specialists, for example, thiols, ascorbic corrosive, or polyphenols. Free radicals are accepted to assume a job in keeping the improvement of such ceaseless illnesses like a malignant growth, coronary illness, stroke, Alzheimer's malady, rheumatoid joint pain. Age of free radicals influences the natural framework, however, it additionally influences the lipids (Pulkalskas, 2008).

MATERIAL AND METHOD

The ethnomedicinal review included diverse anthropological field strategies of which member perception and secondary overviews for the gathering of subjective and quantitative information establishes a necessary part. The information of customary social orders on various parts of the examination was investigated amid the investigation.

Study area and People

Kalahandi lies in between 19.3 N and 21.5 N latitudes and 82.20 E and 83.47 E longitudes(.Orissa District Gazetteers, Kalahandi,) and occupies the south western portion of Odisha, bordered to the north by the Balangir district and Nuapada district, to the south by the Nabarangpur district, Koraput district and Rayagada district, and to the east by the Rayagada district, Kandhamal district and Boudh district. It has an area of 8,364.89 square kilometres and ranks 7th in area among the 30 districts of Odisha.

The Niyamagiri hill range lies between 19º 26’ to 19º 43’ N latitude, and 83º 18’ to 83º 28’ E longitude. The hills are situated within the districts of Rayagada and Kalahandi, and veer off in a NE-SW direction as part of the Eastern Ghats of India. The region is known for its innumerable valleys, watercourses and high mountain peaks, as well as for its very diverse vegetation. Topographically, 75 % of the Niyamagiri hills landmass is covered with dense forests with evergreen and semi- evergreen in nature where the average forest density is around 0.6, with 1300 to 1400 trees per acre. Eight distinct types of vegetation are seen in Niyamagiri, depending on the local microclimate, plant density, species association and effect of biotic and edaphic factors, among which deciduous forests predominate. Most important aspect of Niyamagiri hills is that it is rich in Mountain Rivers which give the location are unique Phytogeographical zone. Therefore it was declared as Nature Conservation or Game Sanctuary. It has been proposed as a Wild Life Sanctuary in the working plan of Kalahandi district forest division.

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Fig-1: Index map of Kalahandi district, Odisha, India

Methodology of Documentation- Documentation includes the systematic collection, recording and compilation of the oral traditional knowledge of local health traditions. This includes systematic recording of data on concept and diagnosis of the disease, methods of treatment, the resource of plants that are used singly or in compound preparation, parts used, method of preparation, administration of drug, duration of treatment, precaution, If any, For the treatment.

For the present study, standard procedures laid down by Girach, 1992; Begum et al. 2016; and Mohanty, 2003 are followed. The steps involved in the process of documentation in the present context are as follows:

-Identification of the knowledge holders of the survey area through consultation/ verbal inquiry with NGOs village heads or serpents.
-Obtaining prior informed consent from the knowledge holder afterexplaining him/ per the purpose of documentation.
-Interviewing the informants with the questionnaire developed for this purpose. Focus group discussion and walk with informants.
-Recording the information related to the cause, symptom, diagnosis method, resources used and mode of treatment used by the traditional practitioners.
-Herbarium and Voucher specimen collection for record and Future reference.
-Compilation and analysis of the information to consolidate the report.

Fig -2: Discussion with local people of Niyamagiri hill region(Kalahandi district).

Data analysis
Use value (UV)

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

The relative importance of each plant species known locally to be used as herbal remedy is reported as the use value (UV) and it was calculated using the following formula (Phillips *et al.*, 1994).

$UV = \sum \boldsymbol{U}/\boldsymbol{n}$

U is the number of use reports cited by each informant for a given plant speciesand n is the total number of informants interviewed for a given plant. It is helpful in determining the plants with the highest use in the treatment of an ailment (Xavier *et al.*, 2014).

Processing of plant samples

The 50 different samples were collected from the study area. The selected plantparts were removed from the plants and then washed under running tap water to remove dust. The plant samples were then oven dried at 60^0C for few days and were ground to a fine powder in a mechanic grinder and stored in polythene bags for future use (Wadood *et al.*, 2013).

Preparation of Plant extract

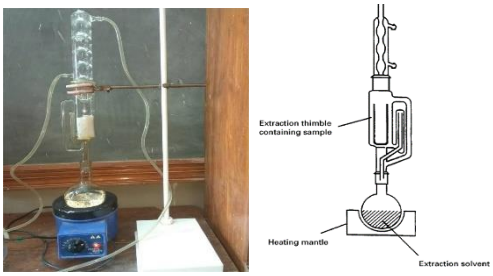
Measured plant parts were extracted with methanol by using soxhlet apparatus method (Okunada, 2002). Finally, all methanolic extract was evaporated in a water bath to obtain the respective extracts and stored in a freeze condition at -20^0C untilused for future analysis (Shekhar & Anuj, 2014; Nahak & Sahu, 2011). Percent ofyield (Anokwuru *et al.*, 2011) was calculated as follows;

Yield %= $(W_2 - W_1)/W_0$ x 100

Where, W2= the weight of the extract and the container, W1= the weight of the container alone and W0= the weight of the initial dried sample.

Chemicals and Reagents

All chemicals and reagents used during the research work were of standard grade. Mayer's reagent, Iodine solution, Fehling's solution A and B, Ammonia solution, Isoamyl alcohol, glacial acetic acid, Folin-Ciocalteu reagent, sodium carbonate, Gallic acid, rutin, DPPH (*1,1-Diphenyl 2-Picrylhydrazyl*), Ascorbic acid, $FeSO_4$, Hydrogen Peroxide (H_2O_2) Sodium salicylate, Nitro Blue Tetrazolium (NBT), Nicotinamide Adenine Dinucleotide (NADH), Phenazine Methosulfate (PMS), Tris HCl buffer, Phosphate buffer, Sodium phosphate, Ammonium molybdate, HNO_3, Chloroform, $AlCl_3$, HCl, NaOH, H_2SO_4, $FeCl_3$, Methanol.



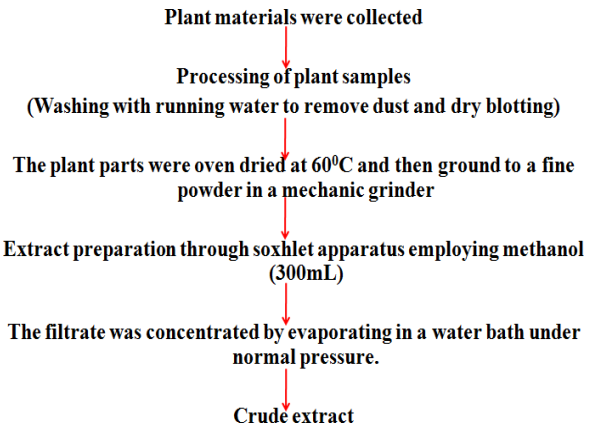


Fig-3: Soxhlet extraction apparatus

Fig-4: A Flow Chart depicting the process of gets the extract of the solvent fromthe material.

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Qualitative analysis of Phytochemicals

Qualitative analysis of methanolic extracts was carried out to determine the presence of various bioactive compounds using the standard qualitative procedures (Trease and Evans, 1989; Sofowora 1993; Harborne 1998).

RESULTS

The present study was conducted in Niyamagiri hill region and its allied villages, which is faraway and remote region of Kalahandi district of Odisha. During the present study, it was recorded that 50 medicinal plant species are used as herbal therapy for the healing of various ailments. Among them, 13 plants were trees, 12 plants were shrubs,and 25 plants were herbs (Fig-5). These were enumerated with their medicinal value. Out of the 50 plant species studied 43 were dicot and 7 were monocot. During the survey, all the species were noted for used in curing all types of diseases by the local people and healer of the remote region. Table described the all 50 medicinal plants with their local name, parts used, preparation and application. The plant parts were collected from the four different villages of Niyamagiri hill region and these villages are Haridaguda, palberi, tadijhola and Olabali.

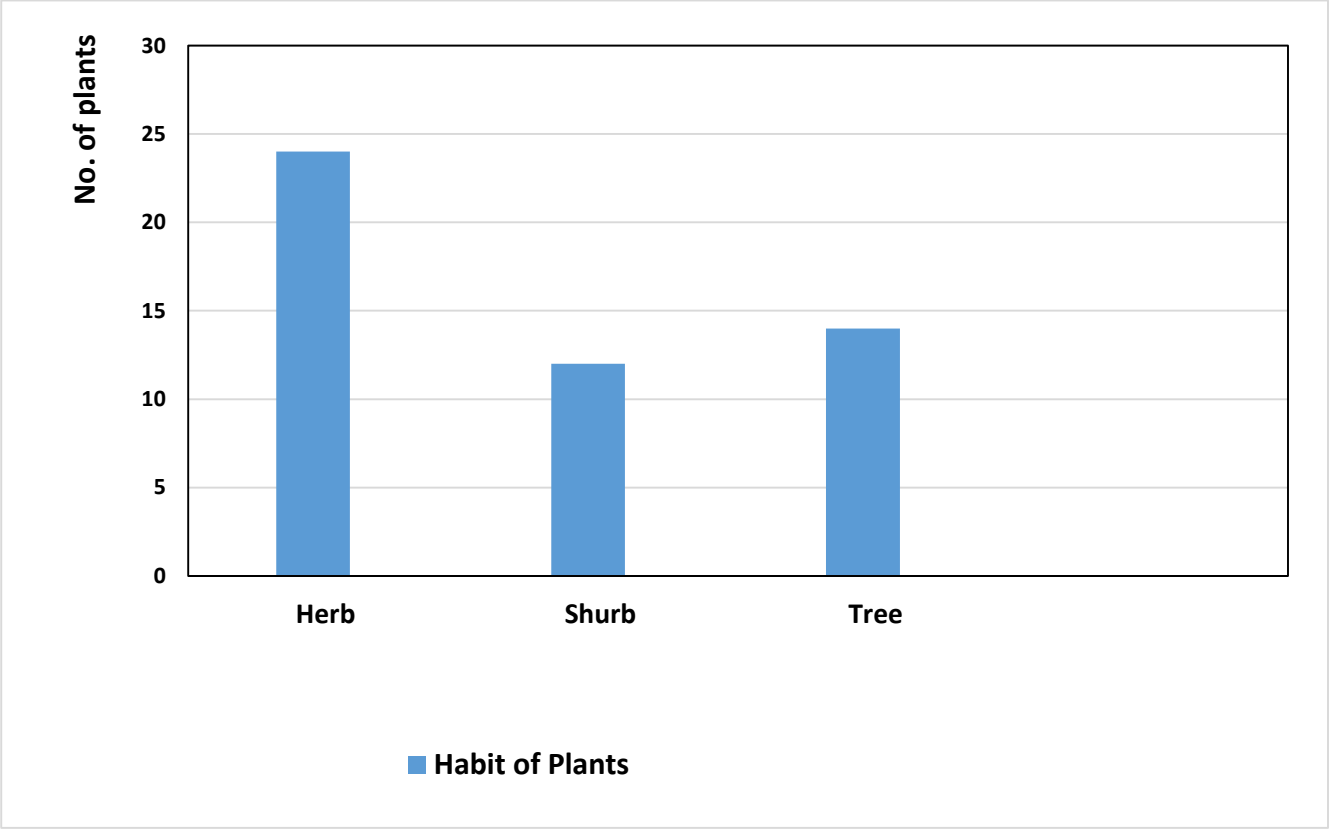


Fig- 5: Study of habit with respect to number of plant species.

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

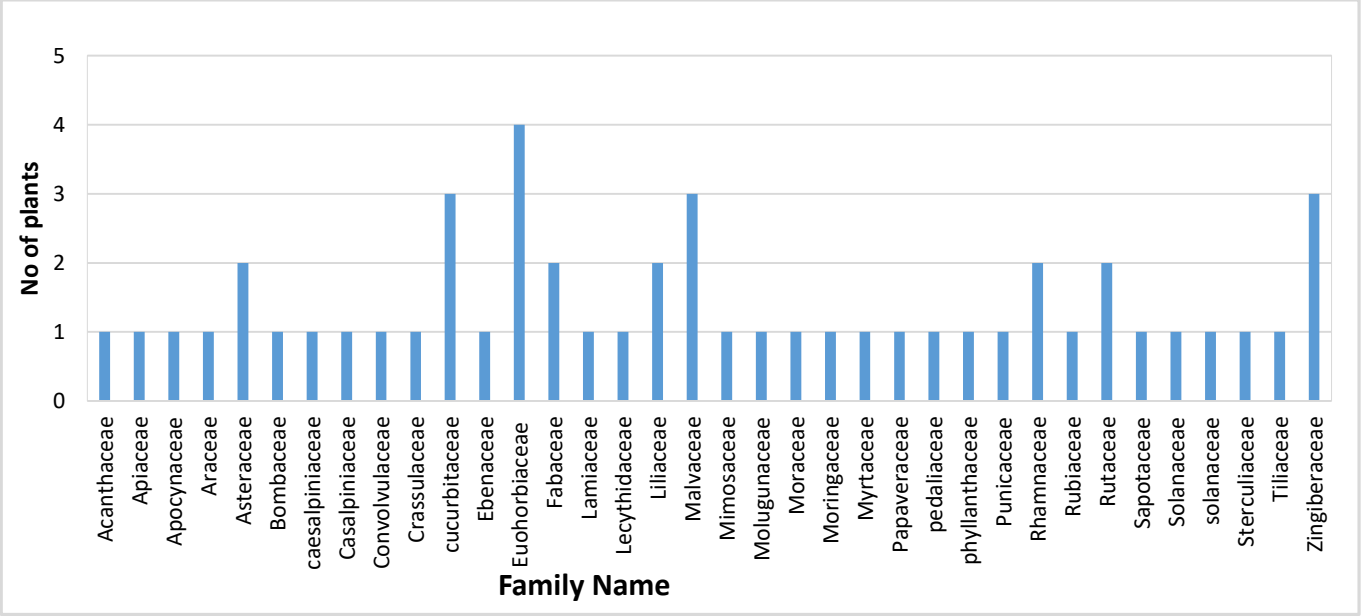


Fig- 6: The no. of plants showing different families

Table 1: List of commonly used medicinal plants used by local healers of Kalahandi district of Odisha.

Scientific Name	Villages Name	Local Name	Parts Used	Preparation
A.augusta	Haridaguda	Olatakamala	Bark ,leaf	Decoction /powder
A.indicum	Haridaguda	Pedipedika	Leaf	Paste /infusion
A.indica	Palberi	Indramaris	Leaf	Raw /juice
A.galangal	Tadijhola	Malayabacha	Rhizome	Powder
A.paeoniifolius	Tadijhola	Dhai	Tuber	Paste /Raw
A.mexicana	Haridaguda	Dragugach	Leaves ,seed	Juice /paste
B.malabarium	Palberi	Semel	Root ,stem bark	Paste /Decoction
B.laciniosa	Palberi	Shivalingi	Seed	Decoction /powder
B.pinnatum	Haridaguda	Amarpoi	Leaves	Juice/paste /decoction
B.monosperama	Tadijhola	Phalsa	Flower	Raw /paste
B.herbacea	Tadijhola	Samarkhai	Root	Paste
C.arborea	Tadijhola	Kumbhi	Fruit ,stem bark	Decoction /juice
C.arundinaceum	Palberi	Bharat batuli	Flower, root	Powder /Decoction
C.serratum	Palberi	Bharangi	Roots, leaves	Paste

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

C.caesia	Tadijhola	Kalahaldi	Rhizome	Paste /Decoction
D.melanoxylon	Haridaguda	Kendu	Bark, fruits	Raw /Juice
E.scaber	Olabali	Mayurchulia	Root	Paste
E.hirta	Olabali	Chitakuti	Whole plant	Juice
F.limonia	Olabali	Kaitha	Leaves	Juice /Powder
F.racemose	Olabali	Dimiri	Bark	Paste
G.gummifera	Olabali	Kurudu	Stem bark	Paste
G.oppositifolius	Tadijhola	Pita gaham	Leaves ,Root, flower	Paste
G.superba	Tadijhola	Kulhiakanda	Rhizome	Paste /Juice
G.abutilifolia	Haridaguda	Dhamana	Bark	Powder
G.abyssinica	Tadijhola	Alsi	Leaf ,seed	Juice /Paste
G.sylvestre	Olabali	Gudamari	Leaves ,root	Paste /juice
J.adhatoda	Olabali	Basanga	Leaves, root	Decoction /paste
L.longiflorus	Tadijhola	Mahulmadang	Leaf	Juice /paste
M.indica	Haridaguda	Mahua	Leaves, flower ,bark, fruit ,seed	Decoction /juice
M.phillippencis	Haridaguda	Sundari	Leaves	Decoction /Raw
M.quadrifolia	Tadijhola	Sunsunia saga	Leaves	Decoction /juice
M.pudica	Tadijhola	Lajkuli	Leaf ,Root	Paste /Decoction
M.charantia	Palberi	Karla	Leaf	Juice
Moringa oleifera	Palberi	Sajana	Leaves ,fruit, bark, seed	Paste /juice
M.koenigii	Palberi	Versunga	Leaves , bark	Decoction /powder/Juice
O.turpethum	Palberi	Tihudi	Stem	Decoction
P.emblica	Palberi	Amla	Fruit ,leaves, root	Powder /Raw
P.granatum	Tadijhola	Dalimba	Leaves ,Fruit, bark	Raw /Decoction
R.communis	Tadijhola	Jada	Seed	Decoction /paste
S.indicum	Haridaguda	Rasi	Seed	Decoction
S.sesban	Olabali	Jayanti	Bark	Decoction
S.cordifolia	Olabali	Bajramuli	Whole plant ,Root	Infusion /powder
S.cumini	Olabali	Jambakoli	Leaves	Raw /Juice
T.indica	Tadijhola	Tetli	Leaf	Raw /Paste
T.ammi	Haridaguda	Juani	Seed	Raw /Juice
T.bracteata	Palberi	Mahakal	Root, leaf, fruits	Paste /Juice
W.somnifera	Palberi	Ashwagandha	Root	Paste
W.fruticose	Olabali	Dhatu	Flower, leaves, fruit ,gum	Paste /Juice
Z.mauritiana	Olabali	Barakoli	Leaf	Raw /powder
Z.oenoplia	Olabali	Kantekoli	Roots, stem bark, leaves, Whole plant	Decoction /infusion

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Statistics of Plant parts used

Medicinal plants are used in herbal medicines, which were 11 classes (Fig-7). Different plant parts like leaves, roots, seed, bark, flower, whole plant, stem, fruits, Tuber, Rhizome and Gum, Among them the largely used plants parts were leaves (31%), and root (17%) followed by seed (8%), bark (15%), flower (6%), whole plant (3%), stem (6%), fruits (9%), rhizome(3%) and gum(1%).

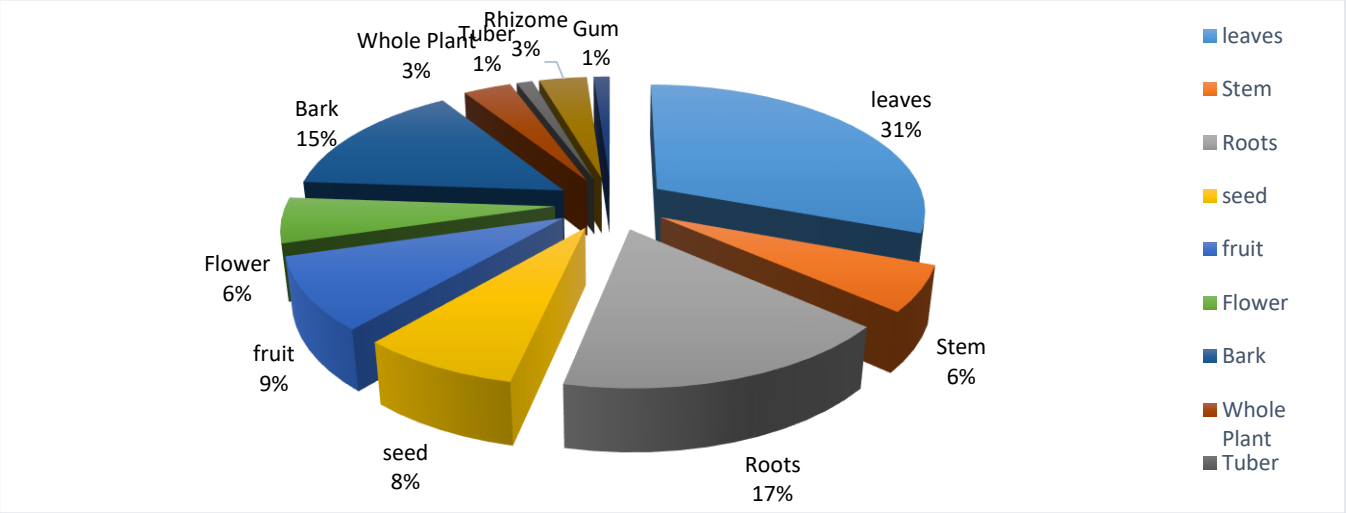


Fig -7: Plant parts used by traditional people or healer.

Method of preparation and mode of administration of plants

The preparation and utilization of plant parts were grouped in six classes (Fig-8). Of these, the most frequently used method of preparation was paste (30%),followed by decoction (22%), Juice (23%), raw (12%) and powder (10%) and infusion (3%).

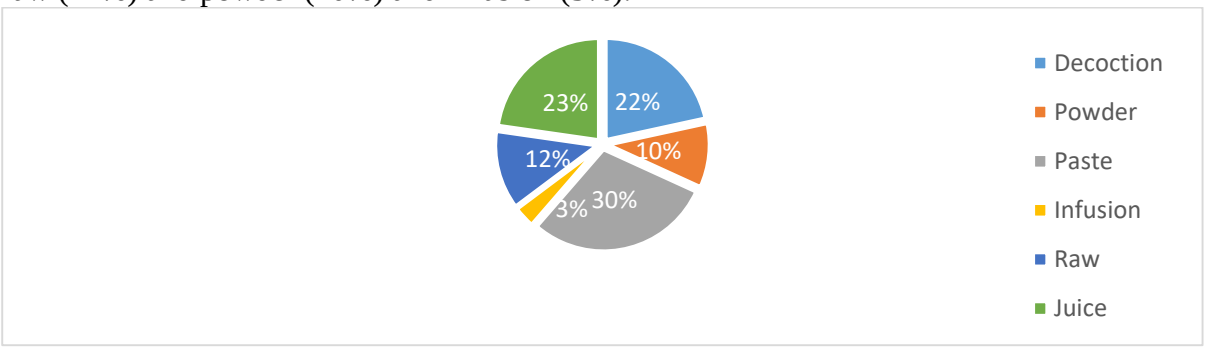


Fig-8: Mode of utilization for the preparation of medicine.

Ailment categories

Based on the information obtained from the traditional healers in the studyarea, all the reported ailments were categorized in 16 categories (Table-2). These are endocrinal disorders (ED), respiratory system disorder (RSD), gastro intestinal ailments (GIA), fever (Fvr), dermatological infections (DI), skeleton muscular system disorders (SMSD), tooth diseases (TD), genitor urinary ailments (GUA), circulatory system (CS), neural disorders (ND) and ear diseases (ED).

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Table 2: Ailments grouped by different categories with their biomedical terms and Odia terms.

Ailment categories	Biomedical terms	Odia terms
Liver problem (LP)	Jaundice	Kamalo rogo
Circulatory system (CS)	Blood pressure, cholesterol	Rakta chapo Medurata
Poisonous bites (PB)	Insect bites, Snake bites	Kitokamuda,sarpo dansan
Endocrinal disorders(ED)	Diabetes	Madhumeho
Fever (FVR)	Fever	Joro
Respiratory system disorders(RSD)	Cold &Cough, Asthma, Throat	Thanda O' Khaso, swasho, gala phula
Skeleto Muscular system Disorders(SMSD)	Rheumatism, joint pain, paraplegia ,inflammation, swelling	Bato rogo, Gonthi batha, Fula, adhasakha achalana
Gastro intestinal ailments (GIA)	Dysentery, diarrhea, piles, ulcer, constipation	Torolojhada, arsorogo Petoga, kosthokathinya
Eye infection (EI)	Eye infection	Chakhyu roga
Genito urinary ailments(GUA)	White discharge, metrorrhagia, aminorrhoea, vermifuge, insomnia, intestinal worm, stomachache, menstrual problems, leucorrhoea, strangury, gonorrhea, infertility	Dhatu padiba, Masiko rutusrabo re asubidha, mutra kuchhro rogo, prameha rogo, bandhyato
Dermatological infections (DI)	Wounds, itching, scabies, ringworm, measles, mumps, chickenpox, skin irritation, burn, eczema	Gha, Charmo rogo, jadu
Hair diseases(HD)	Dandruff	Rupi samasya
Kidney stone (KS)	Lactation	Dugdho srabano
Ear disease (ED)	Earache	Karno rogo
Dental problem(DP)	Toothache	Danto botha
Neural disorders (ND)	Headache, Insanity	Mundo botha, pagala

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Diseases wise classification

The 50 medicinal plants belonging to 35 families used against 27 diseases categories such as, skin diseases, gastro intestinal disease, wound healing, rheumatoid, cold & cough, diabetes, jaundice, Asthma, piles, swelling, insect bite, joint pain, ringworm, indigestion, Gonorrhea, constipation, Dysentery, urinary infection, increase sperm count, obesity, insomnia, toothache, headache, diarrhea, ulcer, menstrual problem and earache (Table -3).

Table 3: Diseases wise classification the medicinal plants.

Diseases	Plant parts used	Medicinal plants
Jaundice	Root, leaf, flower	O.turpethum A.indicum, P.granatum, M.koenigii
Blood pressure	Leaves	J.adhatoda
Cholesterol	Bark	G.abutilifolia
Insect bites	Seed Bark	R.communis, F.racemose
Snake bites	Rhizome	C.caesia
Diabetes	Root, leaves, Fruits	J.adhatoda, G.sylvestre¸P.emblica M.koenigii
Fever	Leaves, fruit, rhizome	J.adhatoda, T.indica¸M.charantia A.indicum, A.galangal
Cold and cough	Leaves, rhizome, root, seed, flower	T.ammi, A.indica, A.galangal, J.adhatoda, B.pinnatum,W.fructicosa ,P.granatum, Z.mauritiana
Headache	seed, root, leaves	R.communis, C.serratum, M.quadrifolia
Asthma	Leaves, rhizome	B.pinnatum,T.bracteata, A.galangal
Throat	Root	C.arundinaceum ,S.cordifolia
Paraplegia	Whole plant	S.cordifolia
Waist pain	Root	M.pudica
Inflammation	Flower, whole plant, leaves	B.monosperma, L.lonfiflorus, M.koenigii
Joint pain	Leaf, rhizome	R.communis, G.superba, M.oleifera
Swelling	Leaves, whole plant	J.adhatoda, B.pinnatum, R.communis, M.koenigii
Rheumatism	Fruits, root, bark	C.arborea, C.arundinaceum, Z.oenoplia, G.abutilifolia
Dysentery	Seed, fruit, bark, flower	T.indica, D.menoxylon, C.arborea, G.oppositifolius
Diarrhea	Seed, root, leaves, bark	B.malabarium, B.pinnatum, M.phillippencis, S.cumini, P.granatum, F.limonia, G.abyssinica

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Piles	Tuber, leaves, rhizome, root	A.paeoniifolius, B.pinnatum, G.superba,M.pudica, Z.oenoplia
Ulcer	Leaf	M.oleifera
Constipation	Leaves	A.indica
Vomiting	Rhizome	C.caesia
Eye infection	Flower	J.adhatoda
White discharge	Root	G.oppositifolius
Metrorrhagia	Bark	F.racemose
Aminorrhoea	Fruit	P.granattum
Vermifuge	Leaf	M.phillippensis
Insomnia	Leaf, root	M.pudica
Intestinal worm	Root	W.fructicosa
Stomach ache	Bark¸fruit, leaves	G.abutilifolia, S.cumini, P.grannatum
Menstrual problems	Root, seed, bark	E.scaber, W.fructicosa, A.augusta
Leucorrhoea	Root, whole plant, fruit	B.malabarium, E.hirta, P.emblica
Strangury	Root	B.malabarium
Gonorrhea	Leaf	A.augusta
Infertility	Seed	B.laciniosa
Urinary tract infection	Leaves, bark	G.sylvestre, M.oleifera
Cuts	Rhizome	C.caesia
Wounds	Leaf	G.sylvestre, M.oleifera, P.granatum, Z.oenoplia
Itching	Leaf, whole plant	G,sylvestre, G.oppositifolius
Scabies	Whole plant, leaf, Bark	G.oppositifolius, M.indica
Ringworm	Leaf	W.fruticosa
Acne	Flower	W.fruticosa
Measles	Leaf	M.charantia
Mumps	Root	T.bracteata
Chicken pox	Leaf	M.charantia
Skin irritation	Root, fruit, flower, leaves, whole plant	O.turpethum, D.melanoxylon, B.monosperma, C.serratum, G.oppositifolius, M.indica, M.philippencis
Burn	Leaves, seed	G.sylvestre, B.laciniosa
Eczema	Leaf	M.pudica
Dandruff	Seed	S.indicum
Kidney stone	Root, leaves	M.pudica, F.limonia
Lactation	Whole plant	E.hirta
Toothache	Twigs	P.granatum
Earache	Leraf, bark	L.longiflorus, M.oleifera

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

The major 4 diseases which are common in this region are Gastro intestinal ailments, Dermato infection , Skeleto muscular system Disorder & Respirotary system Disorder (Fig 9).

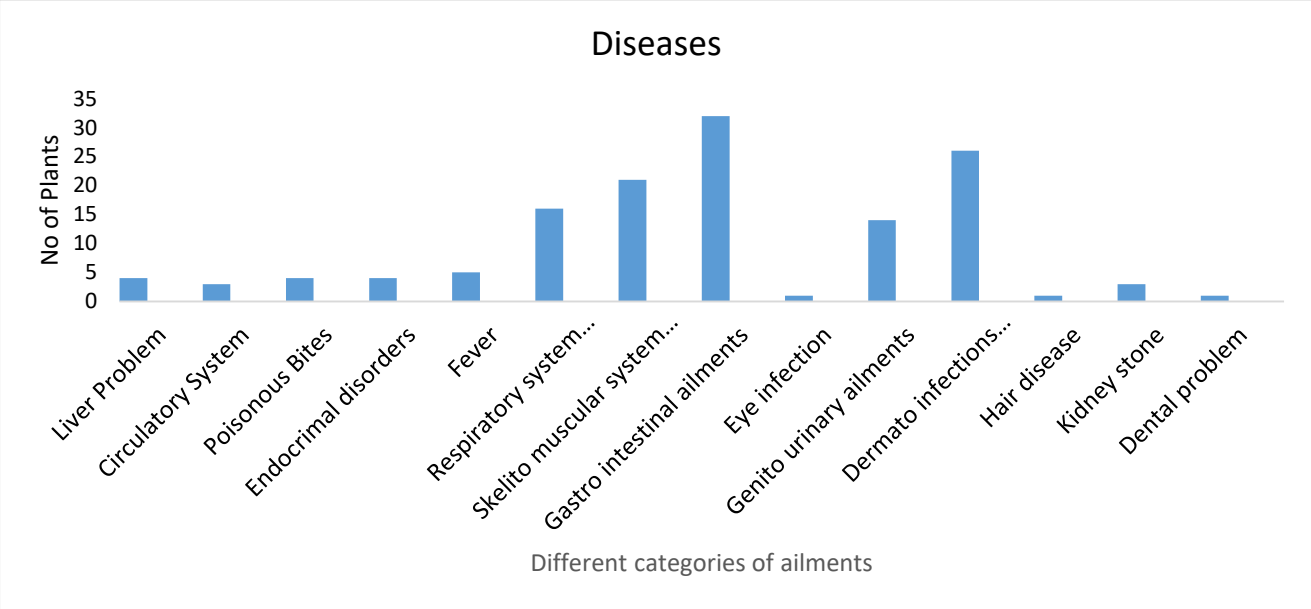


Fig -9: Plant parts used for treating different diseases.

Ingredients added

The medicinal arrangements were completed out of a single plant part or in mixture of various plant parts. During the present study, it observed that multiple modes of preparation were dominating over the single mode of preparation (Table 4).

Table 4: Ingredients added for the preparation of herbal medicines by the local healers.

Botanical name	**Other plants addeed**	**Other ingredients added**
A.augusta	Black pepper	----
A.indicum	Piper nigrum	----
A.indica	Castor oil	
A.galangal	----	Water, honey, sugar
A. paeoniifolius	Rawolfia serpentine, zingiber officinale, piper nigrum, piper longum	----
A.mexicana	. ----	Common salt, water
B.malabarium	----	Sugar
B.laciniosa		Jaggery
B.pinnatum	Aegle marmelos	Honey, sugar
B.monosperam	Black pepper	Water
B.herbacea	----	----
C.arborea	Holarrhena antidysenterica	----
C. arundinaceum	----	Turmeric

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

C.serratum	Clerodendrum	----
C.caesia	----	Water
D. melanoxylon	----	----
E.scaber	----	Milk, rice water
E.hirta	----	----
F.limonia	----	----
F.racemose	White cumin seed	Water, sugar
G.gummifera	----	----
G.oppositifolius	Santalum album	----
G.superba	----	----
G.abutilifolia	----	----
G.abyssinica	----	----
G.sylvestre	Jamun seed	Coconut oil
J.adhatoda	----	Milk, cardamom
L.longiflorus	----	----
M.indica	----	----
M.phillippencis	Betel	----
M.quadrifolia	----	Oil, salt, masalas
M.pudica	Piper nigrum	----
M.charantia	----	----
M.oleifera	----	Common Salt
M.koenigii	----	Warm water, olive oil ,buttermilk
O.turpethum	----	Milk
P.emblica	----	Honey¸curd, honey radish
P.granatum	----	Rice water, sugar, honey
R.communis	----	----
S.indicum	----	----
S.sesban	----	----
S.cordifolia	Withania somnifera Asparagus racemosus	----
S.cumini	----	Curd
T.indica	----	Water, salt
T.ammi	Carom seed	Honey, salt
T.bracteata	----	Black peppers, warm water, cow urine
W.somnifera	----	Ghee, sugar, honey
W.fruticose	----	Milk
Z.mauritiana	----	Salt ,chilli
Z.oenoplia	Calotropis gigantean	Coconut oil, black peppers

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Plant Use Value (UV)

Showed that the most frequently used plant species was *B. laciniosa*, *Z.oenoplia*, *T. bracteata* giving the highest use value of 1.33. *B. laciniosa* is recognized to its use in the treatment of different ailments and it is well renowned by all informants as the plant having the maximum medicinal value. Other important medicinal plants like *C . caesia, G.opositifollius,* G.sylvestre with a high use value 1.25.

Table 5: Use value (UV) of ethnomedicinal plant species.

Plants	**Use Value**
A.augusta	0.66
A.indicum	0.40
A.indica	0.75
A.galangal	0.67
A.paeoniifolius	0.60
A.mexicana	0.80
B.malabarium	0.40
B.laciniosa	1.33
B.pinnatum	0.83
B.monosperama	0.66
B.herbacea	0.50
C.arborea	0.40
C.arundinaceum	0.40
C.serratum	0.42
C.caesia	1.25
D.melanoxylon	0.67
E.scaber	0.68
E.hirta	o.33
F.limonia	0.40
F.racemose	0.33
G.gummifera	0.67
G.oppositifolius	1.25
G.superba	0.75
G.abutilifolia	0.50
G.abyssinica	0.33
G.sylvestre	1.25
J.adhatoda	1.20
L. longiflorus	0.40
M. indica	0.67
M. phillippencis	0.33
M. quadrifolia	0.80
M.pudica	0.80
M. charantia	0.75
M. oleifera	1.25
M. koenigii	1.25

Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

O. turpethum	0.75
P. emblica	1.25
P. granatum	1.20
R. communis	1.25
S. indicum	0.67
S. sesban	0.75
S. cordifolia	0.50
S. cumini	0.83
T. indica	0.75
T. ammi	0.80
T. bracteata	1.33
W. somnifera	0.80
W. fruticose	0.71
Z. mauritiana	0.67
Z. oenoplia	1.33

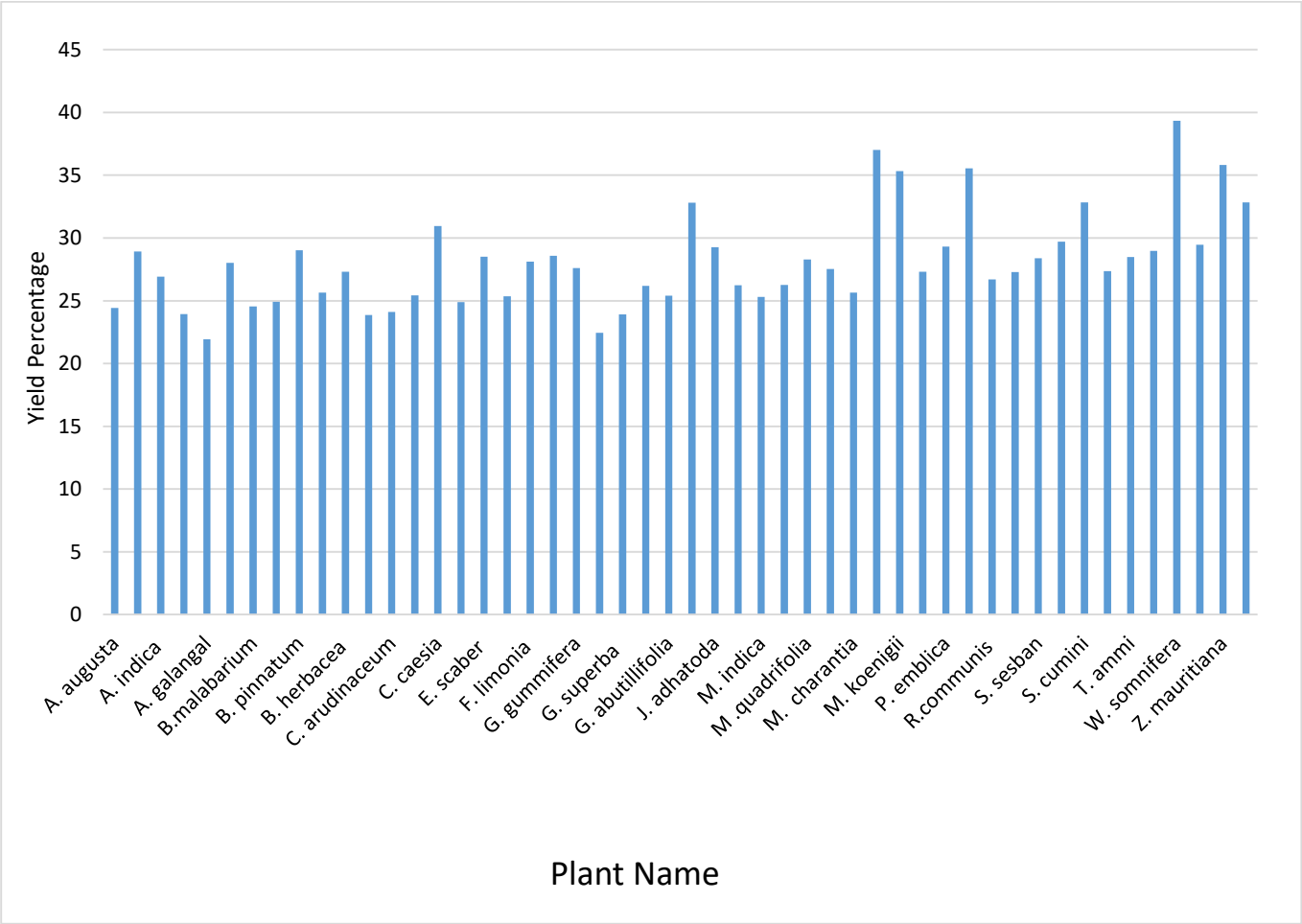


Fig -10: Yield percentage of methanolic extract

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

Table – 6: Phytochemical screening of ethno medicinal plant of methanolic extracts

Plants name	Steroid	Tannin	Saponin	Anthocyanin	Coumarin	Alkaloids	Proteins	Glycosides	Terpenoids	Leucoanthocyanin	Phenol	Reducing Sugar
A. augusta	+	+	-	-	-	+	-	+	-	-	+	+
A. indicum	-	+	+	-	-	-	-	+	+	-	+	+
A. indica	+	+	+	-	-	-	-	+	+	-	-	-
A. mexicana	+	+	+	-	-	+	-	+	+	-	+	+
A. galangal	-	-	-	-	-	-	+	-	+	-	+	-
A. paeoniifolius	+	-	-	-	-	+	-	-	-	+	-	-
B.malabarium	-	+	+	-	-	-	-	-	-	-	-	-
B. laciniosa	+	+	-	-	-	+	+	+	+	-	+	-
B. pinnatum	-	-	-	-	-	+	-	+	+	-	-	-
B..monosperma	-	+	-	-	+	-	+	-	-	-	+	-
B.herbacea	-	+	-	-	-	+	-	+	-	-	+	-
C. arborea	+	+	+	-	-	+	+	+	+	-	+	-
C arudinaceum	+	+	+	-	-	+	+	+	-	-	+	-
C. cerratum	-	+	+	-	-	+	+	+	+	-	+	-
C. caesia	-	+	+	-	-	+	-	-	-	-	+	-
D. melanoxylon	-	+	+	-	-	+	-	-	+	-	-	-
E. scaber	+	+	+	-	-	+	+	+	-	-	-	-
E. hirta	+	+	+	+	-	+	+	-	+	-	+	-
F. limonia	-	+	+	-	-	+	+	+	-	-	+	-
F. racemose	-	+	-	-	-	+	+	+	+	-	+	-
G. gummifera	-	+	+	-	-	+	-	+	+	-	+	-
G. oppositifolius	+	+	+	-	-	+	-	+	+	-	+	-
G. superba	+	+	+	-	-	+	-	+	+	-	+	-
G. abyssinia	+	-	-	+	+	+	-	-	+	-	-	-
G. abutillifolia	-	+	+	-	-	+	-	+	+	-	+	-
G. sylvestre	+	+	-	+	+	+	+	+	+	+	+	-
J. adhatoda	+	+	+	-	-	+	-	+	+	-	+	-
L. longiflorous	+	-	-	-	-	+	-	-	-	-	+	-
M. indica	-	+	-	-	-	+	+	-	-	-	+	-
M. phillippencis	-	+	-	-	-	-	+	+	-	-	+	-
M .quadrifolia	+	+	+	-	-	+	+	-	-	-	+	-

@ECRTD-UK- https://www.eajournals.org/
Journal level DOI: https://doi.org/10.37745/ejbpsp.2014

M. pudica	+	+	+	-	+	+	+	-	+	-	+	-
M. charantia	-	+	+	-	-	+	+	+	-	-	-	-
M. oleifera	-	+	+	-	-	+	-	-	+	-	-	+
M. koenigii	+	+	+	-	+	+	-	-	-	-	+	+
O. turpethum	-	+	+	-	-	-	-	+	-	-	+	+
P. emblica	+	+	-	-	-	-	+	-	-	-	-	+
P. granautum	-	+	+	+	-	+	-	+	-	-	-	-
R.communis	+	+	+	-	-	+	-	-	+	-	-	-
S. indicum	+	+	+	-	-	+	-	+	+	-	+	-
S. sesban	-	-	+	-	-	+	+	-	-	-	+	-
S. cordifolia	-	-	+	-	-	+	+	+	-	-	-	-
S. cumini	-	+	+	-	-	+	-	-	+	-	+	-
T. indica	-	+	+	-	-	+	-	+	-	-	-	+
T. ammi	+	-	-	-	-	-	+	+	+	-	-	-
T. bracteata	+	+	+	-	+	+	-	+	+	-	-	-
W. somnifera	-	+	-	-	-	+	-	-	+	-	+	-
W. fruticosa	+	+	+	-	+	+	-	+	+	-	-	-
Z. mauritiana	-	+	+	-	-	-	-	+	-	-	+	-
Z. oenoplia	-	+	-	-	-	+	-	+	-	-	+	-

+ = Present; - = Absent;

DISCUSSION

The prevalence of variety of climatic conditions puts India in a supreme position with respect to richness of tribal medicinal flora. Tribal medicinal formulation are popular among rural and urbans of India. Interest on medicinal plant has been shown throughout the world because of the safe and effective on treatment on different diseases. The medicinal plants are used as cheap and safe remedies for various ailments by the tribal people. In our study all 50 plant species, among 50 plants, herbs are found to be (25) nos followed by tree (13) and 12 plants are shrubs. Different parts of plants like leaves, roots, rhizome, inflorescence, fruits, seeds, flower and bark are being used for different diseases like skin disease, asthma, Fever etc. The information recorded from medicinal healers that diseases like cough, skin diseases, wound, fever, asthma, diabetes, jaundice, Gastric stress, rheumatism, white discharge, jaundice, menstrual disorder indicates that the tribals of these regions possess good knowledge of medicinal drugs which found in natural form. The collective efforts of ethnobotanists, phytochemists, pharmacognostical and pharmacologists are needed to document and evaluate the efficacy and safety of the claims. To test the scientific validity of the herbal preparation or drugs, clinical studies are required to be conducted. This can establish therapeutic properties of these preparations for safe and longer use. The indigenous knowledge and uses of medicinal plants of a

particular area have to be analyzed to develop appropriate management measures (ex situ and in situ conservation) for best utilization of natural resources.

Phytochemical analysis carried on the plant extracts Revealed the presence of compounds which are known to exhibit medicinal as well as physiological activities (Sofowra et al., 1993). Analysis of the plant extracts revealed the presence of phytochemicals such as phenols, tannins, flavonoids, saponins, glycosides, steroids, terpenoids, and alkaloids. The phenolic compounds are one of the major and most ubiquitous groups of plant metabolites (Singh et al., 2007). They hold biological properties those are antiapoptosis, antiaging, anticarcinogen, antiinflammation, antiatherosclerosis, cardiovascular defense and improvement of endothelial function, as well as inhibition of angiogenesis and cell proliferation activities Tannins tie to proline rich protein also get in the way with protein synthesis. Flavonoids are hydroxylated phenolic substances known to be synthesized by plants in reaction to microbial infection and they have been found to be antimicrobial substances in opposition to wide range of microorganisms in vitro. Their performance is probably due to their ability to complex with extracellular and soluble proteins and to multifarious with bacterial cell wall (Marjorie et al.,1996) The plant extracts were also shown to contain saponins which are known to produce inhibitory effect on inflammation (Recio et al., 1998).Saponins has the possessions of precipitating and coagulating red blood cells. Some of the characteristics of saponins include formation of lather in aqueous solutions, hemolytic activity, cholesterol binding properties and bitterness (Sodipo et al., 2000). Steroids been reported tohave antibacterial properties (Raquel, F.E., 2007). Alkaloids have been connected with therapeutic uses for centuries and one of their common biological properties is their cytotoxicity (Okwu, D.E. 2001).

CONCLUSION

The data obtained in this study suggest that the identified phytochemical constituents may be the bioactive constituents and these plants are proving to be an more and more valuable reservoir of bioactive compounds of considerable medicinal merit. However there is need to further carry out advanced hyperated spectroscopic studies in order to elucidate the structure of these compound. Furthermore, this data may be handy in probing of the bio chemistry of these plants in the future.

Consent
It is not applicable

Ethical Approval
It is not applicable

Acknowledgements-
The authors are grateful to the tribals of Niyamagiri hill of Kalahandi district, Odisha of their indigenous knowledge throughout the field study.The authors are also thankful to the Head of the Department of Botany, Berhampur university,Berhampur for his kind help and support throughout the study.

Competing Interests
All authors declare that there were no conflicts of interest in relation to the work described in this paper.

References

Anima panda and Malaya Mishra (2011) have conducted ethno medicinal survey of medicinal plants by local herbal healers in south Odisha.

Anokwuru CP, Esiaba I, Ajibaye O, Adesuyi AO. Polyphenolic content and antioxidant activity of Hibiscus sabdariffa calyx. Research journal of medicinal plant. 2011;5(5):557–566.

B.Mishra, J. Bengal Art, Vol.9&10, 2004–2005, 383–410

Begum HA, Asad F, Yasseen T. Ethnomedicinal Study of Medicinal Plants of Village Harichand, District Charsadda, Khyber Pakhtunkhwa, Pakistan. 2nd ed. Vol. 2. ScinzerJournal; 2016.

Bora, R., P. P. Adhikari, A. K. Das, N. Raaman, and G. D. Sharma. "ethnomedicinal, phytochemical, and pharmacological aspects of genus acanthus". International Journal of Pharmacy and Pharmaceutical Sciences, vol. 9, no. 12, Dec. 2017, pp. 18-25,

Breslin, Andrew (2017). "The Chemical Composition of Green Plants". Sciencing, Leaf Group Ltd.

Current medicinal chemistry. 2004;11(11):1451–1460.

EL-Kamali HH, EL-Amir MY. Antibacterial activity and phytochemical screening of ethanolic extracts obtained from selected Sudanese medicinal plants. Current Research Journal of Biological Sciences. 2010;2(2):143–146.

EL-Kamali HH, EL-Amir MY. Antibacterial activity and phytochemical screening of ethanolic extracts obtained from selected Sudanese medicinal plants. Current Research Journal of Biological Sciences. 2010;2(2):143–146.

Fuller JL, Ginsburg BE, 1954, Effect of adrenalectomy on the anticonvulsant action of glutamic acid in mice, Am J Physiol, 176, 374-376.

Girach RD. Medicinal plants used by Kondh tribe of district Phulbani (Orissa) in eastern India. Ethnobotany. 1992;4(1):53–66.

Harborne AJ. Phytochemical methods a guide to modern techniques of plant analysis. springer science & business media; 1998.

Harborne, Jeffrey B.; Baxter, Herbert; Moss, Gerard P., eds. (1999). "General Introduction". Phytochemical dictionary a handbook of bioactive compounds from plants (2nd ed.). London: Taylor & Francis. p. vii. ISBN 9780203483756.

Harsha VH, Hebbar SS, Shripathi V, Hegde GR. Ethnomedicobotany of Uttara Kannada District in Karnataka, India—plants in treatment of skin diseases. Journal of Ethnopharmacology. 2003;84(1):37–40.

Heneman, Karrie; Zidenberg-Cherr, Sheri (2008). "Publication 8313: Phytochemicals" (PDF). University of California Cooperative Extension.

Jones VH. The Nature and Scope of Ethnobotany. Chronica Botanica. 1941;6(10):219- 221.Lai PK, Roy J. Antimicrobial and chemopreventive properties of herbs and spices.Lloydia. 1962;24:257-265.

Lyons AS, Petrucelli J (1987) Medicine an illustrated History. Harry N abranis Publisher, Abradale Press, New York.

Mohanty RB. Oral and dental healthcare in folklores of Orissa: An ethnobotanical observation. Ethnobotany. 2003;15:125–126.

Molyneux, RJ; Lee, ST; Gardner, DR; Panter, KE; James, LF (2007). "Phytochemicals: the good, the bad and the ugly?". Phytochemistry. 68 (22–24): 2973–85. doi:10.1016/j.phytochem.2007.09.004. PMID 17950388.

Mukjharjee , S.,pawar, N., Kulkarni, O., Nagarkar, B., Thopte, S., Bhujbal, A., Pawar, P.,2011. Evalution of free-radical quenching properties of standard ayurvedic formulation Vayasthapana Rasayana. BMC complimentary alternative medicine.

Nahak G, Sahu RK. Phytochemical evaluation and antioxidant activity of Piper cubeba and Piper nigrum.

Journal of Applied Pharmaceutical Science. 2011;1(8):153.
Orissa District Gazetteers, Kalahandi,
P.Mohanty, B. Mishra, Op. Cit,2000; C.R. Mishra, S. Pradhan, op. cit. 1989–1990, Infra, F.N.79
Periyasamy A, Mahalingam K. Phytochemical screening and antimicrobial activity from five Indian medicinal plants against human pathogens. Middle East Journal of Scientific Research. 2010;5(6):477–482.
Phillips O, Gentry AH, Reynel C, Wilkin P, Galvez-Durand BC. Quantitative ethnobotany and Amazonian conservation. Conser Biol. 1994;8:225-248.
Phytochemistry. 1989;28(4):1057–1060.
Pukalskas A. Isolation, identification and activity of natural antioxidants from sweet grass (Hierochloe odorata), costmary (Chrysanthemum balsamita) and horehound (Marrubium vulgare), cultivated in Lithuania. Thesis Wageningen University, 2008.
Saxena and Dutta (1975) have reported ethnobotany observations on 81 plant species.
Saxena HO, Brahman M. Flora of Orissa, Orissa Forest Dev. Corp, Bhubaneswar.
Schultes RE. The role of the ethnobotany in the Search for new medicinal plants.
Selah N, Miller NJ, Pagange G, Tijburg L, Bolwell GP, Rice E, et al. Polyphenolic flavonoids as scavenger of aqueous phase radicals as chain breaking antioxidant. Arch Biochem Broph. 1995;2:339–346.
Shekhar TC, Anju G. Antioxidant activity by DPPH radical scavenging method of Ageratum conyzoides Linn. leaves. Am J Ethnomed. 2014;1(4):244–9.
Sies H. Oxidative stress: oxidants and antioxidants. Experimental Physiology: Translation and Integration. 1997;82(2):291–295.
Singh VK, Abrar M (1990) Medicinal Plants and Folklores. Today and Tomorrow Printers and Publishers, New Delhi.
Singleton VL, Rossi JA. Colorimetry of total phenolics with phosphomolybdic- phosphotungstic acid reagents. American journal of Enology and Viticulture. 1965;16(3):144–158.
Smirnoff N, Cumbes QJ. Hydroxyl radical scavenging activity of compatible solutes.
Trease GE, Evans WC. Pharmacognsy. 11th edn. Brailliar Tiridel Can. Macmillian Publishers 0. 1989;5:10–15.
Vaghasiya Y, Dave R, Chanda S. Phytochemical analysis of some medicinal plants from western region of India. Res J Med Plant. 2011;5(5):567–576.
Wadood A, Ghufran M, Jamal SB, Naeem M, Khan A, Ghaffar R. Phytochemical analysis of medicinal plants occurring in local area of Mardan. Biochem Anal Biochem. 2013;2(4):1–4.
Xavier TF, Kannan M, Lija L, Auxillia A, Rose AKF. Ethnobotanical study of Kani tribes in Thoduhills of Kerala, South India. Journal of ethnopharmacology. 2014;152(1):78–90.

European Journal of Botany, Plant Sciences and Phytology
Vol.7, No.1, pp.7-27, 2022
Print ISSN: 2055-8139(Print)
Online ISSN: 2055-8147(Online)

European Journal of Botany, Plant Sciences and Phytology
Vol.7, No.1, pp.7-27, 2022
Print ISSN: 2055-8139(Print)
Online ISSN: 2055-8147(Online)