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Medico Botany of some anti Diabetics plants used in sculptures and rituals in Coastal districts of Odisha

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Abstract
Rituals are the part of Indian society from the Vedic period till now. Whole plant or plant parts like seeds, roots, stem, bark, leaves, flowers, and fruits are used by people of coastal district on odisha while performing different types of rituals belonging from ceremony of birth till mourning for death. They offer different plant materials to the diets. Hindu priests are also orthodox & conservative; they never accept a plant part as offering unless they are documented in an ancient religious litterateur. All these plant have curative values in different ailments. This knowledge is fast eroding because this knowledge is orally transmitted from generation to generation. Some local healers do not express this traditional knowledge to successors.
A survey was conducted on Hindu communities of coastal District of Odisha to explore the anti-diabetic plant parts used in different rituals. The present study attempts to document & enumerate the medico botanical relevance and traditional knowledge of some ant diabetic plant used in different rituals by people of coastal districts of Odisha. It is based on field survey carried out in villages in coastal district of odisha. The species used comprises 40 plants of 30 different families. Most important families are poacae, Arecaceae, Fabaceae. All these plants have medicinal value used by local healers in treatment of different ailments.

Keywords: Medico Botany, Ritual, Coastal Districts, Traditional knowledge.

Introduction
Odisha is one of the states of eastern India. Coastal undivided Districts comprise Cuttack, Balasore, Puri and Ganjam. From IST April 1993 coastal districts have been divided in to 11 different districts. These districts are Jajpur, Kendrapara, Jagatsingpur, Cuttack, Balasore, Bhadrakh, puri, Khorda,Nayagerh, Ganjam & Gajapati. These coastal districts are prone to cyclonic storm. These have long coastal area of Bay of bangle. The state of odisha has a coastline of 480 KM. And one of the most dynamic coastal environments in India due to its network of barrage, powerful rivers with their delta and estuarine systems., each with a variety of ecological niches and habitats. The coastline traverses six coastal districts of Odisha viz.-Balasore (80 KM), Bhadrak-50, Kendrapara (68), Jagatsingpur-67KM), Puri-156km, Ganjam-(60km). Being dotted with several natural lakes with the largest salt water lake chilika the coastal plains the vast tract of the coastal planes planes are the vast tract of fertile alluvial landmass.
Because of the very nature of the coastline of Odisha, there is only one natural harbour in Odisha, i.e. Paradip. It is the deepest natural port in the whole of India. With annual cargo handling capacity of 108.50 million metric tonnes, the port occupies the top amongst all major ports of the country. In terms of capacity. Chandabali, Gopalpur, and Dhamara are being developed in to ports on the Coastline of Odisha.
Odisha is a land of rich flora and fauna. The diverse topography of the state plays a significant role towards the sustenance a wide variety of flora and fauna in the stat. They show a great extent of endemism in their character owing to the natural habitats where they have been evolving for decades. Odisha great degree of biodiversity. The vegetation and wild life found in the coastal area of Odisha differs to a considerable extent from those available in the plateaus and plains, the back water lagoons like Chilika; the largest coastal lake of India is of great significance for the ecological and biological balance of the region. The islands surrounding the lakes are home for the millions of resident birds while the forest of thes islands attracts migratory birds.
Thes districts are famous for Maa Biraja in Jajpur, Baldevjew in Kendrapara, Babakhandalamani bhadrak, Lord Jagannatha in Puri, lord Lingaraja in BBSR, TaraTarini &

Thakurani Yatra in Ganjam etc. Not only Coastal Districts but also entire Odisha have vast natural resources and complex cultural diversity. Tree worship is earlier form of cult. Some anti-diabetic plants associated with different rituals have therapeutic utilities in treatment of diabetes in coastal regions. Local healers of these districts use these plants in treatment of diabetes. Some of which orally transmitted from one generation to other and some perish within that generation. This knowledge is not recorded in literature. The present study communicates medico botany relevance of some religious plants used in rituals.

As a proverb in India says that there is not a single alphabet which is not a "mantra" there is not a single root which is not a medicine. India is rich in medicinal biodiversity. Over 7500 species of Indian medicinal plants are known being synonymous with our cultural heritage. Though old as human civilization Pharmacognosy remained more than a science for several hundred years. It was left to the tribal medicine men, the 'witch doctor' "faith healer", to collect own herbs, prepare extracts from them and administer to the local patients. This indigenous knowledge how gained through a life time .such effects was quietly carried over by words to another of his own creed of the succeeding generation. This knowledge is remained under known to the scientific communities for several years, because of lack of proper documentation. Use of plant as medicine in India has been known since the period of Rig Veda (4500-1600 B.C). While an advanced account of drug plants in use appeared in "atharva Veda" (1500B.c). Reports claim that approximately one third of all pharmaceuticals are of plant again. It is estimated that nearly three fourth of the drug plants mentioned in various pharmacopoeias of the world are endemic to India. In spite of the considerable advances made in the pharmaceutical science, especially in synthetic chemistry. Plants and their derivates continue to remain their significance in medicine. Herbal remedy, a kind of treatment of illness using various plant parts (commonly referred to us Ayurveda/ unani/ sidha system of medicine) is now going importance among the people of developed countries. In fact, modern people are now sharing increased interest in natural drugs in preference to synthetic ones. Primarily because of high degree of adverse side effects associated with the latter. Herbal cure now a day has worldwide acceptance mode of use of such plants used in rituals and in treatment of diabetes as based on ethno botanical studies (Folklore claims of Orissa) as well as clinical trials.

Diabetes (Madhumeha) used known to India in ayurveda since about three thousand years as old as in which a person (patient's) urine sweet enough which attracts flies and insects. Sushruta (great Indian physician) diagnosed diabetes during 1000 BC. This is due to deficiency of secretion of hormone antidiuretic hormone (ADH). It result passage of very large volume of dilute urine. It is called diabetes inspidus.In diabetes mellitus blood sugar level increased. It result excess sugar in urine. This is due to deficient in secretion of insulin.

Several synthetic drugs like to lbutamide, phenorformin etc are applied externally. But these only had temporary effects and more adverse effects are noted. Therefore alternatives were sought in plants and herbal treatment of diabetes using harmless plant based products gained momentum. Nevertheless, such treatments more effective. Different vernacular names are given (in Oriya, Hindi. Bengal, tribal names) for easy identification by local habitats. Local habitats are consulted for locating & procuring such plants. Occurrence in India, identifying features, chemical constituents, mode of use in diabetes is recorded from the folklores and some are clinically verified. Specific proven uses of these medicinal plants in diabetes are provided some of which have not been reported earlier.

Methodology

Odisha extends from 170 49 N to 220 34N latitude and from 81027-e to 870 29 E longitude on the eastern coast of India. It is 9th largest state by area in India & 11th largest by population. The state population is estimated to be 4.37 crores in 2014 (41,947,358). It is bounded by the states of west Begle on the north and Bay of Bengal on the East. The coastal district lies between longitude-21^{o}3$^{'}$-18^{o}4$^{'}$N and latitude-86^{o}20$^{'}$-84^{o}12$^{'}$E. The population of the district is about-(balasore-2,317,419,bhadrakh-1,506,522.cuttack-2,618,708,Gajapati-575,880,gnjama-3,520,151,Jagatsingpur-1,136,604,kendrapara-1,439,891,khordha-2,246,341,Nayagarh-962,215,Puri-1,697,983. All districts are covered with dense forest and long range of hills. Which are the home of wild animals and plants. These districts have long seashore and prone to natural calamities. About 90% of people live n villages and most of them have occupation is agriculture. In undivided Cuttack district is inhabited by tribal communities, which have a vast source of traditional knowledge. Some important tribal communities are munda, kolha, Bhumija, santal, Shabar, Bathudi, matya, mankidia, Juanga $^{'}$population of District. It is 98% of total tribal population of district.

Climate of this district is warm and humid. Three seasons are felt during the year. Rainy from middle June till Oct. winter is from mid Nov. to Feb. And summer March to June middle. Annual average rainfall is 15.2 to 16.4 mm. Average temp is 37^{o} c to 19^{o} c.

Study carried out in 34 villages of different district. The survey conducted in the year 2011-12 to study the use of antidiabetic plants in rituals in coastal districts of Odisha. Local knowledgeable person, temple priests, Vedic Brahmins, villagers, local healers and aged person both men and women are interviewed to collect information mode of use of concerned plant in rituals. These persons are consulted to recording of local name, parts used in diabetics and rituals. Group discussion with local inhabitants revealed is very valuable and specific information about the plants. These are futer authenticated by cross checking. In addition to cross cross checking. In addition to cross checking and recording folk names of the plant through collecting information cited on ancient text (Dikshitar 1951, Dutta 1908, Ganguli 1976, Gupta-1971; Manmath-1967,`Sen Gupta-1965, Shastri-1970; sitholey 1979; Wilson 19761; sensarma 1989) is studied.

The floristic composition of neighbourhood districts were thoroughly examined and plants being used in rituals and used in treatment of Diabetes were studied, identified & described. Chemical constituent, mode of use are recorded from the folklores & arranged in tabular form. Some of these are clinically verified. Specific proven use of these antidiabetic plants are provided, some of which have not repoted earlier (sarangadhara, charaka sahmita, sushruta sahmita, Indian pharmaceutical codex. As per as possible, the latest Botanical Botanical names have been adopted (Saxena & Brahmam 1994),. Local names in Odia is given in order that the natural habitats could he contacted for locating and

procuring such plants. Specimens are collected by guidance of inhabitants, local helears and temple priests. They proned in to specific size, dried, pressed on herbarium sheet and stored after poisoning in herbarium of S. G college for futer reference.

Results and Discussion

A total of 40 plants belonging to 30 families and 28 Genera were identified as being used in rituals and diabetes. Large number of antidiabetic plants used in rituals are belongs to family Arecaceae, poaceae. It is fascinating to note that all these offerings posses' therapeutic values. Some of antidiabetic plants used in rituals are enumerated here with details mentioning their botanical names, vernacular names, in odium, Sanskrit, zhindi along with mode of use for diabetes.

The traditional knowledge of the people on medicinal plant reported has revealed the truth that the knowledge of different age group varies with gender, age. Old women are knowledgeable than old men. Aged person are more knowledgeable than. *Santalum album*, *cynodon dactylon*, *Mangifera indicia*, *Areca catechu* & *cocoas nucifera* used in almost all rituals

It can be concluded that coastal district of Odisha is rich in wide variety of plants and people of coastal region not only familiar with the knowledge of plant species in their eco system but also understand the ecological interaction for the various components of their resources. Such cultural act ivies of them & ritual practices reflect the interdependency and keep harmony with biodiversity of the sorroundings. The present study of the traditional knowledge of the people of coastal belt will help in wide spreading of knowledge for long term of consumption of plants in the temple premises, club, school, campus, open fields, villages and for futer generation.

Enumeration-

Sl.No	Name of plant	Local Name	Family	Part used & name of Rituals	Chemical constituent & Mode of use in diabetes
1	*Aegle marmelos* (Linn.)corr.	Bela	Rutaceae	Leaf/Worshiping Lord Shiva and other Goddes	Essential oil, aegelenine and and aegeline; tannins, phlobotannins, flavan-3-ols, Leuco-anthocyanins, anthocyanins, flavonoids, glycosides, skimmianine, β-sitosterol, rutin, marmecinin.-tender leaf juice (10ml) with 2-3 drops of honey is given twice daily (evening and morning) on empty stomach.
2	*Azadirecta indica* A.Juss.	Neem/Margosa(E),Nimba/Limba (O),Neem(B)	Meliaceae	Leaf,Seed Funeral and DaruBrahma	Flavonoid, meliasin flavonone, meliacinsolannolide, solannin, triterpenoidnimocinol, azadiractanin, tetranortriterpenoid isoazaditolide, nimbocinolide.seeds contain nimbolin a& B nimbinene triterpenoids3-α-acetoxy-1-hydroxyazadirachtol.-seven tender leaves prescribed daily.six seeds made in to paste with 50ml rice wash and 1 mlghee given after meal.
3	*Areca catechu* Linn.	Gua(O,S)Supari/kasali(H),supari /gua(B)	Arecaceae	Fruit(nut) All rituals	Tannin, alkaloids, oil, polyphenols, flavonoids, imp. Alkanoids are-arecoline, arecaidine, arecolidine, guvacine, guvacoline, isoguvacine, norcarecaidine and norarecoline-decoction of nut(15g) mixed with 5 g of old jagery is given once daily for 7 days .
4.	*Benincasa hispida*	Pani-kakharu(o), ash gourd(E),kumra/chalkkumra(B)	Cucurbitaceae	Leaf& Fruit in Chuli Puja and Durgapuja	B-sitosterol,luepol, n-triacontanol, amino acids(arginine, aspartic acid, glutamic acid, asparagines, glutamine, proline, hydroxyl proline, isoleucine, L-leucine.)-Fruit juice (20ml) with seed power (1g) of syzygium cumini) is given two times in a day for one month.
5.	*Butea monosperma* (Lam.) Taub.	Palasa(H,B)Dhak(H),palasha(o)	Fabaceae	Leaf,Wood,Yangya	B-sitosterol-Leaf juice (10ml) is admistered once a day for 5-10 days on empy stomach. It reduces blood sugar
6.	*Bambusa arundanasia* (Retz.) Willd.	Kanta Baunsa (o),kantabanas(B)Bans(H)	Poaceae	Root and leaf-in funeral,Marriage Brataupanayana etc	You leafy shoots contain cyanogenetic glucoside.-Decoction of root (20g) leaves (15g) once daily for 10 dars.
7.	*Calotropis gigantia*(linn.) R.Br.ex Ait	Arakha/Akanda(o)Akanda(B), ak/Mudhari(H)	Aclepiadacea	Flower	Esters of α&β-Calotropols, fatty acids.-Decoction of flower910) ml along withthe rhizome juice(3ml.) of Haridra(Cucurma longa) is given two times daily for 15 days
8.	*Crateva magna* (lour.)DC.	Baruna(o),Barun(H & B)	Capparaceae	Bark,in funeras	Ceryl alcohol, friedelin, betulinic acid and diosgenin, sitosterol glucoside, cadabacine,cadabicineiacetate,glucocapparin, lupeol, tannin, saponin-Decoction of bark(5g) of this plant and juice of the leaves (19g) of gymnema sylvestre) is given.
9.	*Cynodon dactylon*(linn.) pers.	Bahama grass/conch grass(E),dhub grass,Duba ghasa,	Poaceae	Whole plants/All rituals	The juice of the whole plant along with the rhizome (15 ml) is given two times a day for 15 days.

		Hariali/ Duba(H); durba(B);			
10.	*Cucurma longa* Linn.	Haladi/haridra(o),Halad(B),Haldi (H)	Zingiberaceae	Rhizomea-All rituals	Essential oil, cucumin,,β-termenone, dimethoxy curcumin, bis-demethoxy curcumin, neutral polysaccharide ukonan D-15-20 ml of juice of the rhizome with equal amount of Phyllanthus emblica is given 3 times in a day for 15 days.
11	*Cocos nucifera* Linn.	Coconut(E)Nadia/narikela(O), Nariya(H), Dab/Narikel(B)	Arecaceae	Leaf, Fruit milk,fibre	Albumin and globulin and amino acids-Coconut milk of young fruit prescribed for one month
12.	*Euphorbia lingunaria* Roxb.	Common milk hedge(E) patra siju/Manasa-Siju(O),Manasasij(B)	Euphorbiaceae	Twig,In Chulipuja	Triterpenes-cycloartenol, cyclolaudenol, anthocyanins, steroids.-10g root juice along with 5g of stem juice of Guduchi (Tinospora cordifolia) is given every morning for 15 days.
13	*Ficus religiosa*	Peepal/Bo-tree(E); Osta/Aswatha(O)papal(H)aswath (B)	Moraceae	Unripe fruit/ Funeral	Lauosterol, stigmasterol, tannin-Unripe fruit boiled & made in to paste (10g) with pinch of rock salt and jeera (Cuminum cymiinum) powder given once daily for atleast 15 days.
14.	*Ficus bengalensis Linn.*	Baanyan tree(e),Bara(o),Bat/Bargad(H);Baur(B)	Moraceae	Bark, Laticiferous sap, twigs-twigs used as panchapallava,worshipeed as kalpa bata	Bark cpontain leuco-anthocyanins, leaves contain quercetin-3-galactoside, rutin and β-sitosterol, ripe figs contain glycosides-an infusion of bark 10g mixed with 5g old jagery ued once daily for 10-15 days. Laticiferous sap is effective in controlling diabetes and increase capacity pancreatic cells
15.	*Ficus recemosa Linn.*	Gular fig/ Cluster fig/country fig(E);Dimiri(o);Gular(h); jagya-dumur(b)Udumbaru	Moraceae	Frit, twigs-twigs used in panchpallava	Glycosides, tetracycliriterpene glauanol-a paste is made out of 50g of unripe fruit with equal quantity of fine rice given with normal leaf for 2-3 months
16.	*Gnelina arborea roxb.*	Gumbar tree, white teak(E), Gambhari/Bhadrapani(o);Gamhar/ khambari(H)Gamari (B)	VERBENACEAE	Leaf-dasamula of Jagannatha	Apigenin, quercetin, hentriacontanol, b-sitosterol and luteolin.-juice of young leaf with 2-3 drops of honey is given three times day after food for 10 days to rectify the eyesight problem due to diabetes. (diabetic retinopathy).
17.	*Hibiscus rosa- sinensis Linn.*	China rose/Chinese hibiscus/shoe flower(E);Mandara(o)joba(B);jasum(H)	Malvaceae	Flower, petals. Used in worship of devi	Anthocyanin pigment, cyaniding diglucoside.-Infusion of petals 5-10ml is given.
18.	*Melia azadirecta*	Bread tree(E), Mahanimba(o), Mahanimba/Bakayan(H)Ghoranim(B);	MELIACEAE	Root, Leaf-in funeral, darubrahma	Flavone glycosides apigenin 5-0galactioside. Root bark contain cytotoxin azadirectin- type limonoids-meliacarpinins5g root powder mixed with 10 ml of fresh amalaki , juice of (Phyllanthus emblica) isan effeive medicine for diabetes
19.	*Moringa oleifera Lam.*	Horse-radish tree/Drum-stick tree(E); Sajana, Muniga(o);sainjana(H); sajna(B)	Moringhaceae	Leaf and fruit	Aspartic acid, glutamic acid, glycine, threonine, alanine, valine, isoleucine, histidine, lysins, methionine. Pods contain globulins and prolamine. Seeds contain glycoside moringyne.-frut juice 15-20 ml along with a pich of old jiggery is given once a day for 15 days per year.
20.	*Mangifera indica*	Amba	Anacardiaceae	Base of petiole/aal rituals	Triterpinoids (Mengiferin, taraxerone, taraxerol, β-sitosterol), flavonoids,

					phenolic compounds, & tannins.- Seven leaf petiole base are made in to paste and given with glass water for 21 days.
21.	*Nelumbo nucifera* Gaertn.	Padma/Kamala(O)Kanwal(H); Padma/ kombol(B)	NYMPHAEACEAE	Flower/Laxmipuja/Durga puja	Oxoushinsunine,n-norarmeparine, isoliensinine, neferine, armepavine and 4-methyl-N- methylcoclaurine.-10g of seeds fried within ghee and mixed with 2g of jagerry eaten once daily for 30 days before sunrise to check impotency during this disease.
22.	*Neolanakia cadamba(Roxb.) Bosser*	Kadam(e); Kadamba/Badakadamba(o), kadamb(H), kadambo/kadam(B0	Rubiaceae	Bark,Fruit and flower/Rasalila of Krishna	Saponins cadambagenic acid and quinovic acid, β-sitosterol and 4 saponinsa, b c.d. steroids, tannins-5-6g of powdered bark orbark juice or unripe fruit (50-100ml) is prescribed two times in day after the meal for atleast 7 days.
23.	*Ocimum sanctum linn.*	Hly basil/sacred basil(E);Tulasi(o);kala tulsi/Tulsi(H);kalo-tulsi(B)	Lamiaceae	Root.Leaf-Leaves used in worship of Bishnu/Jagnnatha, in funerals	Roots contains glycosides,saponins, tannins,leaf contain volatile oil, ascorbic acid essential oil having methyl chavicol, camphor, β-caryophyllene, eugenol, caryophyllene, camphene,α- pinene etc.-Decoction of root or leaf or both is given daily at evening fofr one month to excees urination.
24.	*Punica granatum*	Pomegranate,(E)Dalimba(O),Onar/Dhalim(H), Dalim-gachh(B)	Punicaceae	Fruit rind, root bark/in durga puja	Tannins- Punicalagin& Punicalins. Bark contains ellagitannins- punicacorteins A-D, Punigluconnin, casuariin, casuarainin, punicalins, punicalagin & pullestierine.-Root bark and fruit rind ground in equal proportion and the paste (10g) is given twice a day to check excess urination (polyuria).
25.	*Polyalthia longifolia (sonn.) Thw.*	Mast tree/ cemetery tree(E); Devadaru(o);Devdari/asoka(k0(H); debdaru(B)	ANNONACEAE	Bark,Leaf-twigs are used in decoration in all rituals	Diterpene butenolide,stepholidine,onychine, darienine,6,7 dimethoxyonychine, β-sitosterol, leucocyanidin, noroliveroline, oliveroline-β-N-oxides, darienine, polytothine, iso-oncodine.-Decoction of the bark 50g mixed with the leaf powder 2-3g of Madhunasini(Gymnema sylvestre) is admistered.
26.	*Saraca asoca*(Roxb.) de Wilde.	Ashoka	Caesalpiniaceae	Flower	B-sitosterol, quercetin, leucocyanidine, gallic acid & kaempferol.-Leachates of flowers along with 5g of old jiggery is given with 50ml cow milk in the morning for one month.
27.	*Sida cordifolia*	Bajramuli/Bisiripi(O)Country mallow/Sida(E)Khareti/kunngyi(H), Bala/Brela(B)	Malvaceae	Roots/InBata osha	Acylsteryglycoside sitoindosida, ephedrine.-Root powder (2-3g) with one glass of milk given daily is effective in reducing blood sugar
28.	*Santaluum album* Linn.	Chandan(O,H,B)Sandal wood(e)	Santalaceae	Heart wood,In all rituals	Sanda oil, which ketosantalic acid, and exo- norbicycloekasantalal.-5g paste with water mixed with seed powder of methi (Trignonella foenum-graecum),is given 7 days.
29.	*Syzygium cumuni (Linn.)Skeels*	Black plum/Java plum(E); Jammu/Jamu-koli(o);Jamun(H)Kala-Jam(B)	MYRTACEAE	Leaf,Fruit,seed-In panchapallava in Ghata puja	Leaves contains α-pinene, β-pinene, limonene, cis-ocimene and trans – ocimene. fruit contain anthocyyanins delphinidin-3- gentiobioside, malvidine-3- laminaribioside. Seed contain oleic, myristic, linoleic, stearic, vernolic, lauric, sterculic and malvalic acids.-10g of leaf boiled with Madhunasini (Gymnema sylvestre) are boiled in 500 mi of water till it is reduced to 50 ml.filtred and given with 5g of jiggery daily for two months./5g fruit pulp or

					dried powder1-2g is given twice daily for 15 days.seed powder 1-2g is given twice daily is more effective than fruit.
30.	*Sida spinosa Linn.*	Prickly sida(e), Bajramuli(o), bariyaral/ culsakari(HH),Bon methi/Gorakchaulia(B)	Malvaceae	Roots, whole plant in Bata osa.	Alkaloids β-phenethylamines, quinazolines, carboxylated tryptamines; alkaloid cryptolepine, ephedrine, phytostrol,α-amyrin, ecdysterone.- decoction of root (50ml) given twice daily for 15 days.
32.	*Sesssamum indica Linn.*	Sesame/Gingely(E),Tila/Khasa(o);Til(H), Tilo(B)	PEDALIACEAE	Seed.in funeral(tilatarpan)	Furofuran lignans-sessamolin and sessangolin, antioxidant-sessamolinol, sesamol and ¥-tocopherol. Seeds contain sesamin and sesamolin.-seeds with equal amount of fruits of draksha(Vitis vinifera), amalaki(Phyllanthus emblica) and ?Haritaki(Terminalia chebula) are ground to prepare a mixture.5g ofmixture mixed with fruit juice of avighnah (Carissa carandas) for a period of 15 days.
33.	*Terminalia belerica(*Gaetn.) roxb.	Bahada(O)Bahera/Bairah(H)Boh era/Bahera(B),Belleric myrobalan(E)	Combretaceae	Fruit/in Marriage	Hexahydroxydiphenic acid ester β-sitosterol, gallic acid ellagic acid, ethyl gallate, galloyl glucose, chebulagic acids. Fruit pulp contain cardioglycosides bellericanin. Kemel contains non edible oil.-Fruit powder 1-2g is givenwith hot water twice a day for six months.
34.	*Terminaliachebula Retz.*	Black myrobalan/chebulic myrobalan (E), Harida(o)Harara(H)Haritaki(B)	Combretaceae	Fruit-In marriage	Phenolic compounds, punicalagin, terflavin A, ellagitannin tercheulin, terchebin, gallic acid
35.	*Tribulus terrashis Linn.*	Land calotrops/Puncture-vine(E);Gokhara(o)Gokharu/chot agokhru(H)	ZYGOPHYLACEAE	Fruit, in Dasamula osadi of Lord Jagannatha	Kaempferol, its 3- glucosides, its- rutinoside and tribuloside, steroidal saponins-terrestrosin A-E-Infusin (15ml) of matured fruit is prescribed early in the morning in early stomach.
36.	*Vigna pilosa Baker*	Sana-muga(o),Ban-mung(H),mugani(B)	FABACEAE	Seed,Inprasad in all rituals	100g of seed with Momordica charantia are boiled and given once in a day for five days
37.	*Cumis sativum Linn.*	Cucumber/(E)Kakudi(O)Khira(H), Sasha(B)	Cucurbitaceae	Fruit, seeds-In Prasad in all rituals	Sterols, fatty acids, triterpene alcohol.2g of seed pasted with liquorices (Glycyrrhiza glabra) is given daily for 15 dayus.
38.	*Pandanus fasciculanes lam.*	Screwpine(e), Kia/ketaki/indu-kalika/ Jambula(o)keora(h),kataky(B)	PANDANACEAE	Root,rhizome and flower-flower is used in worship of lord siba in Sibaratri.	Rhizome contain physcion, cirsilineol, n-triacontanol, β-sitosterol, stigmasterol, campesterol, daucosterol and palmitic and stearic acids
39.	*Piper nigrum Linn.*	Black piper(E);Golamaricha(o);Golmar ich/Golki(H);kalomorich(B)	PIPERACEAE	Fruit- In Bisuva Sankranti Belapana	Amide- pipericide, oleoresin, alkaloid piperine, volatile oil.- 5 g of fruit pounded with Bimbi(coccinia indica) and paste is administered fro one month.
40.	*Zingiber officinale* rocs.	Ada/sunthi(o), soth(H),Sunti(B)	Zingiberaceae	Rhizome,In all rituals	Diarylheptanoids, essential oil, ginger diol, zingiberrneol, myrcene, limonene, p-cymene,oleoresin gingerin, paradol etc.-half tea spoon of the rhizome powder with a half boiled egg prescribed at night for a month.

Sculptures in Mahavinayak hanuman temple

Herbarium of *crataeva magna*

Sculptures in Kakatapur

Cynodon dactylon Herbarium

Herbarium of *Melia ajadirta*

Cynodon dactylon Herbarium

Sculptures in Kakatapur

Sculptures in Kakatapur mangala temple

Belabarani in Durgapujamangala temple

worshing of *Mangifera indica* in Bakula Amabasya

Sculpture of *N. Nucifera* in Mahavinayak

Use of Leaves of *F. Religiosa* in funeral

Ficus religiosa

Use of *Sida cordifolia* in Bata/Yamaraja osha

Ficus bengalensis

Yangyakarma

Goddess kali

Map of Odisha showing study area

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