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TO LOUGH # NOIO	WEB BASE GIS SURVEY OF MAJOR AVAILABLE MEDICINAL PLANTS OF JAYNAGAR -1 BLOCK, SOUTH-24 PARGANA, WEST BENGAL, INDIA.
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(ABSTRACT) Jaynaga	r-1 is a block of South-24 Pargana district in the Indian State of West Bengal. The town of Jaynagar is an ancient he name of Jaynagar came from the name of the local goddess "Joychandi". Gradually during the course of time it

place. The name of Jaynagar came from the name of the local goddess "Joychandi". Gradually during the course of time it became "Joychandinagar" and then "Joynagar" or "Jaynagar". Knowledge of medicinal plants and their uses as medicine has been a part of the culture of Bengal since ancient days. Though, very little information exists on the flora in general of our concern area, and medicinal species found within its particular periphery. It is urgent to document this information before such valuable plants gets extinct during the course of urbanization. Identification, mapping using Arc GIS 10.5 and findings of medicinal importance from available literature of the naturally occurring medicinal plants of Jaynagar -1 South-24 Pargana, West Bengal, India is our main concern.

KEYWORDS: Jaynagar, South 24 Pargana, Medicinal Plants, Arc GIS 10.5

1. INTRODUCTION

Traditional medicine is still one of the main resources for majority (80%) of the people in developing countries for treating health issues, particularly because medicinal plants are easily available and cost effective (Dey et al., 2014). India is very rich in biodiversity and is one of the 12 mega diversity centers. In Indian culture, plants are taken as resources as well as with sacred considerations. The plant parts used, preparation of drugs varies from one place to another. Though, the knowledge of herbal medicines is gradually abolishing, but some of the traditional herbal people are still working on the art of herbal healing efficiently (Biswas et al., 2017). These plants are often used by the local inhabitants of the area for treatment of various diseases. It is very interesting that some modern drugs have been deducted from folklore and traditional medicines. Staying close to nature, traditional societies have gathered the unique knowledge about the utilities of wild flora. After several years of observations and analysis, trials, error, human communities have discovered the useful and harmful species of the flora. The importance of traditional knowledge is now increasingly popular all over the world. The pharmaceutical industry continues to explore and confirm the efficacy of many medicines used by traditional communities (Verma et al., 2007). Conservation of medicinal plants from bio-cultural point of view is significant for bothconservation of biodiversity and also for the conservation of cultural diversity. Proper conservation of Medicinal Plants need proper mapping of their habitat. Determination of the spatial location is a prerequisite for the exact habitat and conservation of the medicinal plants (Biswas et al., 2017). GIS can be used as a map maker. Plant species exact area can be identified through the software Arc GIS 10.5 for visualizing and analyzing, creating data with a geographic tool.

The use of spatial analysis within GIS proved effective in providing maps of spatial distribution of Medicinal plants in relation to landscapeand anthropogenic factors (*Biswas et al.*,2017). Different functions of GIS could be used to generate digital layers enable us to extract data and to export them for further statistical analysis and comparisons, which would save time and cost of analysis in these studies (*Qayum et al.*,2014). Utilizing GIS capabilities to identify the species diversity along various altitudes (*Behera et al.*,2005) and findings of economically important medicinal species were carried out by intersection of different GIS layers of vegetation, biogeography and altitude zones.

2. Materials and Methodology:

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The study was conducted in the pre-monsoon season during May, 2018.Based on primary data observation and documentation of the

species which were obtained from field survey of the study area; mostly those species were collected which are unique, having medicinal value and special benefits. The sampling was done among all the trees, herbs and shrubs found in the study area. While collecting data, photographs of certain species were taken for reference.

2.1 Study area:

Jaynagar I is a Community Development Block that forms an administrative division in Baruipur subdivision of South 24 Parganas district in the State of West Bengal, India.Jaynagar I CD Block is situated at 22°10′38″N88°25′33″E. It has an average elevation of near 8 metres (26 ft). Jaynagar I CD Block is encompassed by Baruipur CD Block in a part of the north Canning I CD Block in parts of the north and east, Kultali CD Block in a part of the east, Jaynagar II CD Block in the south, and Magrahat II CD Block in the west. It is 38 kilometers (24 mi) from Alipore, the district headquarters. As per 2011 Census of India, Jaynagar I CD Block consisting a total population of 263,151, among which 216,829 were rural and 46,322 were urban. There were 134,966 (51%) males and 128,185 (49%) females. Jaynagar I CD Block registered a population growth of 18.21 per cent during the 1991-2001 decade. Decadal growth for South 24 Parganas district was 20.89 percent (Handbook, D. S.,2009).





Figure: 1. Location of the study area.

2.2 Sampling Informants:

It was planned to cover at least one Kabiraj/Ayurved/hakim/Unani practitioners in the block. Other than that local people who had knowledge on medicinal plants have been interviewed. Ethnomedicinal data were collected through general conversations with the informants. The questionnaires were used to obtain data on medicinal plants with their local names, parts used, mode of preparation and application. A total of 15 informants, comprising 10 males and 5 females were selected between the ages of 30 to 80. They were selected based on their knowledge of medicinal plants.

2.3 Data Collection:

During the survey, all together 90 plant species with medicinal properties have been identified and recorded and studied in detail from 15 separate fields of Jaynagar-1 Block of the South 24 Parganas district. All the herbarium specimens are kept. The GIS based survey is conducted covering almost 50 kilometers area of the block and was mainly concentrated on naturally occurring Medicinal plant species. To evaluate plants medicinal importance belonging to different families and plant parts used for the treatment of the different diseases bar graphs pie charts has been drawn for plants present in various habitats.

2.4 Methodology:

Study is based on collection of ethno-medicinal utilities of plants based on two sources traditional knowledge in the local habitants and Kabiraj/Ayurved/hakim/Unani practitioners' available and relevant literatures including various research papers, books & journals to obtain. For geographical location; GPS (Global Positioning System) coordinates were recorded. The GIS Maps were generated through satellite imageries, plant location description and GPS observations using ArcGIS 10.5 (*Biswas et al.*, 2017).

2.5 GIS Mapping:

The distribution of Medicinal plants is mapped based on references drawn from available literature, operational land imager satellite imagery and limited field verification using GPS. The data collected from mentioned sources is integrated in ArcGIS 10.5.

1. Results and Discussion:

Our concern area Jaynagar Block-1 is one of the 29 blocks of South 24 Paragana. South 24 Paragana is very rich in flora and fauna, but yet to be explored a lot. Though South 24 Paragana is very rich in the treasure of the medicinal plants but still it is to be documented. Our work is not purely ethnobotanical in nature but amalgamation of ethnobotany & GIS. It can be called work of ethnography. Ninety plants belonging to 31 families were recorded and their medicinal importance, used parts, habit are illustrated [File:1]. It was analyzed that the Medicinal plants of the members of Asteraceae, Euphorbiaceae, Lamiaceae, Malvaceae, Fabaceae, Acanthaceae, Amaranthaceae being predominant (Fig:2). Among the Medicinal plants herbs are the most predominant in natural distribution, where as shrub, tree, climbers are chronologically less (Fig:3). The plant parts found important are mostly leaves, root, bark and sometimes the whole plant (Fig:4). The sampling found that the plants recorded from the site are highly valuable for medicinal uses in Nerve problem, Stomach problem, Skin related problem, Fever and related problems, Diabetes, Wounds, Sexual disease, Respiratory problems broadly(Fig:5).







Fig: 3Different habit of naturally occurring Medicinal Plants







Fig: 5 Plants Medicinal implementations in different categories if diseases.

The exact study area covered in the Jaynagar -1 block is mentioned (Fig:6). Plants found in specific locations are also shown in the Arc GIS Map. The distribution of plants are found in burial ground, crematorium, waste or open areas and along railway tracks, distributed in moist waste places, crop fields and along roadside. The covered area shows several points in the GIS map which typically represent the collection points (Fig:7). By clicking on each point from the web portal we can see the binomial of the plant along with its distinct photographs (Fig:8). These developed maps highlight the geographical location of Naturally occurring medicinal plants and facilitates easy access of plant's natural habitat(Fig:8,9). The collected plant data has been charted (File:1) in order of plant species, plant family local name & plant habitat. Mapping is done to minimize cognitive and perceptual burden of complex data sets.

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Fig:7. Survey area and Collection points in Arc Map.

Plant List (File:1):







Fig: 9.Arc Map showing the collected medicinal plants (Xanthium strumarium) binomial in a particular point.

Abutilon indicum (Link) Sweet.	Malvaceae	Potari	Leaves, Whole plant	SH	Used as abortifacient, aphrodisiac, boil, bone fracture, bronchitis, child birth, colic, convulsion, cooling agent, and in the treatment of cough, diarrhea, dysentery, gonorrhea, headache, leprosy, paralysis, piles, purgative, stomach complaints, ulcer, arthritis and wounds.
<i>Acalypha indica</i> L.	Euphorbiaceae	Muktojhuri	Leaf	Н	Used for treating intestinal worms, gum problems, stomachaches, hernia, rheumatism, bronchitis, asthma, pneumonia, scabies and skin diseases.
Achyranthes aspera L.	Amaranthaceae	Chorkanta	Different parts including seeds	Η	Used for treating anti-fertility in women, asthma, bleeding in delivery, boil, bronchitis, child birth, cold, cough, disability, dropsy, dog bite, dysentery, ear complaints, head ache, hydrophobia, insect bite, leukoderma, liver complaints, pain in ribs, body, piles, pneumonia, renal complaints, rheum, scabies, scorpion bite, skin diseases, snake bite, sore, stomach ache, syphilis, tooth ache, whooping cough, wounds and eye complaints.
Alternanthera sessilis(L.)DC.	Amaranthaceae	Sanchi sak	Leaves, stem	Н	Used in bone-fracture, eye complaints, hydrophobia, diarrhea, dysentery, malarial fever and night blindness.
Ageratum conizoides L.	Asteraceae	Not Known	Leaves	Н	Used for treating boils, burns, cuts, diarrhea, head ache, leprosy, muscular pain, piles, prolapsed anus, ringworm, scabies, skin diseases, snake bite, sores, body swelling, tumor, uterine disorder and lice in hairs.
Amaranthus spinosus L.	Amaranthaceae	Kanta note	Root, Leaves	Н	Plant root is an effective diuretic, a decoction of the root is used to treat gonorrhea and is also applied as an emmenagogue and antipyretic.
Amaranthus viridis L.	Amaranthaceae	Note	Root, Leaves	Н	The boiled leaves and roots given to children as a laxative.
Aniosomeles indica(L.)Kuntze.	Malvaceae	Not Known	Whole Plant	Н	The plant is used in the treatment of rheumatism, colds, fevers, abdominal pain, skin sores, and snake bites.
Areca catechu L.	Arecaceae	Supari	Fruit, Leaves	Т	The plant is used as a diuretic, digestive, anthelmintic, astringent, and cardiotonic.
Asclepias curassavica L.	Asclepiadaceae	Bon kapash	Root, Whole plant	SSH	A decoction of the entire plant is used as an abortifacient. The roots are commonly known as "pleurisy root" and used as an expectorant for pneumonia and pleurisy and other lung problems.
Bacopa monnieri L.Wettst.	Scrophulariaceae	Bramhi	Leaves, Whole plant	Н	The plant is used as adaptogenic stress reducer, anti-anxiety & antidepressant, memory improvement, Alzheimer's disease & dementia treatment., epilepsy treatment, chronic pain minimize, blood pressure regulator.
Blumea lacera (Roxb.)DC.	Asteraceae	Kukurmut	Leaves and Root	Н	The plant is effective in the remedy of burns, cuts, wounds, bronchitis, fever, piles, toe injury, urine complaints, and fish poisoning.
Boerhaavia diffusa L.	Nyctagenaceae	Punarnova	Leaves, Root, Whole Plant	Н	The plant parts are abortifacient, effective in the treatment of anemia, asthma, blood purifier, body heat, child birth, cold, cough, dropsy, dysentery, eczema, epilepsy, eye, complaints, fever, fistula, gonorrhea, head ache, heart disorder, inflammation, jaundice complaints, liver complaints, menstrual complaints, pain in abdomen, piles, rheumatism, stomach complaints, urine complaints, and wounds.
	(Link) Sweet. Acalypha indica L. Achyranthes aspera L. Alternanthera sessilis(L.)DC. Ageratum conizoides L. Amaranthus spinosus L. Amaranthus viridis L. Amiosomeles indica(L.)Kuntze. Areca catechu L. Asclepias curassavica L. Bacopa monnieri L.Wettst. Blumea lacera (Roxb.)DC. Boerhaavia diffusa L.	Internation Indican (Link) Sweet.NurveedeAcalypha indica L.Euphorbiaceae Euphorbiaceae acaeAchyranthes aspera L.Amaranthaceae aspera L.Alternanthera sessilis(L.)DC.Amaranthaceae AsteraceaeAgeratum conizoides L.AsteraceaeAmaranthus spinosus L.Amaranthaceae acae indica(L.)Kuntze.Amaranthus viridis L.Amaranthaceae Malvaceae indica(L.)Kuntze.Areca catechu L.ArecaceaeAsclepias curassavica L.Asclepiadaceae curassavica L.Bacopa monnieri L.Wettst.ScrophulariaceaeBlumea lacera (Roxb.)DC.AsteraceaeBoerhaavia diffusa L.Nyctagenaceae	Iternation indicationIndicatedFourierAcalypha indicaEuphorbiaceaeMuktojhuriA.AmaranthaceaeMuktojhuriAchyranthesAmaranthaceaeChorkantaaspera L.AmaranthaceaeSanchi sakAlternantheraAmaranthaceaeSanchi saksessilis(L.)DC.AsteraceaeNot KnownAgeratumAsteraceaeNot Knownconizoides L.AmaranthaceaeKanta noteAmaranthusAmaranthaceaeNoteyiridis L.AmaranthaceaeNoteAniosomelesMalvaceaeNot Knownindica(L.)Kuntze.AsclepiadaceaeSupariAsclepiasAsclepiadaceaeBon kapashcurassavica L.ScrophulariaceaeBramhiBlumea laceraAsteraceaeKukurmutBoerhaaviaNyctagenaceaePunarnova	Iternor marcumMartaceaeFouriEaves, Whole plantAcalypha indica L.EuphorbiaceaeMuktojhuriLeafAchyranthes aspera L.AmaranthaceaeChorkantaDifferent parts including seedsAlternanthera sessilis(L.)DC.AmaranthaceaeSanchi sakLeaves, stemAgeratum conizoides L.AsteraceaeNot KnownLeavesAmaranthus spinosus L.AmaranthaceaeKanta noteRoot, LeavesAmaranthus spinosus L.AmaranthaceaeNoteRoot, LeavesAmaranthus viridis L.AmaranthaceaeNoteRoot, LeavesAmaranthus curassavica L.ArecaceaeNot KnownWhole PlantBacopa monnieri L.Wettst.ScrophulariaceaeBon kapash Root, Whole plantRoot, Whole plantBlumea lacera (Roxb.)DC.AsteraceaeKukurmutLeaves, and RootBoerhaavia diffusa L.NyctagenaceaePunarnovaLeaves, Root, Whole Plant	InterviewNutricedeFourierEvences, markingOutAcalypha indica L.Euphorbiaceae AmaranthaceaeMuktojhuriLeafHAchyranthes aspera L.Amaranthaceae AmaranthaceaeChorkantaDifferent parts including seedsHAlternanthera sessilis(L.)DC.Amaranthaceae AsteraceaeSanchi sakLeaves, stemHAgeratum conizoides L.Asteraceae Mot KnownNot KnownLeaves LeavesHAmaranthus spinosus L.Amaranthaceae MalvaceaeNoteRoot, Leaves HHAmaranthus viridis L.Amaranthaceae MalvaceaeNoteRoot, Leaves HHAreca catechu L.Arecaceae AsclepiadaceaeNot KnownWhole Plant HHBacopa monnieri L.Wettst.Scrophulariaceae AsteraceaeBon kapash Root, Whole plantSSHBlumea lacera (Root.)DC.Asteraceae AsteraceaeKukurmut RootLeaves, Root, HBlumea lacera diffusa L.Nyctagenaceae PluarnovaLeaves, Root, H

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14.	<i>Calotropis</i> <i>gigantea</i> (L.) Dryand.	Apocynaceae	Akondo	Bark	SH	The plant bark and root bark used for the preparation of medicine. The plant is used for digestive disorders including diarrhea, constipation and stomach ulcers; for painful conditions including toothache, cramps, and joint pain; and for parasitic infections including elephantiasis and worms.
15.	Cardiospermum helicacabum L.	Sapindaceae	Latafotkiri	Root	CL	The plant root is the most important plant part used for medicinal purposes, it is considered to be diaphoretic, diuretic, emetic, antipyretic and purgative a decoction of the plant is used as a post-surgery wash, and a tea of the leaves is rubbed on itching skin.
16.	<i>Carica papaya</i> L.	Caricaeae	Рере	Fruit, Seed, Leaves	SWT	The plant is an abortifacient, used in the treatment of palpitation bone fracture, constipation, cooling, digestive, gastric, ringworm, skin diseases, tooth & gum ache and urine bladder complaints, recently in the treatment of dengue.
17.	Cassia tora L.	Fabaceae	Chakunda	Leaves, Seed, whole plant.	SSH	Plant can be used as anti-helmintic, antiseptic, boils, bone fracture, cold, eczema, epilepsy, fever, indigestion, intestinal disorder, itch, jaundice, itch, night blindness, rheumatism, ringworm, scabies, scorpion bite, skin diseases, sores, stomach ache, vermicide and wounds.
18.	<i>Centella asitica</i> (L.)Urb.	Apiceae	Thankuni	Leaves, Root	TH	The plant is anti-helmintic, anti-viral specially effective against swine flu, also helps to cure blood disease, blood dysentery, cholera, cooling, cough, diarrhea, diuretic, dysentery, eczema, eye complaints, fever, gastric disorder, head ache, leprosy, liver complaints, memory, nervous disorder, tonic, respiratory disorder, skin diseases, stomach ache, syphilis, tuberculosis, tumor, boil, urine complaints and wounds
19.	<i>Cestrum</i> <i>nocturnum</i> L.	Solanaceae	Hasnuhana	Leaves, Flowers	SH	The medicinal properties of the plant include antioxidant, anti-hyperlipidemic, hepatoprotective, analgesic, antibacterial, antifungal, anti-convulsant, anti-HIV and larvicidal activities.
20.	Cleome rutidosperma DC.	Capparidaceae	Hurhure	Leaves	Н	Leaf sap of the plant can be applied to cure earache and deafness. Also used to treat irritated skin and used to treat convulsions.
21.	Coccinea grandis (L.)Voight.	Cucurbitaceae	Telakochu	Root, Leaves, Fruits	CL	The plant roots are used to treat osteoarthritis and joint pain. A paste made of leaves is applied to the skin to treat scabies. fruits are given to treat jaundice
22.	Clerodendron infortunatum L.	Verbenaceae	Ghentu	Leaves, Root, Flower	SH	Plant gets used for the treatment of wounds, skin diseases, liver disorders, intestinal worms, fever and joint pain.
23.	Cocos nucifera L.	Arecaceae	Narikel	Fruit	Т	Coconut oil is used to treat scalp and hair problems. From greying hair, dandruff to baldness. Coconut water is used to treat colitis, kidney stones, and stomach acidity. Coconut water is also used as diuretic to improve removal of excess water.
24.	<i>Crotalaria</i> pallida Aiton.	Fabaceae	Kuduk jhunjhuni	Leaves, Seeds	Н	The plant is used in traditional medicine to treat urinary problems. The plant is also used to reduce fever. The leaves are used to treat wounds. Boiled with salt, it is used to treat eczema and other skin problems.
25.	Crotalaria spectabilis Roth.	Fabaceae	Pipuli jhunjhuni	Flowers, Seeds	Н	The plant is used in the treatment of scabies and impetigo. The seed and other above-ground parts has been shown to lower blood pressure but is also toxic
26.	Croton bonplandianus Baill.	Euphorbiaceae	Lanka siri	Leaves, Root	Н	Plant can be employed analgesic and anti-inflammatory effects. It is used also to treat wound infection, to accelerate wound-healing and to treat rheumatism, cancer and other illnesses.
27.	Crozophora rottleri (Geiseler)A.Juss. ex Spreng	Euphorbiaceae	Khudi okra	Whole plant	Н	The plant extracts or decoctions or pastes are equally used for treatment of cuts, wounds and burns.
28.	Cyanodon dactylon (L.)Pers.	Poaceae	Durba	Root, Whole plant	Н	Drinking of the plant juice empty stomach in the morning is good in normalizing the sugar level.
29.	<i>Datura inoxia</i> Mill.	Solanaceae	Dhutura	Leaves, Seeds	Н	Plant can be used as antihydrophobic, asthma, boils and rheumatism.
30.	Dentella repens (L.)J.R.Frost. & G.Frost.	Rubiaceae	Kudalia	Leaves, Roots	РН	Crushed warm leaf is given for loose motion in infants. Plant juice is taken once daily for blood pressure. Leaves are used for blood ailments to purify the blood. It is also used to improve eyesight damaged by high blood sugar. Also, used as laxative.
31.	Desmodium triflorum (L.)DC.	Fabaceae	Not Known	Leaves, Roots	Н	Plant can be used for curing body ache, breast pain, colic, diarrhea, dysentery, menorrhea, sores, spleen complaints, nail disorder and tooth ache.
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32.	Eclipta prostrata (L.)L.	Asteraceae	Kesud	Leaves, Root, Seeds	Н	Antidote to snake bite, anti-fertility, antiseptic, asthma, bronchitis, cooling, eye disorder, fever, gastric, head ache, hepatic disorder, jaundice, leukoderma, liver complaints, malaria, promotes hair growth, scorpion sting, sores, spleen enlargement, tonic, tooth ache, ulcers and wounds
33.	Ecbolium linneanum Kurz.	Acanthaceae	Neel kantha	Leaves, Root	Н	Plant is used in gout and dysuria; decoction of leaves for stricture. Roots are given in jaundice, menorrhagia and rheumatism.
34.	Euphorbia hirta L.	Euphorbiaceae	Barokhervi	Leaves, Stem, Root	Н	Plant is often used traditionally for female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhea, digestive problems, and tumors.
35.	Euphorbia humifusa Wild.	Euphorbiaceae	Pronoto	Whole plant	PH	The whole plant is depurative, diuretic and styptic. A decoction is used in the treatment of jaundice, dysentery, enteritis, poisonous snake bites and traumatic bleeding.
36.	Evolvulus nummularius (L.) L.	Convolvulaceae	Bhnui okra	Whole plant	Н	The whole plant is used as a medicine for hysteria, to cure burns, cuts, wounds and scorpion stings.
37.	Glinus oppositifolius (L.)Aug.DC.	Molluginaceae	Gima shak	Leaves	Н	The plant can be used for treating joint pains, inflammation, diarrhea, intestinal parasites, fever, furuncles, skin disorders and the plant-macerate is also used as a wound healing remedy
38.	Grangea maderaspatana (L.)Poir.	Asteraceae	Namuti	Root. Leaves	Н	This plant species can be used as an antiseptic, antispasmodic, deobstruent and in many other medicinal uses. The roots are antiseptic and an infusion is applied externally and taken internally for the treatment of piles.
39.	Heliotropium indicum L.	Boraginaceae	Hati sur	Leaves, Flower	Н	Plant extract commonly used for skin diseases, wounds and ulcers.
40.	Heliotropium curassavicum L.	Boraginaceae	Not Known	Leaves, Root	Н	The dried roots of the plant are ground to powder and applied to sores and wounds. A decoction of the plant leaves can be taken as a remedy for leucorrhoea.
41.	Hemigraphis hirta (Vahl)T.Anders.	Acanthaceae	Buri panno	Leaves	Н	The leave's paste can be applied on fresh cut wounds to promote wound healing and used to treat anemia.
42.	Hibiscus vitifolius L.	Malvaceae	Not Known	Root	SH	The plant has shown anti-inflammatory and pain-reducing properties, and may also help fight diabetes, root extract has been used to treat jaundice in Indian herbal medicine for centuries, and recent research has confirmed its potent liver- protecting properties.
43.	Hygrophila auriculata(Schu mach.) Heine.	Acanthaceae	Kulekhara	Leaves, Root	Н	The leaves and roots of the plant have diuretic properties. The herb is also can be used in ailments of the urinogenital tract, like dysuria, urinary calculi and cystisis.
44.	<i>Imperata</i> <i>cylindrica</i> (L.)P. Beauty.	Poaceae	Ulu ghash	Whole plant	Н	The plant extract can be used as an antidote to snake bite, fever, intestinal parasite, liver complaints, spleen complaints and pile.
45.	Jatropha gossypifolia L.	Euphorbiaceae	Bharanda	Leaves, Seed	Н	The leaves of the plant are purgative; applied to boils, carbuncles, eczema and itches. Sap exudates taken from leaf petiole is mixed with molasses and given to cure dysentery. Seeds are drastic purgative and emetic, but they are said to cause insanity. Seed oil is used in skin diseases and as an external stimulant in rheumatism and paralytic affections. Regular brushing with the twigs keeps the teeth and gum disease free and cures tooth-ache.
46.	<i>Kyllinga</i> <i>nemoralis</i> (sJ.R.Frost.& Daiziel.	Poaceae	Not Known	Leaves, Whole plant	Н	Leaves of the plant is used as antivenom, relief of malarial chills, pruritus of the skin, thirst attributable to fever and diabetes.
47.	Leonurus sibiricus L.	Lamiaceae	Raktodron	Leaves, Fruit, Seed	Н	This species is known to have antibacterial, anti- inflammatory, and antioxidant activity and has demonstrated a reduction of intracellular reactive oxygen species.
48.	<i>Leucus aspera</i> (Willd.) Link	Lamiaceae	Setdron	Whole plant	Н	The plant is reported to have antifungal, prostaglandin inhibitory, antioxidant, antimicrobial, antinociceptive and cytotoxic activities.
49.	<i>Lippia geminata</i> Kunth.	Verbenaceae	Bonlebu	Leaves, Root	SH	Leaves are used as medicine for respiratory problems. Roots used traditionally to treat diarrhea, dysentery and malaria. Essential oil prepared is used as medicine.
50.	<i>Lippia nodiflora</i> (L.)Michx.	Verbenaceae	Khar ghas	Leaves, Whole plant	Н	Plant is for treating boils, diuretic, fever, menstrual complaints and fever.
51.	Mecardonia procumbens (Mill.) Small.	Plantaginaceae	Not Known	Leaves, Root, Whole plant	Н	Decoction of roots is taken internally to treat constipation and asthma. Leaf paste is applied to treat cuts and wounds. Juice of whole plant is taken orally to treat cough, sore throat and wounds. The latex from leaf and stem bark is <i>used</i> to treat heel cracks.

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52.	<i>Mikania</i> scandens(L.) Wild.	Asteraceae	Ashamlota	Leaves, Sttem, Whole plant.	CL	It is used in the treatment of gastric ulcers, wounds, and insect bites and stings.
53.	<i>Momordica</i> <i>charantia</i> L.	Cucurbitaceae	Uchche	Leaves, Fruit	CL	Plant is anti-helmintic, used in the treatment of vomiting, diabetes, eczema, laxative, malaria, edema, rheumatism and sores.
54.	<i>Momordica dioica</i> P.Royen	Cucurbitaceae	Kakrol	Fruit, Root	CL	Plant shows anti-fertility nature; used in the treatment of fever, injuries, pain in breast due to swelling, piles, asthma, bronchitis, delirium, dysentery, spleen complaints and head ache.
55.	Manilkara zapota(L.) P.Royen.	Sapotaceae	Sobeda	Leaves,Flowe r,Bark, Root	Т	Young leaves and shoots of the plant is edible as well is used medicinally for the treatment of fever, hemorrhage, wounds, ulcers, neuralgia, diarrhea, indigestion, gallstones, and thrush in babies.
56.	Musa paradisica L.	Musaceae	Kola	Leaves, Root, Fruit	Т	The plant parts promotes healthy digestion, improves affective state, helps in the retention of and serves as good sources of potassium, calcium, phosphorus and nitrogen, which build and regenerate tissues in the body, and is also a rich source of iron and vitamins, especially Vitamins C and E.
57.	Nasturtium indicum(L.)P. Royen.	Brassicaceae	Bon sorisha	Leaves, Flower, Seed pod.	Н	The herb is used primarily as an herbal remedy for urinary tract infections and infections of the respiratory tract but is also indicated for external and internal bacterial infections and to treat minor scrapes and cuts.
58.	Nicotiana plumbaginifolia Viv.	Solanaceae	Bon tamak	Leaves	Н	Leaf juice for skin diseases, ground leaves as germicide for animal wounds.
59.	Ocimum gratissimum L.	Lamiaceae	Ram/Bon tulsi	Leaves	SH	The leaves have been used as a general tonic and anti- diarrhea agent and for the treatment of conjunctivitis by instilling directly into the eyes; the leaf oil when mixed with alcohol is applied as a lotion for skin infections, and taken internally for bronchitis.
60.	<i>Ocimum sanctum</i> L.	Lamiaceae	Tulsi	Leaves	SH	Plant leaves relieves various kinds of fevers including malaria and dengue. Common Cold and Cough, raw leaves are very helpful in providing relief from cold and cough.
61.	Oldenlandia corymbosa L.	Rubiaceae	Not known	Leaves, Whole plant	РН	It is used to treat viral infections, cancer, acne, boils, appendicitis, hepatitis, eye problems and bleeding. It also can be used as a mouthwash for toothache.
62.	Oxalis corniculata L.	Oxalidaceae	Bhui amla	Leaves, Whole plant	РН	Plant parts can be used for the remedy of cold, corn, cough, cuts, diarrhea, dysentery, epilepsy, eye complaints, fever, insect bite, jaundice, refrigerant, Rickettsia, scurvy, skin diseases and stomach ache.
63.	Phaseolus acutifolius A.Gray.	Fabaceae	Borbati	Leaves, Seed	PH	The seeds and leaves are valued for their astringent qualities and are used in the diet as a treatment against fever. The seeds are powdered and rubbed into small cuts on tumours and abscesses to promote suppuration. The leaf juice, mixed with coconut oil or castor oil, is given to children to improve their strength; as a treatment for fever and as an emetic.
64.	<i>Phyllanthus</i> <i>reticulates</i> Poir.	Euphorbiaceae	Panjuli	Leaves, Root, Bark	PH	Dried bark and leaves decoction are as a diuretic, alterative and for cooling effect and also used for smallpox.
65.	Physalis angulata L.	Solanaceae	Bon tapari	Leaves, Seed	Н	The plant is also widely used as a medicinal plant. It is used to treat malaria, toothache, liver ailments including hepatitis, rheumatism, and is considered a diuretic and relaxant. Plant infusions are taken to treat gonorrhoea, indigestion, nephritis and fever.
66.	Polygonum barbatum L.	Polygonaceae	Not Known	Leaves, Seed, Root	Н	Plant Sap applied to wounds as antiseptic. Paste of roots used for treatment of scabies. Seeds used for treatment of dysentery and cholera.
67.	Polygonum orientales L.	Polygonaceae	Not Known	Leaves, Fruit, Stem	Н	The leafy stems are used in the treatment of hernias. A decoction of the ripe fruits is used in the treatment of hepatitis, sloughing ulcers, tympanites and cancer. The seed is said to relieve flatulence, fevers and thirst, brighten the eyes and benefit the breath.
68.	Polygonum plebejum R.Br.	Polygonaceae	Chimte shak	Seed	Н	The crushed seeds are cooked and eaten as remedy fort bowel complaints.
69.	Pluchea indica(L.) Less.	Asteraceae	Not known	Root, Leaves	Η	The leaves of the plant are considered to be a diaphoretic, febrifuge, galactagogue and stomachic. A decoction of the leaves and stem is drunk to ease asthma and other pulmonary problems. The methanol extract of the roots was also screened for activity against the venom of the snake Viper, where it was found to significantly reduce venom-induced lethality and haemorrhagic activity.

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70.	<i>Rauwolfia</i> serpentina (L.) Benth. ex Kurz	Apocynaceae	Sarpagandha	Root	H	Plant is used for the treatment of Schizophrenia. It is used as a sedative and tranquilizer. Plant is believed to cure anxiety, psychosis and epilepsy. It is also quoted for the treatment of colic and cholera
71.	<i>Ruellia prostrata</i> Poir.	Acanthaceae	Damani ful	Leaves, Root	Н	Believed to be anticancer against the epidermis of the nasopharynx region and slightly hypoglycemic.
72.	Rungia pectinata (L.) Nees.	Acanthaceae	Pindi	Root	Н	Few drops of root extract together with honey is prescribed for fever, especially for children.
73.	<i>Rumex dentatus</i> L.	Polygonaceae	Bon Palong	Root	Н	Important medicinal uses of the plant are: root is used as an astringent application in the treatment of cutaneous disorders.
74.	Scoparia dulcis L.	Scrophulariaceae	Bon dhone	Leaves, Root, Whole plant	Н	The plant is anti-emetic, helps in the recovery of digestive problem, eye diseases, fever, gonorrhea, child birth, rheumatism, sex weakness, ulcer of tongue and urine complaints
75.	Senna occidentalis(L.) Link.	Fabaceae	Kalkasunda	Flower, root, leaves, whole plant	Н	Plant have use in bone fracture, diarrhea, dropsy, dysentery, eczema, fever, gastric complaints, purgative, rheumatism, ringworm, skin diseases, snake bite, throat infection, whooping cough and wounds.
76.	Setaria viridis (L.) P.Beauv.	Poaceae	Not Known	Leaves, Seed, Whole plant	Н	The seed of the plant is diuretic, emollient, febrifuge, refrigerant and tonic. The plant is crushed and mixed with water then used as an external application in the treatment of bruises.
77.	<i>Sida acuta</i> Burm.f.	Malvaceae	Bon methi	Leaves, Whole plant	SH	The leaves of this plant are used for their diuretic, demulcent, anthelmintic and wound healing properties.
78.	<i>Sida cordifolia</i> L.	Malvaceae	Brela	Leaves	SH	The plant can be used in boils, dysentery, gonorrhea, leucorrhea, rheumatism, sexual weakness, stomachache, venereal disorder and wounds.
79.	Sida rhombifolia L.	Malvaceae	Swet brela	Leaves, Root	SH	The pounded leaves are used to relieve swelling, the fruits are used to relieve headache, the mucilage is used as an emollient, and the root is used to treat rheumatism.
80.	Solanum nigrum L.	Solanaceae	Futi begun	Leaves	Н	Plant can be used in the relief of boils, cough, diarrhea, dysentery, ear complaints, eye complaints, fever, goiter, heart ailment, jaundice, liver complaints, inflammation of (scrotum, kidney and bladder), sores, nostril complaints, piles, rheumatism, skin diseases, sprain, stomachache, swelling, throat trouble, ulcer in mouth and urine complaints.
81.	Solanum torvum Sw.	Solanaceae	Tita begun	Fruit, Leaves	SH	Its fruit and leaves can be used to control a range of microbial activities.
82.	Solanum villosum Mill.	Solanaceae	Not Known	Fruit, Leaves	Н	Leaves of the plant can be used to treat stomachache and extracts from leaves and fruits are used to treat tonsillitis.
83.	<i>Synedrella</i> nodiflora Gaertn.	Asteraceae	Not Known	Leaves, Stem	Н	Plant shows antipsychotic property.
84.	Turnera ulmifolia L.	Passifloraceae	Not Known	Leaves	Н	Plant is use to treat gastrointestinal problems, colds and flu, and circulatory problems, infant care, menstrual cramps, and dermatological issues.
85.	Tridax procumbens L.	Asteraceae	Tridhara	Leaves, Whole plant	Н	Plant is antiseptic in nature, used in treating blisters, boils, cuts & wounds, diarrhea, dysentery, eczema, eye disease, fever, leprosy, scorpion bite, skin diseases, sores, stomach ache, stone in bladder, tooth ache, ulcer and wounds.
86.	Vernonia cinerea (L.) Less.	Asteraceae	Kuk sim	Leaves, Seed, Root, Whole plant.	Η	Plant can be used in cholera, dysentery, constipation, fever, impotency, lactation, malaria, night blindness, piles, skin diseases, threadworm, spleen complaints and wounds.
87.	Vinca rosea L.	Apocynaceae	Nayantara	Leaves, Stem	SH	Fresh leaves can be chewed in empty stomach to check blood sugar.
88.	Vitex negundo L.	Verbenaceae	Neergundi	Roots, Bark, Leaves and fruits	Т	Roots, bark and leaves are used in treating colitis, dysentery, diarrhea, flatulence, fever, vomiting and colic.
89.	<i>Urena lobata</i> L.	Malvaceae	Bon okra	Leaves, Root, Bark	SH	Plant parts are used in the treating diarrhea, dysentery, hyperactivity, hydrophobia and lumbago.
90.	Xanthium strumarium L.	Asteraceae	Bnuichi	Leaves, Root	SH	Plant helps in curing boils, wound, cooling, eye diseases, head ache, herpes, malaria, piles, rheumatism, ringworm, tooth ache, ulcer and urine complaints

C= Climber, SH= Shrub, H=Herb, PH= Prostrate Herb, SSH=Sub Shrub, T=Tree, SWT=Soft Wooded Tree.

4. CONCLUSION:

Bengal has been blessed with enormous natural resources, in his quest to modernization people has forgotten that they nearly destroyed his silent friend always present in their periphery. This has led to certain environmental degradation like global warming. Herbal products and medicines are cost cheap and mostly devoid of any side effects. The work carried out in the region reveals that the plants recorded is highly valuable fin terms of medicinal application and in future; projects in a broader scale can be initiated for vivid exploration and public awareness. With the course of time technology has evolved. It's time now for technology to intervene plant identification, natural habitat location and most obviously conservation. Conservation strategies can be greatly enhanced with integration with the technology. Our effort is to line traditional plant knowledge with GIS for dynamic knowledge based mapping.

GIS can spot all the movements of human interfaces and thus application of GIS in the research paper has been done to map medicinal plants of the given locality. Traditional plant knowledge and plant spatial distribution can be linked further and its understanding is enhanced with GIS mappings. It is realized that the time has arrived when GIS will be a dominant tool to understand ethnography.

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