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RESEARCH ARTICLE

DOCUMENTATION OF MEDICINAL PLANTS IN NIRAMKAITHAKOTTA HILLS, KERALA

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ABSTRACT

The present study has been carried out in Niramkaitha kotta Hills, Vallikkunnu, Malappuram District, Kerala, India to document the current floristic composition, conservation status of the study area and medicinal properties of plants .An extensive and intensive floristic survey were undertaken during December 2020 - Feb 2021 in Niramkaitha kotta hills. The area was surveyed at every visit and periodical collection of plants made from each locality. Taxonomically a total number of 91 medicinal plant species of Angiosperms distributed belonging to 45 families and 4 species of pteridophytes has been recorded from the study area of Niramkaitha kotta Hills and listed in the. Out of this 91 species 87 families belongs to Dicotyledons and 4families belongs to Monocotyledons and four species were Pteridophytes. In the life form category of the enumerated plants the majority of the species were herbs (46 species) followed by shrubs (26 species), climber (9 species) and tree (10species). *Tridax procumbens* L. was the most abundant species when compared to other species in the study area. In the present study out of 91 species recorded two species namely *Gloriosa superba* L. and *Pterocarpus santalina* L. f are endangered, 24 species are least concern.

Keywords: Medicinal Plants, Niramkaitha kotta Hills, *Tridax procumbens*, *Gloriosa superba* L. and *Pterocarpus santalina* L. f

1. INTRODUCTION

Medicinal plants have been a vital role of preventive medical therapy for human beings, which also has been used for the extraction of important secondary metabolites (1). It is estimated that almost 80% of the world's total population, regularly, depends on traditional medicine and products for its healthcare needs especially in third world countries (2). Many sick people in the developing regions combine the conventional medicine with traditional medicine (3). Traditional medicines are usually cheaper than modern medicines, and probably the only natural remedies available and accessible in the remote rural communities in developing countries. Indiscriminate trade of plant resources, uncontrolled collecting methods, habitat change, overexploitation, and climate change pose great threats to availability of plant medicine in most third world countries, thus, creating a pressing need for better methods of conservation and viable use of priority plant resources (4).

This study focused on Niramkaitha kotta Hills, Vallikkunnu, Malappuram District, Kerala, India to document the current floristic composition and the medicinal plants used to treat different ailments. The documentation of the natural resources is key, as it will assist in the conservation of residual and remaining forests. The databases obtained in this research forms a foundation for potential development of new medicines. Ethnobotanical investigations are vital in preserving traditional medicine through suitable documentation of plants, which also assist in its sustainability. Therefore, documentation of this traditional knowledge is inevitable to throw light into the field of herbal research and to improve socioeconomic development of the people.

2. MATERIALS AND METHODS

Niram Kaitha Kotta Temple is situated in Vallikunnu Grama Panchayath at the northern extreme of Malappuram district of Kerala.This is an important pilgrim centre of Malabar. Malappuram is the third largest district of Kerala covering a geographical area of 3,550 sq. km, which is 9.13 per cent of the total area of the State and lies between 10° 41' 33" to 11° 30′ 32"N

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latitude and 75° 49' 25" to 76° 32' 40" E longitude. An extensive and intensive floristic survey were undertaken during December 2020 - Feb 2021 in Niramkaitha kotta hills. The area was surveyed at every visit and periodical collection of plants made from each locality.

3. RESULTS AND DISCUSSION

The present study has been carried out in Niramkaitha kotta Hills, Vallikkunnu, Malappuram District, Kerala, India to document the current floristic composition, conservation status of the study area and medicinal properties of plants .An extensive and intensive floristic survey were undertaken during December 2020 - Feb 2021 in Niramkaitha kotta hills. The area was surveyed at every visit and periodical collection of plants made from each locality.

3.1. Plant species and their habit

Taxonomically a total number of 91 medicinal plant species of Angiosperms distributed belonging to 45 families and 4 species of pteridophytes has been recorded from the study area of Niramkaitha kotta Hills and listed in the (Table 1). Out of this 91 species 87 families belongs to Dicotyledons and 4families belongs to Monocotyledons and four species were Pteridophyte (*Adiantum capillus -veneris* L. *Cystopteris fgracilis* (L.)Bernh, *Phegopteris connectilis* (Michx) Watt, *Selaginella tamariscina* P.(Beauv)). Our findings revealed that the Angiospermic plant species are more abundant in the study area because flowering plants grow in virtually every habitable region compare to pteridophytes.

In the life form category of the enumerated plants the majority of the species were herbs (46 species) followed by shrubs (26 species), climber (9 species) and tree (10species) (Table 2; Figure 2). The finding the more herbs are present in the study area is in line with the previous report were the same (5). This unanimity in result suggest that the herbs grow readily well in moderate climate and also that they can be easily accessed.

3.2. Species, Family and Relative Dominance

Tridax procumbens L. was the most abundant species when compared to other species in the study area. The most species rich families include Fabaceae (9 species) was the dominant family followed by Asteraceae (8species), Apocynaceae (7 species), Euphorbiaceae (6 species), Verbenaceae and Commelinacea (4 species each), Convolvulaceae, Rubiaceae, Lamiaceae, Acanthaceae (3species each), Amaranthaceae, Araceae, Cyperaceae, Malvaceae and Utricaceae (2 families each), Pteridaceae, Oxalidaceae, Nyctaginaceae, Orchidaceae, Annonaceae,Costaceae, Capparidaceae, Cytopteridaceae, Davallaceae, Moraceae, Liliaceae, Rutaceae, Linaceae, Violaceae, Balsaminaceae, Linderniaceae Lygodiaceae, Meliaceae, Passifloraceae, Pedaliaceae, Thelypteridaceae, Petiveriaceae, Plantaginaceae, Selaginellaceae, Poaceae, Melastomaceae, Bignoniaceae and Orobanchaceae, with one species each **(**Table 3; Figure 3). The use of members of the above families in herbal medicines is widely known in Kerala state (6-7). It is widely known that members of the families contain secondary metabolites such as tannins, phenolics, and alkaloids that are responsible for their bioactivity (3).

Documentation of traditional medicinal knowledge could be beneficial activity for human mankind health purpose. The local healers have incredible knowledge of the medicinal properties and uses of their ambient natural resources. It exists in the form of traditions and uses maintained in perpetuity through verbal transmission only. Through this effort, the present study have made an attempt to document and explore the traditional medicinal knowledge by the people inhabiting the Niramkaithakotta hills have been validated. To investigate the use of the plants parts revealed that almost all the plants parts are used for medicinal values that includes roots, leaves, stems, flower, fruits and seeds (8). The study also recorded the plants which are used to cure for basic remedies properties such as fever, cough, diabetes, stomach ache, and curing jaundice. Some plants have also able to increase memory power, cure cancer and asthma. Our observation record also revealed that most of the inhabitants are suffered from eye diseases, malaria and giddiness.

3.3. Conservation status of taxa

Assessment of conservation status of the species level was performed using the International Union for conservation on Nature of Red list Criteria. In the present study out of 91 species recorded two species namely *Gloriosa superba* L. and *Pterocarpus santalina* L.f are endangered, 24 species are least concern (Table 4).

FIGURE 1: STUDY AREA MAP SHOWING NIRAMKAITHAKOTTA HILLS

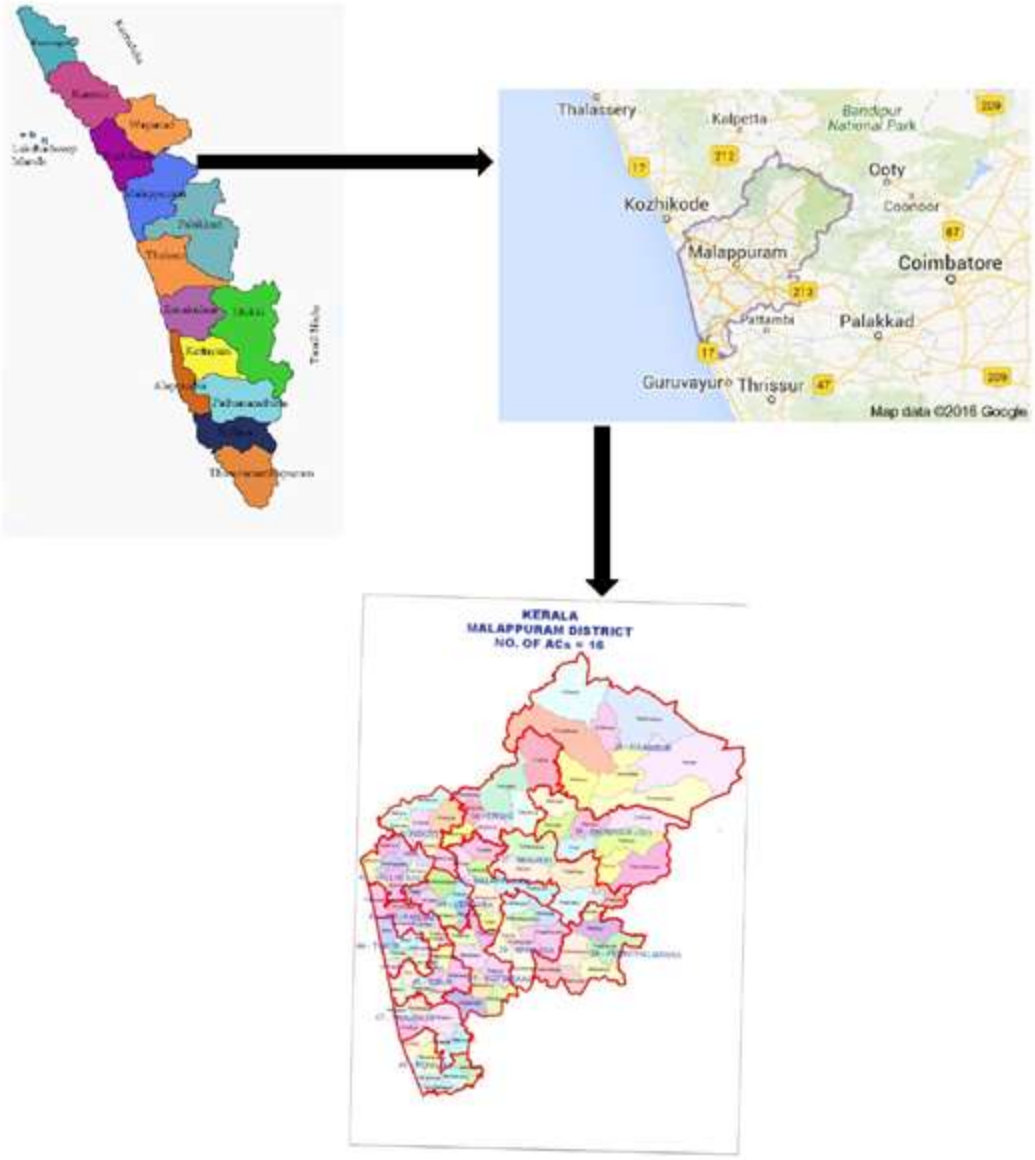

TABLE: 1 ENUMERATION OF MEDICINAL PLANTS IN NIRAMKAITHAKOTTA HILLS, KERALA

S. NO	BINOMIAL NAME	FAMILY	LIFE FORM	MEDICINAL USES
Pteridophytes				
1.	*Adiantum capillus-veneris* L.	Pteridaceae	Herb	pharmacological effects including anti-diabetic, anti-obesity, anticonvulsant, analgesic, hypocholesterolemic, goitrogenic, anti-thyroidal, antibacterial, antifungal, wound healing, anti-hair loss, anti-asthmatic, anti-inflammatory, antidiarrheal and antispasmodic, antioxidant as well as diuretic, anti-urolithiasis, and detoxifying properties.
2.	*Phegopteris connectilis*(Michx)Watt	Thelypteridaceae	Herb	Food source
3.	*Cystopteris fragilis*(L.)Bernh.	Cytopteridaceae	Herb	used as an anthelmintic enema
4.	*Selaginella tamariscina* P.Beauv	Selaginellaceae	Herb	astringent and haemostatic.A decoction is used in the treatment of traumatic bleeding, haemoptysis in pulmonary disease, gastro-intestinal bleeding, metrorrhagia, haematuria, persistence of post-partum lochial discharge, rectal prolapse and leucorrhoea
ANGIOSPERMS				
1.	*Acacia auriculiformis A.Cunn.ex. Benth.*	Leguminosae	Tree	It is being used traditionally to overcome various medical complications like sore eyes, aches, rheumatism, allergy, itching, and rashes.
2.	*Acalypha indica* L.	Euphorbiaceae	Herb	Used to treat asthma and pneumonia
3.	*Acmella uliginosa* (Sw.)Cass	Asteraceae	Herb	Used to relieve pain often associated with mouth ulcers, toothache, sore throat, and stomach ache.
4.	*Aerva lanata* (L.) Juss ex Schult.	Amaranthaceae	Herb	used as a traditional medicine for snakebites. The plant is also used as a talisman against evil spirits, a good-luck talisman for hunters, and a talisman for the well-being of widows. In the traditional medicine of India, the juice of crushed Aerva lanata root is used for jaundice therapy.
5.	*Alstonia scholaris* R.Br.	Apocynaceae	Tree	Used alternative medicinal systems against different ailments such as asthma, malaria, fever, dysentery, diarrhea, epilepsy, skin diseases, snakebite etc.
6.	*Alternanthera sessilis* R.Br.	Amaranthaceae	Herb	used to treat hepatitis, bronchitis, tight chest, lung diseases and asthma owing to anti-diabetic, anti-cancer, anti-ulcer, anti-oxidant, anti-malarial, anti-diarrheal, anti-fungal, prophylactic, anti-microbial, anti-inflammatory and anti-pyretic potentials and non-tropic, wound healing
7.	*Arum maculatum* L.	Araceae	Shrub	Used in the treatment of rheumatic pain, sore throats, diarrhoea

8.	*Barleria cristata* L.	Acanthaceae	Shrub	acts as a tonic, diuretic and blood purifier.
9.	*Biophytum sensitivum*(L.)DC.	Oxalidaceae	Herb	inflammation, arthritis, wounds, tumors and burns, gonorrhea, stomach ache, asthma, cough, degenerative joint disease, urinary calculi, diabetes, snake bite, amenorrhea and dysmenorrhea.
10.	*Blumea lacera* L.	Asteraceae	Herb	anti-inflammatory, styptic, opthalmic, digestive, anthelmintic, liver tonic, expectorant, febrifuge, antipyretic, diuretic, deobstruant, and stimulant
11.	*Boerhaavia diffusa* L.	Nyctaginaceae	Herb	cure disorders like intestinal colic, kidney disorders, cough, hemorrhoids, skin diseases, alcoholism, insomnia, eye diseases, asthma and jaundice
12.	*Breynia vitis idaea* (Burm.f.)FI.	Euphorbiaceae	Shrub	The bark is astringent, it is used to prevent haemorrhage.The leaf juice is given to a mother after giving birth
13.	*Bulbophyllum nutans* Thouars.	Orchidaceae	Herb	It is a rejuvenator
14.	*Calotropis gigantean* (L.) R.Br.	Apocynaceae	Shrub	effective in treating skin, digestive, respiratory, circulatory and neurological disorders and was used to treat fevers, elephantiasis, nausea, vomiting, and diarrhea.
15.	*Cananga odorata* (Lam.)Hook.f.&Thomson.	Annonaceae	Tree	used to treat malaria, stomach ailments, asthma, gout, and rheumatism. The essential oils or ylang-ylang oil is used in aromatherapy and is believed to be effective in treating depression, high blood pressure, and anxiety.
16.	*Cassia alata* L.	Leguminosae	Shrub	treatment of typhoid, diabetes, malaria, asthma, ringworms, tinea infections, scabies, blotch, herpes, and eczema.
17.	*Catharanthus pusillus*(Murray)G.Don	Apocynaceae	Herb	Leaf extract is used as a medicine for fever. The decoction of dried leaves boiled in oil is used to cure joint and muscle pain in the lower back. The Catharanthus pusillus possesses both hypoglycaemic and anti-diabetic activities.
18.	*Centrosema pubescens* Benth.	Leguminosae	Climber	treatment of indigestion, stomach ache, wounds and other inflammatory conditions
19.	*Cheilocostus speciosus* (J.Konig)C.Specht	Costaceae	Shrub	as a purgative or poultice, and for coughs, fever, leprosy and small pox.
20.	*Chromolaena odorata*(L.)R.M.King&H.Rob.	Asteraceae	Shrub	treatment of malaria, wounds, diarrhoea, skin infection, toothache, dysentery, stomach ache, sore throat, convulsions, piles, coughs and colds.
21.	*Cissus verticillata* (L.)Nicolson & C.E.Jarvis	Vitaceae	Vine	to treat snakebite, thrush, ulcers, sores, swellings etc., and to hasten the opening of boils
22.	*Cleodendrum serratum* (L.)Moon	Verbenaceae	Shrub	use in respiratory treatment , pain, inflammation, rheumatism and fever especially malarial fever.

23.	*Cleome rutidosperma* DC.	Cleomaceae	Herb	to cure an earache, ear-inflammation and deafness ·
24.	*Clerodendrum indicum* (L.)Kuntze	Verbenaceae	Shrub	stomachic, expectorant, antiinflammatory, anti-bronchitis, febrifuge, hence useful for asthma, cough, and scrofulous
25.	*Colocasia esculenta* (L.)Schott	Araceae	Shrub	cure diarrhea. The juice of the corm is used in cases of alopecia. Internally, it acts as a laxative, demulcent, anodyne, galactagogue and is used in cases of piles and congestion of the portal system, as well as an antidote to the stings of wasps and other insects.
26.	*Commelina erecta* L.	Commelinaceae	Herb	It is used in the treatment of wounds The sap is used as an oral contraceptive
27.	*Cyanotis cristata*(L.)D.Don	Commelinaceae	Herb	used to treat swelling and snakebite.
28.	*Cyperus rotundus* L.	Cyperaceae	Herb	used widely as analgesic, sedative, antispasmodic, antimalarial, stomach disorders and to relieve diarrhoea
29.	*Davallia canariensis*(L.)Sm.	Davalliaceae	Herb	The leaf and rhizome are popular ingredients in mixed medicines of Polynesian local healers.
30.	*Desmodium paniculatum* (L.)DC	Leguminosae	Herb	to treat weakness and cramps.
31.	*Dregea volubilus*(L.f.)Benth.	Apocynaceae	Climber	eye ailments, general debility, tumors, asthma, stress-related disorders, inflammatory and painful conditions, skin diseases and haemorrhoids
32.	*Eclipta prostate* L.	Asteraceae	Herb	liver tonic, and especially good for the hair and skin.
33.	*Emillia sonchifolia* DC.	Asteraceae	Herb	treatment of fever, sore throat, diarrhea, eczema and as an antidote for snake bites
34.	*Euphorbia heterophylla* L.	Euphorbiaceae	Herb	purgative and laxative to treat stomach-ache and constipation, and to expel intestinal worms.
35.	*Euphorbia hirta* L.	Euphorbiaceae	Herb	female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhea, digestive problems, and tumors.
36.	*Evolvulus alsinoides* Linn.	Convolvulaceae	Herb	nervous debility and loss of memory. useful as blood purifier and in bleeding piles. chronic bronchitis and asthma.
37.	*Ficus bengalensis* L.	Moraceae	Tree	it is astringent to bowels; useful in treatment of biliousness, ulcers, erysipelas, vomiting, vaginal complains, fever, inflammations, leprosy. ... The aerial root is styptic, useful in syphilis, biliousness, dysentery, inflammation of liver etc.
38.	*Gliricidia sepium* Jacq.	Leguminosae	Tree	colds, cough, fever, headache, bruises, burns, rheumatism, ulcers, and wounds.
39.	*Gloriosa superba* L.	Liliaceae	Shrub	used in the treatment of gout, infertility, open wounds, snakebite, ulcers, arthritis, cholera, colic, kidney problems, typhus, itching, leprosy,

				bruises, sprains, hemorrhoids, cancer, impotence, nocturnal emission, smallpox, sexually transmitted diseases, and many types of internal parasites.
40.	*Glycosmis pentaphylla* Corr.	Rutaceae	Tree	used against diseases like bilious complaints, cough, worms, jaundice, fever, inflammation, rheumatism, anaemia and vermifuge.
41.	*Grewia nervosa*(Lour.)G.Panigrahi	Malvaceae	Shrub	for treatment of diabetes and its associated complications such as oxidative stress and inflammation.
42.	*Grona triflora*(L.)H.Ohashi	Leguminosae	Herb	dysentry, rheumatism and fever. A decoction of the roots is used by the Malays to treat stomachaches, while a poultice is used for treating skin problems.
43.	*Hibiscus surrattensis* L.	Malvaceae	Shrub	used as an emollient
44.	*Hugonia mystax* L.	Linaceae	Shrub	antidote for snake or viper bite, anthelmintic, febrifuge, astringent and for the treatment of fever, verminosis, peptic ulcers, intestinal worms.
45.	*Hybanthus enneaspermus* Jacq.	Violaceae	Herb	treating diarrhoea, urinary infections, leucorrhoea, dysuria, inflammation, cholera and sterility.
46.	*Impatiens flaccida* Arn.	Balsaminaceae	Herb	treatment of bee stings, insect bites, and stinging nettle (Urtica dioica) rashes. They are also used after poison ivy (Toxicodendron radicans) contact to prevent a rash from developing
47.	*Ipomea mauritiana* Jacq.	Convolvulaceae	Climber	treat tuberculosis and for the treatment of external and breast infections.
48.	*Ixora coccinea* L.	Rubiaceae	Shrub	astringent and to treat dysentery and tuberculosis
49.	*Kyllinga brevifolia* Rottb.	Cyperaceae	Herb	digestive, diuretic, sedative, tonic, antispasmodic and sudorific properties
50.	*Lantana camara* L.	Verbenaceae	Shrub	treatment of cuts, swellings, ulcers, cataract, bilious fever, itches, eczema, and rheumatism
51.	*Laportea aestuans* (L.)Chew	Utricaceae	Herb	to prevent and treat bone diseases, such as osteoporosis
52.	Leucas *aspera* (Willd.)Link	Lamiaceae	Herb	antifungal, prostaglandin inhibitory, antioxidant, antimicrobial, antinociceptive and cytotoxic activities
53.	*Lindernia dubia*(L.)Pennel	Linderniaceae	Herb	anthelmintic and for the treatment of hernia
54.	*Lygodium venustum* Sw.	Lygodiaceae	Climber	Antimicrobial
55.	*Microstachys chamaelea*(L.)Mull.Arg.	Euphorbiaceae	Herb	to relieve teething pain in babies
56.	*Mimosa pudica* L.	Leguminosae	Herb	antibacterial, antivenom, antifertility, anticonvulsant, antidepressant, aphrodisiac
57.	*Mimosa quadrivalvis* L.	Leguminosae	Shrub	antibacterial, antivenom, antifertility, anticonvulsant, antidepressant,
58.	*Morinda citrifolia* L.	Rubiaceae	Tree	blood purifiers, antihelminthic agents, tonic supplements, against digestive disorders, hypertension tuberculosis,

				urinary tract dysfunctions, hypertension, diabetes, depression and as appetite stimulator.
59.	*Murdannia nudiflora*(L.)Brenan	Commelinaceae	Herb	asthma, leprosy and piles stomach complaints, giddiness, and astringent
60.	*Naregamia alata* Wight&Arn.	Meliaceae	Herb	eczema; pruritus, scabies, jaundice, anaemia, asthama, bronchitis, arthritis, biliousness, phlegm vomiting.
61.	*Ocimum basilicum* L.	Lamiaceae	Shrub	treatment of headaches, coughs, diarrhea, constipation, warts, worms, and kidney malfunctions.
62.	*Oldenlandia corymbosa* L.	Rubiaceae	Herb	clear heat and toxins, activate blood circulation, promote diuresis and relieve stranguria. It is also active against appendicitis, hepatitis, pneumonia, cholecystesis, urinary infection, cellulites and snake bite
63.	*Parietaria officinalis* L.	Utricaceae	Herb	kidney and bladder stones and other complaints of the urinary system such as cystitis and nephritis
64.	*Passiflora foetida* L.	Passifloraceae	Climber	diarrhea, intestinal tract, throat, ear infections, fever and skin diseases.
65.	*Pedalium murex* L.	Pedaliaceae	Herb	treatment of puerperal diseases, digestive tonics, ulcers, fevers, wounds, other ailments and general debility.
66.	*Phyllanthus niruri* L.	Euphorbiaceae	Herb	jaundice, chronic dysentery, dyspepsia, cough, indigestion, diabetes, urinary tract diseases, skin diseases, ulcer, sores and swelling
67.	*Premna serratifolia* L.	Lamiaceae	Shrub	anti-inflammatory, stomachic, and anti-pyretic, and is prescribed in liver complaints, cold, obstinate fevers, flatulence, urticaria rheumatism
68.	*Pterocarpus santalinus* L.f.	Leguminosae	Tree	Antipyretic, anti-inflammatory, anthelmintic, tonic, hemorrhage, dysentery, aphrodisiac, and diaphoretic activities.
69.	*Rauwolfia serpantina* Benth.	Apocynaceae	Shrub	treatment of hypertension, insanity
70.	*Rauwvolfia tetraphylla* L.	Apocynaceae	Shrub	antimicrobial, antioxidant, anti-inflammatory, cytotoxic, platelet antiaggregant, cardioprotective, sedative, antihypertensive, insecticidal, allelopathic and antiparasitic activities.
71.	*Rhinacanthus nasutus*(L.)Kurz	Acanthaceae	Shrub	eczema, herpes, pulmonary tuberculosis, hepatitis, diabetes, hypertension, and different types of skin diseases
72.	*Rivina humilis* L.	Petiveriaceae	Shrub	used for catarrh and for treating wounds
73.	*Ruellia tuberosa* L.	Acanthaceae	Shrub	diuretic, anti-diabetic, antipyretic, analgesic, antihypertensive, gastroprotective, and to treat gonorrhea.
74.	*Scoparia dulcis* L.	Plantaginaceae	Herb	treatment for digestive problems, pulmonary conditions, fever, skin disorders, hypertension, hemorrhoids, diarrhea, dysentery, insect bites, anemia, albuminuria, diabetes, herpes,

75.	*Setaria parviflora* (Poir.)Kerguelen	Poaceae	Herb	The seed is diuretic, emollient, febrifuge, refrigerant and tonic
76.	*Sonerila versicolor* Wight.	Melastomaceae	Herb	Immunomodulatory activity
77.	*Spathodea companulata* P. Beauv.	Bignoniaceae	Tree	anti-inflammatory, analgesic, cytotoxic, anti-diabetic and anticonvulsant activity.
78.	*Sphagneticola trilobata* L.	Asteraceae	Herb	used for bathing babies to prevent lichen tropicus skin infection.
79.	*Stachytarpheta indica* (L.)Vahl	Verbenaceae	Shrub	treating malaria, yellow fever, amenorrhea, syphilis, and gonorrhoea
80.	*Striga asiatica* L.	Orobanchaceae	Herb	*used* for treating intestinal parasites
81.	*Tabernaemontana alternifolia* L.	Apocynaceae	Tree	Antioxidant and antimicrobial properties
82.	*Tiliacora acuminata* (Lam.)Hook.f.&Thoms.	Menispermaceae	Climber	phyto-antidote for snake bite, curing skin diseases
83.	*Tradescantia virginiana* L.	Commelinaceae	Herb	The roots are laxative, They are also used as a tea in the treatment of kidney and stomach ailments and women's complaints, A poultice of the leaves is applied to stings, insect bites and cancers
84.	*Tridax procumbens* L.	Asteraceae	Herb	Wound healing and as an anticoagulant, antifungal, and insect repellent. The juice extracted from the leaves is directly applied on wounds. Its leaf extracts were used for infectious skin diseases
85.	*Vernonia cinerea* L.	Asteraceae	Herb	used in smoking cessation, cough, fever, malaria, urinary calculi, arthritis and leprosy
86.	*Vigna reflex-pilosa* L.	Leguminosae	Climber	Antiinfiammatory ,analgesic
87.	*Xenostegia tridentata*(L.)D.F.Austin	Convolvulaceae	Climber	astringent, aphrodisiac, laxative and bitter properties. The aerial parts are used in treating haemorrhoids, swellings, rheumatic affections

Biophytum sensitivum DC.

Evolvulus alsinoides Linn.

Gloriosa superba L.

Pedalium murex L.

Rhinacanthus nasutus(L.)Kurz

Stachytarpheta indica (L.)Vahl

Table 2. Life forms of the species

LIFE FORMS	NUMBER OF SPECIES
Herbs	46
Shrubs	26
Trees	10
Climbers	9

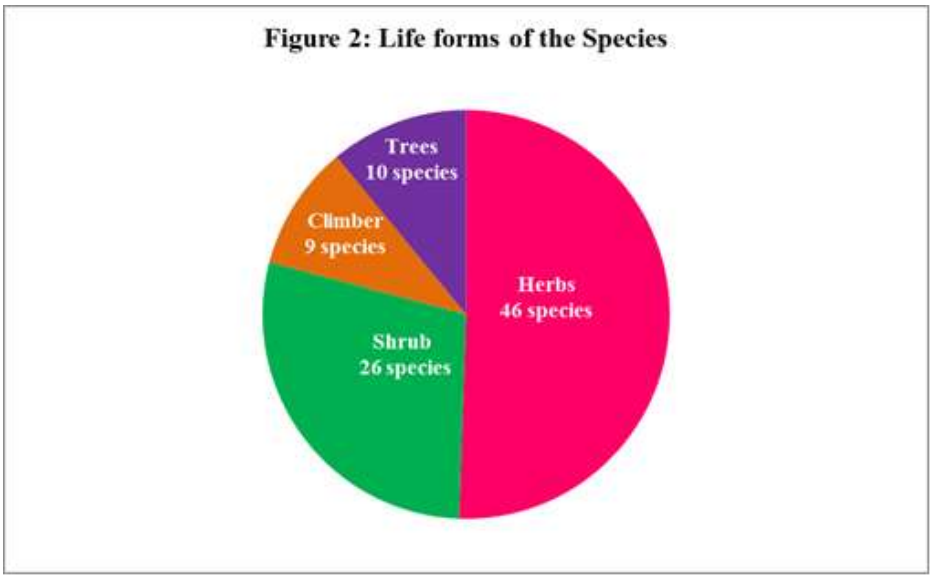

Table 3. Distribution of species under family

S. NO	FAMILY	NO. OF PLANT SPECIES
1.	Leguminosae	10
2.	Asteraceae	8
3.	Apocynaceae	7
4.	Euphorbiaceae	6
5.	Verbenaceae and Commelinaceae	4
6.	Convolvulaceae, Rubiaceae, Lamiaceae and Acanthaceae	3
7.	Amaranthaceae, Araceae, Cyperaceae, Malvaceae and Utricaceae	2
8.	Pteridaceae, Oxalidaceae, Nyctaginaceae, Orchidaceae, Annonaceae, Costaceae, Vitaceae, Cleomaceae, Cytopteridaceae, Davallaceae, Moraceae, Liliaceae, Rutaceae, Linaceae, Violaceae, Balsaminaceae, Linderniaceae, Lygodiaceae, Meliaceae, Passifloraceae, Pedaliaceae, Thelypteridaceae, Petiveriaceae, Plantaginaceae, Selaginellaceae, Poaceae, Melastomaceae, Bignoniaceae, Orobanchaceae and Menispermaceaea	1

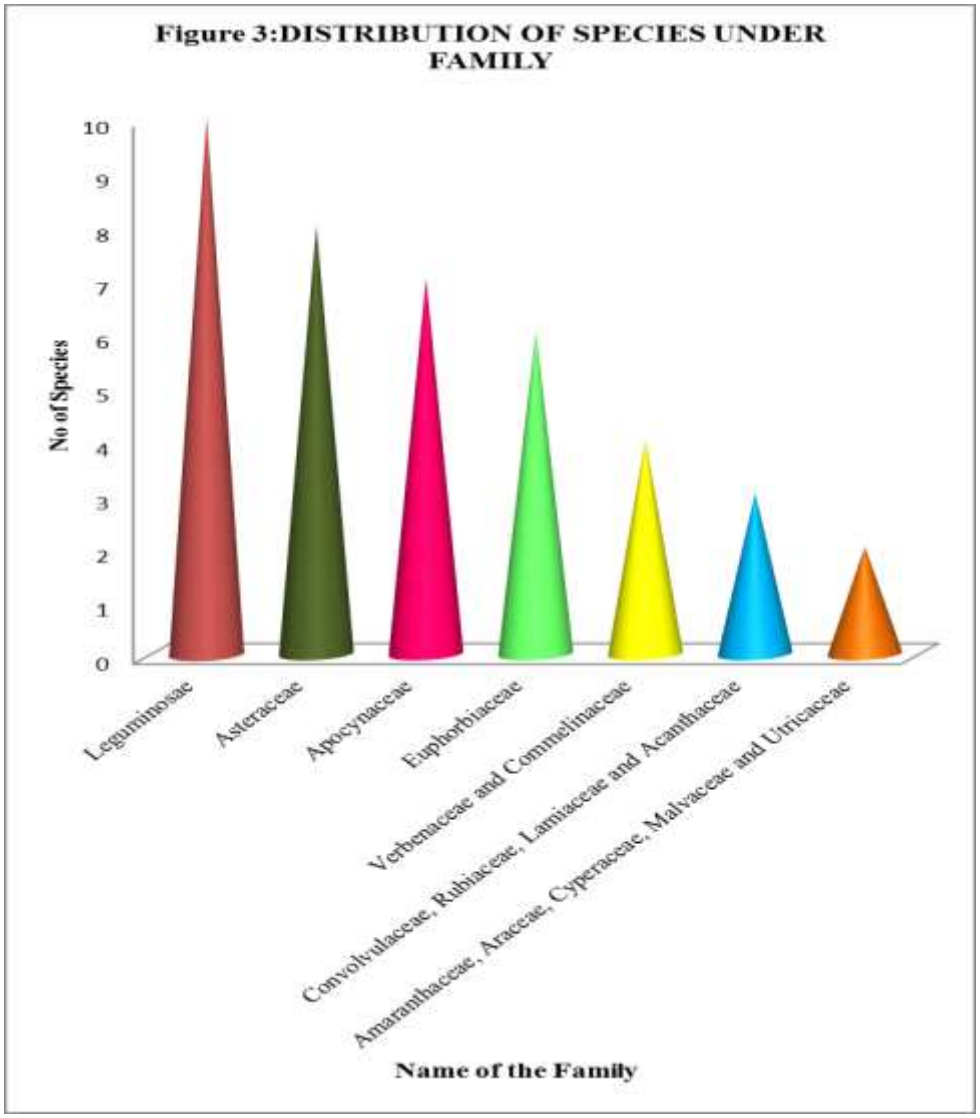

Table 4. Conservation status of recorded species in Niramkaithakotta hills, Kerala

S. NO	BINOMIAL NAME	FAMILY	LIFE FORM	*IUCN RED LIST CATEGORY
1	*Acacia auriculiformis A.Cunn.ex. Benth.*	Leguminosae	Tree	LC
2	*Acalypha indica* L.	Euphorbiaceae	Herb	LC
3	*Acmella uliginosa*(Sw.)Cass	Asteraceae	Herb	NE
4	*Adiantum capillus-veneris* L.	Pteridaceae	Herb	LC
5	*Aerva lanata*(L.) Juss ex Schult.	Amaranthaceae	Herb	LC
6	*Alstonia scholaris* R.Br.	Apocynaceae	Tree	LC
7	*Alternanthera sessilis* R.Br.	Amaranthaceae	Herb	LC
8	*Arum maculatum* L.	Araceae	Shrub	LC
9	*Barleria cristata* L.	Acanthaceae	Shrub	NE

10	*Biophytum sensitivum*(L.)DC.	Oxalidaceae	Herb	NE
11	*Blumea lacera* L.	Asteraceae	Herb	NE
12	*Boerhaavia diffusa* L.	Nyctaginaceae	Herb	NE
13	*Breynia vitis idaea*(Burm.f.)FI.	Euphorbiaceae	Shrub	NE
14	*Bulbophyllum nutans* Thouars.	Orchidaceae	Herb	NE
15	*Calotropis gigantea*(L.) R.Br.	Apocynaceae	Shrub	LC
16	*Cananga odorata* (Lam.)Hook.f.&Thomson	Annonaceae	Tree	NE
78	*Cassia alata* L.	Leguminosae	Shrub	NE
17	*Catharanthus pusillus* (Murray)G.Don	Apocynaceae	Herb	NE
18	*Centrosema pubescens* Benth.	Leguminosae	Climber	NE
19	*Chelocostus speciosus* (J.Konig)C.Specht	Costaceae	Shrub	NE
20	*Chromolaena odorata*(L.)R.M.King&H.Rob.	Asteraceae	Shrub	NE
21	*Cissus verticillata* (L.)Nicolson&C.E.Jarvis	Vitaceae	Vine	LC
24	*Cleodendrum serratum* (L.)Moon	Verbenaceae	Shrub	NE
22	*Cleome rutidosperma* DC.	Cleomaceae	Herb	LC
23	*Clerodendrum indicum* (L.)Kuntze	Verbenaceae	Shrub	NE
25	*Colocasia esculenta* (L.)Schott	Araceae	Shrub	LC
26	*Commelina erecta* L.	Commelinaceae	Herb	LC
27	*Cyanotis cristata*(L.)D.Don	Commelinaceae	Herb	LC
28	*Cyperus rotundus* L.	Cyperaceae	Herb	LC
29	*Cystopteris fragilis*(L.)Bernh.	Cytopteridaceae	Herb	NE
30	*Davallia canariensis*(L.)Sm.	Davalliaceae	Herb	NE
31	*Desmodium paniculatum* (L.)DC	Leguminosae	Herb	NE
32	*Dregea volubilus*(L.f.)Benth.	Apocynaceae	Climber	NE
33	*Eclipta prostate* L.	Asteraceae	Herb	NE
34	*Emillia sonchifolia* DC.	Asteraceae	Herb	NE
36	*Euphorbia heterophylla* L.	Euphorbiaceae	Herb	LC
37	*Euphorbia hirta* L.	Euphorbiaceae	Herb	LC
35	*Evolvulus alsinoides* Linn.	Convolvulaceae	Herb	LC
38	*Ficus bengalensis* L.	Moraceae	Tree	LC
39	*Gliricidia sepium* Jacq.	Leguminosae	Tree	NE
40	*Gloriosa superba* L.	Liliaceae	Shrub	EN
41	*Glycosmis pentaphylla* Corr.	Rutaceae	Tree	NE
42	*Grewia nervosa* (Lour.)G.Panigrahi	Malvaceae	Shrub	NE
43	*Grona triflora* (L.)H.Ohashi	Leguminosae	Herb	NE
44	*Hibiscus surrattensis* L.	Malvaceae	Shrub	NE
45	*Hugonia mystax* L.	Linaceae	Shrub	NE
46	*Hybanthus enneaspermus* Jacq.	Violaceae	Herb	NE
47	*Impatiens flaccida* Arn.	Balsaminaceae	Herb	NE
48	*Ipomea mauritiana* Jacq.	Convolvulaceae	Climber	NE
49	*Ixora coccinea* L.	Rubiaceae	Shrub	NE
50	*Kyllinga brevifolia* Rottb.	Cyperaceae	Herb	LC
51	*Lantana camara* L.	Verbenaceae	Shrub	LC
52	*Laportea aestuans* (L.)Chew	Utricaceae	Herb	NE
54	*Leucas aspera* (Willd.)Link	Lamiaceae	Herb	NE
53	*Lindernia dubia* (L.)Pennel	Linderniaceae	Herb	LC
55	*Lygodium venustum* Sw.	Lygodiaceae	Climber	NE
56	*Microstachys chamaelea* (L.)Mull.Arg.	Euphorbiaceae	Herb	NE
57	*Mimosa pudica* L.	Leguminosae	Herb	LC
58	*Mimosa quadrivalvis* L.	Leguminosae	Shrub	NE

59	*Morinda citrifolia* L.	Rubiaceae	Tree	NE
60	*Murdannia nudiflora*(L.)Brenan	Commelinaceae	Herb	NE
61	*Naregamia alata* Wight&Arn.	Meliaceae	Herb	NE
62	*Ocimum basilicum* L.	Lamiaceae	Shrub	NE
63	*Oldenlandia corymbosa* L.	Rubiaceae	Herb	NE
64	*Parietaria officinalis* L.	Utricaceae	Herb	NE
65	*Passiflora foetida* L.	Passifloraceae	Climber	LC
66	*Pedalium murex* L.	Pedaliaceae	Herb	NE
67	*Phegopteris connectilis* (Michx)Watt	Thelypteridaceae	Herb	NE
68	*Phyllanthus niruri* L.	Euphorbiaceae	Herb	NE
69	*Premna serratifolia* L.	Lamiaceae	Shrub	NE
70	*Pterocarpus santalinus* L.f.	Leguminosae	Tree	EN
71	*Rauwolfia serpantina* Benth.	Apocynaceae	Shrub	NE
72	*Rauwvolfia tetraphylla* L.	Apocynaceae	Shrub	NE
73	*Rhinacanthus nasutus* (L.)Kurz	Acanthaceae	Shrub	NE
74	*Rivina humilis* L.	Petiveriaceae	Shrub	NE
75	*Ruellia tuberosa* L.	Acanthaceae	Shrub	NE
76	*Scoparia dulcis* L.	Plantaginaceae	Herb	NE
77	*Selaginella tamariscina* P.Beauv	Selaginellaceae	Herb	NE
79	*Setaria parviflora*(Poir.)Kerguelen	Poaceae	Herb	NE
80	*Sonerila versicolor* Wight.	Melastomaceae	Herb	NE
81	*Spathodea companulata* P. Beauv.	Bignoniaceae	Tree	NE
82	*Sphagneticola trilobata* L.	Asteraceae	Herb	NE
83	*Stachytarpheta indica* (L.)Vahl	Verbenaceae	Shrub	NE
84	*Striga asiatica* L.	Orobanchaceae	Herb	NE
85	*Tabernaemontana alternifolia* L.	Apocynaceae	Tree	NE
86	*Tiliacora acuminata* (Lam.)Hook.f.&Thoms.	Menispermaceae	Climber	NE
87	*Tradescantia virginiana* L.	Commelinaceae	Herb	NE
88	*Tridax procumbens* L.	Asteraceae	Herb	NE
89	*Vernonia cinerea* L.	Asteraceae	Herb	LC
90	*Vigna reflex-pilosa* L.	Leguminosae	Climber	NE
91	*Xenostegia tridentate* (L.)D.F.Austin	Convolvulaceae	Climber	NE

***NE- Not Evaluated, *LC-Least Concern, *EN –Endangerd**

4. CONCLUSION:

The current study provides the basic information about the medicinal uses of plant species and provides the information about the distribution, description and conservation status of the medicinal plant species which is useful for further research and field work in Niramkaitha kotta Hills. It is concluded that, 91 medicinal plant species are documented in the study area which belongs to 45 families and 4 species of pteridophytes has been recorded from the study area of Niramkaitha kotta Hills. Out of this 91 species 87 families belongs to Dicotyledons and 4 families belongs to Monocotyledons and four species were Pteridophyte. In the life form category of the enumerated plants the majority of the species were herbs (46 species) followed by shrubs (26 species), climber (9 species) and tree (10species). *Tridax procumbens* L. was the most abundant species when compared to other species in the study area. In the present study out of 91 species recorded two species namely *Gloriosa superba* L. and *Pterocarpus santalina* L. f are endangered, 24 species are least concern. These wild medicinal plant species treasure are encouraged to be conserved because many of the valuable plant species are under threat to became rare, endangered and some are on the verge of extinction due to various external factors.

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