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Ethno-medicine system of Gadag district, Karnataka, India

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Abstract

Ethno-Medico Botanical survey work has been carried out in rural areas of Gadag district, Karnataka during 2013-14. Gadag district is located in the central part of northern Karnataka between 15.4167°N and 75.6167°E. Kappath hills of Gadag district is a treasure of medicinal plants. Of total geographical area of the district, 7 percent is covered by forest and a large part of it belongs to the shrub category. Local traditional healers are playing an important role on health issues of the populace. Survey team interacted with age old people of villages and traditional healers and collected 63 folk claims of common lifestyle ailments like Animal bite and poisoning, Ano-rectal, Bone and joints, Calculus, Gastro intestinal tract, Gynecological, Metabolic disorders, Neurological disorders, Respiratory system, Skin, Others and Veterinary. The collected data has been represented systematically in tabular form and photographs of medicinal plants with traditional healers have been presented in this paper.

Keywords: Traditional, Ethno-Medicine System, Folklore, Healthcare, Medicinal plants

1. Introduction

Indian Vedas and Upanishads are the evidence of origin of traditional system of medicine and also bridging with modern medicine. Traditional medicine systems are well flourished in our country and spreading fragrance in other countries too. This system of medicine is passing from generation to generation and used to treat various health ailments of human and animal. India is blessed with diverse flora and fauna. Most of the population is living in the rural area and dependent on rainfed agriculture for their sustenance. The populaces staying in remote villages are not aware of modern facilities and not in a position to afford the expenditure to treat health related ailments. These people will prepare their own simple herbal formulation to treat general health issues, for serious issues family head will consult the local traditional healers. In urban area, modern system of medicine spoiled the total health system of the urban population by symptomatic treatment. Medicated people are leading their life with lots of side effects and other complications. Due to this urban population is slowly diverting towards our own traditional system of medicine even though it may need long time to heal the ailment.

Karnataka is known for the practice of traditional system of medicine. Western and Eastern Ghats are contributing a lot of raw material for the preparation various medicine to take care of public health. Most of the traditional practitioner use medicinal plants available in their surroundings field and of nearest forest. Ethno-Botanical literature of Gadag district reveals that, documentation of local health Tradition is limited to some selected area such as Ramana *et al.* (2008) have worked on floristic biodiversity of Magadi wetland area in Gadag and recorded 52 plants of these 44 are used medicinal; Sidanand and Kotresha (2011) [2] have conducted study on alien flora of Gadag district and enlisted 141 plants species belonging 112 genera in 40 families with medicinal and other economical uses; Harihar and Kotresha (2012) [3] have documented 27 medicinal plants belonging to 25 genera and 17 families from Kappat hills used by local people for herbal preparations; Sidanand and Kotresha (2014) [4] have enlisted 133 tree species belonging to 105 genera of 42 families in the forests of Gadag district and Shiva kumar and parashurama (2015) have interviewed the folk healers and collected 114 medicinal plant information from Kappathgudda region of Gadag district of which 16 are recorded used as medicinal. People of the Gadag district area have a belief that unique medicinal plant available in the Kappathgudda and other forest due to unique climatic and geographical condition.

In supporting that many more traditional healers from Karnataka and other states are visiting the forest in all seasons for crude drugs collection and taking the shelter in the temples and Maths. It is the present need to understand the use of locally available medicinal plants in various formulations to control health related issues. Hence, the present work has been under taken to understand the plants used by local people to cure various diseases.

2. Study area

The study area of Gadag district is found between $15^{\circ} 12'$ and $15^{\circ} 56'$ N and $75^{\circ} 16'$ and $76^{\circ} 2'$ E. An estimated geographical area is 4657.00 sq Kms and it is found to be an expanded tract of Deccan plateau. The forest cover includes reserved forest (32799.21) and protected forests (268.67) hectares of land. This area encompasses various districts in different positions on the north by Bagalkot, south by Haveri, east by Koppal and west by Haveri district. Gadag district is having 04 taluks such as Gadag, Mundargi, Naragund, Ron and Shirahatti (Figure no. 01).

The major water sources are Malaprabha and Tungabhadra rivers. Gadag area contains auriferous minerals such as Gold and Iron present in Kappath hills, Kabool, Yatakatti, Attikatti, Sangli and Hosur. Soil found in this zone is deep loamy with humus and productivity of soil is inadequate due to less rain fall. South west monsoon kind of climate is observed. The temperature varies from 19° to 20° during December to January and maximum temperature reached till 42° in the month of May. The rain fall is unreliable and it varies from 450 mm to 650 mm during April and May. The forests of this area are ascended from uneven and low hill ranges of about 500 feet above the plain land. Most of the district place is treeless and floristic diversity is appeared to be green patchy areas such as Shirahatti, Mundargi and Kappath hills.

Some historical evidence revealed more focussed data on Kappath hills for having domicile of religious belief due to Kappath malleshwara temple in the hills and it is considered as sacred place to perform meditation for saints in olden days. Till today thousands of people visit Kappath hills temple during "Shravana masa" and strong belief among the people that, every people who visit temple should carry one small twig of any tree in Kappath hills on their return journey to their home for the wellbeing of themselves and their communities. The medicinal plants of Kappath hills has more importance and it is said to be the presence of rich minerals such as gold and iron, this contributes robust strength for the existence and curative properties present in the available medicinal plants. Most of the neighbour nati vaidyas mainly depended on Kappathgudda hills for the collection of medicinal plants. At present only few medicinal plants are still available in the Kappath hills remaining plant species are almost extinct. Kappath hills had a pleasant fog or moist kind of climate like southern hill stations like Ooty and Kodaikanal. The valleys of Kappath hills had very good vegetation in and around Kadkol, Doni, Chikkawaddatti, Bagewadi and Kelur villages. The vegetation of these villages shows some dry deciduous sort of vegetation. Local people depended on forest areas for grazing and supply of stones and building materials by mining activities.

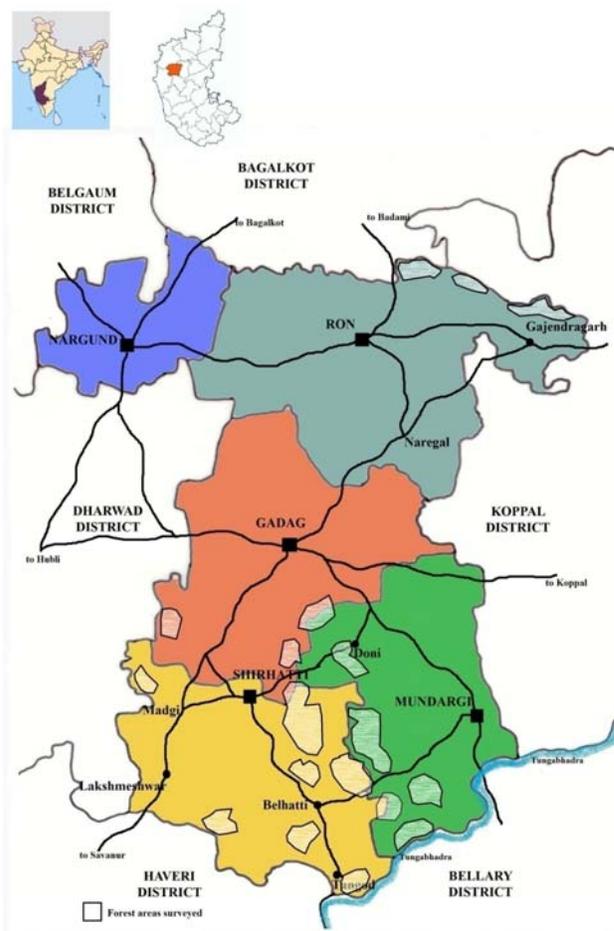


Fig 1: Map of the study area of Gadag, Karnataka

3. Methodology

Ethno Medico-Botanical survey work has been carried out in the forests of Gadag district during 2013-14 to enlist flora of medicinal plants available and plants used for the preparation various formulations for the control and management of diseases by local people. This work has been carried out by interviewing of traditional healers and age people of the villages to duly filling of format provided by CCRAS, Ministry of AYUSH, Govt. of India. Followed by, visiting of forest along with traditional knowledge provider and forest staff to locate the medicinal plants for collection of herbarium specimen and photography.

Collected herbarium specimens were botanically identified and authenticated with the help of floras Gamble (1967a, 1967b & 1967c) [6, 7, 8], Marigowda and Krishnaswamy (1968) [9], Ramaswamy and Razi (1973) [10], Saldanha and Nicolson (1976) [11], Rao and Razi (1981) [12], Yoganarasimhan *et al* (1982) [13], Sharma *et al* (1984) [14], Saldanha (1984) [15], Murthy and Yoganarasimhan (1990) [16], Saldanha (1996) [17], Singh (1988a & 1988b) [18, 19], Seetharam *et al* (2000) [20], Ramaswamy *et al* (2001) [21], Bhat (2004), Gowda (2004) [23], Manjunatha *et al* (2004) [24] and Rao (2008) [25]. Identified herbarium specimens were cross verified with herbarium specimens of RRCBI, Survey of Medicinal Plants Unit, RARIMD, Jayanagar 1st Block, Bengaluru. The Nomenclature of each species has been updated as per the ICBN principles and rules of Bennet (1987) [27]. Recorded data has been

indexed and systematically organized as system, name of the disease, ingredients, part used, method of preparation and mode of administration. Botanically identified medicinal plant photographs are arranged alphabetically in the plates.

4. Results and Discussion

Documentation of local health traditions of Gadag is having formulations to treat to 63 diseases from various systems like animal bite and poisoning (5), Ano-rectal (4), Bone and joints (6), calculus (2), gastro intestinal tract (8), gynecological (5),

metabolic disorders (2), Neurological disorders (1), Respiratory system (3), Skin (10) and others (16) and also veterinary (1). All together 79 plant ingredients and 2 minerals are used for the preparation of various formulations to cure listed diseases. The collected data has been indexed and systematically organized as system, name of the disease, ingredients, part used, method of preparation and mode of administration (table no. 01) and photographs are presented with botanical names (Plate no. 01- 07).

Table 1: Folk-claims of Gadag district, Karnataka.

Sl. No	System	Name of the disease	Ingredients	Part used	Method of Preparation	Mode of administration
1.	Animal bite and poisoning	Dog bite	Apamarga: <i>Achyranthes aspera</i> L. - Amaranthaceae	Root	Root is dried and powdered	1 g of root powder given orally for 7 days in dog bite
2.		Snake bite	Eshwari: <i>Aristolochia indica</i> L. - Aristolochiaceae	Whole plant	Whole plant is collected and dried in shade and made into a powder	10 g of whole plant powder given orally for 7 days in snake bite
3.		Snake bite	Kataka: <i>Strychnos potatorum</i> Linn.f.- Loganiaceae	Fruit	Fruit is dried and made into a powder	Fruit powder is applied over the site of snake bite
4.		Scorpion bite	Eshwari: <i>Aristolochia indica</i> Linn.- Aristolochiaceae	Roots	Root of drug is mixed with water, ground, kalka prepared	Applied to site of scorpion bite.
5.		Prolonged and Accumulated poisoning	Ankola: <i>Alangium salvifolium</i> (Linn.f.) Wang	Root	Roots mixed with water and crushed to prepare paste	To expel the Garavisha(For Vomiting), 50 gm of paste given orally
6.	Ano-rectal	Rectal prolapse	Kumari: <i>Aloe vera</i> (L.) Burman-Liliaceae	Leaf pulp	Leaf pulp is scrapped out of the leaf.	applied locally to Guda bhramsha / Rectal prolapsed
7.		Rectal prolapse	Sitaphala: <i>Ammona squamosa</i> L.- Annonaceae	Leaves	Leaves are crushed to obtain juice	200 mL of leaf juice given orally BD in Guda bhramsha/Rectal prolapsed
8.		Bleeding hemorrhoids.	Adhahpushpi: <i>Trichodesma indicum</i> (L.) R.Br.-Boraginaceae Lata karanja: <i>Caesalpinia bonduca</i> (L.) Roxb.- Caesalpinaceae Maricha: <i>Piper nigrum</i> L.- Piperaceae Saindava lavana: Sodium Chloride + Sodium Sulphate	Leaves	All ingredients are powdered and mixed in equal quantity	5 g of the powder is given twice daily in Raktarshas/ Bleeding hemorrhoids.
				Seeds		
9.	Bleeding hemorrhoids.	Hingunadika: <i>Gardenia resinifera</i> Roth.- Rubiaceae	Resin	Resin is taken and placed in ripe banana	Juice kept in banana during night and eaten next morning in Arshas / hemorrhoids	
10.	Bone and joints	Fracture	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth	Whole plant	The whole plant made into paste	Applied over bone fracture site.
11.		Osteoarthritis	Schefflera venulosa (Wight & Arn.) Harms- Araliaceae Vana tulasi: <i>Ocimum basilicum</i> L.Lamiaceae Tulasi: <i>Ocimum sanctum</i> L. Lamiaceae	Leaves	Leaves are taken in equal quantity, dried and powdered	5 g of leaves powder given orally in Sandigatavata / Osteoarthritis
				Leaves		
				Leaves		
12.	Arthralgia	Aaragvadh: <i>Cassia fistula</i> Linn.- Caesalpinaceae	Roots	Roots mixed with water and crushed to prepare kalka (paste)	Applied in affected joints in Sandhishoola /Arthralgia	
13.	Arthralgia	<i>Schefflera venulosa</i> (Wt. & Arn.) Harms-Araliaceae	Leaves	Leaves are crushed and rolled into pills	1 gm tablet in empty stomach for 21 days in Sandhi shoola / Arthralgia	
14.	Fracture	Asthishrunkala: <i>Cissus quadrangularis</i> L.-Vitaceae	Stem	Stem mixed with water and decoction prepared	Stem decoction given orally in Fractures	

15.		Painful joints	Tila: <i>Sesamum indicum</i> L.- Pedaliaceae Eranda: <i>Ricinus communis</i> L.- Euphorbiaceae Nimba: <i>Azadirachta indica</i> A. Juss- Meliaceae Methika: <i>Trigonella foenum-graecum</i> L.-Fabaceae Karpura: <i>Cinnamomum camphora</i> (L.) Nees & Eberm.-Lauraceae Shatapushpa: <i>Foeniculum vulgare</i> Miller.-Apiaceae	Seeds Seeds Leaves Seeds Resin Seeds	Oil is extracted from Tila, Eranda and Nimba and mixed with powders of other ingredients.	Locally applied over shula yukta sandhi / Painful joints.	
16.	Calculus	Renal calculus	Jayanthi: <i>Tridax procumbens</i> L.- Asteraceae	Whole plant	Whole plant is crushed to extract juice	Given orally 5 mL BD in Mutrashmari / urinary Calculus	
17.		Renal calculus	Shigru: <i>Moringa oleifera</i> auct. non Lam.-Moringaceae	Leaves	Leaves crushed and juice obtained	5-10 ml of leaf juice is given in Ashmari / Calculus	
18.	Gastro intestinal tract	Abdominal Ulcers	Snuhi: <i>Euphorbia nivulia</i> Buch.- Ham. - Euphorbiaceae	Stem Juice	Collect the stem parts, semi burn and extract juice	Oral administration of 1 tsp juice + 1 tsp honey for 7 days	
19.		Constipation	Danthi: <i>Baliospermum montanum</i> (Willd) Muell.-Arg. – Euphorbiaceae	Seeds	Seeds are powdered and mixed with jaggery and made into tablet	1 tablet given early morning empty stomach	
20.		Indigestion	Ingudi: <i>Balanites aegyptiaca</i> (L.) Delile - Simaroubaceae	Fruit gum	Fruit rind is ripped off and gum seperated	1 g taken before food in Ajeerna / Indigestion	
21.		Stomatitis	Charma karvata: <i>Ehretia canarensis</i> (C.B.Clarke) Gamble-Boraginaceae	Leaves	Leaves are crushed and juice extracted	Juice with Pan Patra given for chewing in mukhapaka / Stomatitis	
22.		Hyperacidity	Changeri: <i>Oxalis corniculata</i> Linn.-Oxalidaceae	Leaves	Leaves are crushed and juice extracted	Leaf juice mixed with pinch of lime water and given in Amlapitta / Hyperacidity	
23.		Diarrhoea	Bhumyamalaki: <i>Phyllanthus amarus</i> Schumach. & Thonn.- Euphorbiaceae	Leaves	Leaves are crushed and juice extracted	Orally 5 mL juice given in Atisara / Diarrhoea	
24.		Diarrhoea	Tinthidika: <i>Tamarindus indica</i> L.- Fabaceae	Fruit pulp	Fruit pulp made into fine paste	125mg given orally in Bala atisara / infantile diarrhea	
25.		Pain Abdomen	<i>Cadaba fruticosa</i> (L.) Druce-Capparaceae	Leaves	Leaves crushed and juice obtained	5-10 ml of leaf juice is given in Udara shula / Pain Abdomen	
26.		Gynecological	Dysmenorrhoea	Shata pushpa: <i>Foeniculum vulgare</i> Miller-Apiaceae Aranya jeeraka: <i>Centratherum anthelminticum</i> (L.) Kuntze - Apiaceae	Seeds	Seeds are taken in equal quantity and boiled in water and filtered to obtain a decoction.	200 mL of decoction of drugs given orally in Kashtartava / Dysmenorrhoea
27.			Leucorrhoea	<i>Rhus mysorensis</i> G.Don.- Anacardiaceae	Leaves	Leaves are crushed and juice extracted	Juice mixed with butter milk & cumin powder and taken in Shwetha pradara / Leucorrhoea
28.	Menorrhagia		Japakusuma: <i>Hibiscus rosasinensis</i> L.-Malvaceae	Flowers	Flowers pounded and juice extracted	Juice of flowers given orally in Rakta pradara / Menorrhagia	
29.	Leucorrhoea		Pashana bheda: <i>Aerva lanata</i> (L.) Juss. ex Schultes- Amaranthaceae	Whole plant	Whole plant is crushed and juice extracted	10 mL given orally relieves Shwetha pradara / leucorrhoea	
30.	Leucorrhoea		Sariva: <i>Hemidesmus indicus</i> (L.) R. Br.- Asclepiadaceae Lashuna: <i>Allium sativum</i> L.- Liliaceae Maricha: <i>Piper nigrum</i> L.- Piperaceae Lavanga: <i>Syzygium aromaticum</i> (L.) Merr.& Perry-Myrtaceae	Roots Bulb Seeds Flower buds	All ingredients are mixed in equal quantity, crushed and juice extracted	Given orally 5 mL BD in Shweta pradara / Leucorrhoea	
31.	Metabolic disorders	Diabetes mellitus	Guduchi: <i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thomson Menispermaceae Kalmegha: <i>Andrographis paniculata</i> (N. Burman) Wall. ex Nees-Acanthaceae Madhu nashini: <i>Gymnema sylvestre</i> (Retz.) R. Br. ex Schultes-Asclepiadaceae	Leaves Leaves Leaves	Leaves are taken in equal quantity, dried and powdered	5 g given thrice daily orally in madhumeha / Diabetes mellitus	
32.		Diabetes mellitus	Bilwa: <i>Aegle marmelos</i> (L.) Correa- Rutaceae	Leaves	Leaves are crushed and juice extracted	5 mL juice given orally in Madhumeha / Diabetes mellitus.	

33.	Neurological disorders	Paralysis	Tila: <i>Sesamum indicum</i> L.- Pedaliaceae	Seeds	All ingredients mixed oil is prepared	Oil massaged over affected part in Pakshaghata / Paralysis
			Sarshapa: <i>Brassica nigra</i> (L.) G. Koch-Brassicaceae	Seeds		
			Chincha: <i>Tamarindus indica</i> L.- Fabaceae	Fruit pulp		
			Agnimantha: <i>Clerodendrum phlomidis</i> L.f.-Verbenaceae	Bark		
			Sadapushpa: <i>Calotropis gigantea</i> (L.) R. Br.-Asclepiadaceae	Leaves		
34.	Respiratory system	Bronchial Asthma	Dhanvayaasa: <i>Fagonia indica</i> N.Burm.-Zygophyllaceae	Root	Roots mixed with water and crushed to prepare paste	5-10ml of paste given orally in Shwasa / Asthma
35.		Bronchial Asthma	Girishalmalika: <i>Cochlospermum religiosum</i> (L.) Alston	Leaves	Leaves are dried and made into a powder	1g powder given orally with honey for 7 days relieves Shwasa / Asthma
36.		Bronchial Asthma	Lakshmana: <i>Solanum trilobatum</i> L.-Solanaceae Tulasi: <i>Ocimum sanctum</i> L.- Lamiaceae Vishamadari: <i>Clerodendrum inerme</i> (L.) Gaertner- Verbenaceae Markandika: <i>Cassia angustifolia</i> Vahl.-Caesalpiniaceae	Leaves Leaves Leaves Leaves	All ingredients crushed and juice extracted	Given orally 5 mL BD in Shwasa / Asthma.
37.	Skin	Warts	Karaveera patra: <i>Cascabela thevetia</i> (L.) Lippold- Apocyanaceae Nimbu: <i>Citrus lemon</i> L.- Rutaceae	Leaves Lemon juice	2 – 3 leaves made into a paste (kalka) and mixed with lemon juice	Paste applied on Warts
38.		Urticaria	Palasha: <i>Butea monosperma</i> (Lam.) Taubert- Fabaceae	Leaves	Leaves dried and made into a powder.	Powder added to bathing water in Sheetapitta / Urticaria
39.		Skin lesions	Kenduka: <i>Diospyros melanoxylon</i> Roxb.-Ebenaceae	Leaves	Leaves are crushed to make a paste	Locally applied over lesions of Shwetakushta / A type of skin disease
40.		Allergic skin lesions	Arka: <i>Calotropis gigantea</i> (L.) R. Br.-Asclepiadaceae	Leaves	Leaves are burnt to obtain Ash	250mg BD of bhasma orally in Vicharchika / Allergic skin lesions
41.		Wound	Jayanthi: <i>Tridax procumbens</i> L.- Asteraceae	Whole plant	Whole plant is made into a paste	Local application of paste is helpful in Vrana ropana / Wound healing
42.		Allergic skin lesions	Swarnaksheeri: <i>Argemone mexicana</i> L.- Papavaraceae	Latex	Latex is collected from the fresh plant	Locally applied as an ointment in Vicharchika / Allergic skin lesion
43.		Skin thickenings	Parisha: <i>Thespisia populnea</i> (L.) Sol. ex Correa- Malvaceae	Bark	Bark is rubbed with water and lime	Locally applied with lime water in gajakarna / thickened skin
44.		Leucoderma	Avarthaki: <i>Cassia auriculata</i> L.- Caesalpiniaceae	Leaves	Leaves are pounded to make a paste	Locally applied on the lesions of shwithra / leucoderma
45.		Wounds	<i>Prosopis juliflora</i> (Sw.) DC.- Mimosaceae	Leaves	Leaves are ground into a paste	5gms of Paste of leaves is applied over Vrana / wounds due to injury.
46.		Herpes	<i>Morinda citrifolia</i> L.-Rubiaceae	Leaves	Leaves are crushed into a paste along with 5-6 grains of salt	Applied on Visarpa / herpes lesions
47.	Others	Excess heat in the body	<i>Naringi crenulata</i> (Roxb.) Nicolson- Rutaceae	Leaves	Leaves are boiled in water to obtain decoction	200 ml of decoction is taken once a day in empty stomach in Sharira daha/ excess heat in the body
48.		Alcohol deaddiction	Naakuli: <i>Corallocarpus epigaeus</i> (Rottler) Hook.f.-Cucubitateae Aralu: <i>Ailanthus excelsa</i> Roxb. - Simaroubaceae	Leaves Leaves	The drugs are powdered and mixed with sufficient quantity of horse urine and made into paste. The paste is applied to steel plate and allowed to dry in shade. Then the dried powder is collected and its decoction is prepared	200 mL of decoction is given with alcohol induces vomiting. This is used for alcohol deaddiction
49.		Toothache	<i>Stylosanthes fruticosa</i> (Retz.) Alston	Leaves	Leaves dried and made into a powder.	Applied to teeth and gum region in danta shoola / toothache

50.		Toothache	Haritaki: <i>Terminalia chebula</i> Retz.- Combretaceae	Fruit	Fruits are ground to make a paste	Sufficient quantity of fruit paste should be placed in the painful tooth in Dantashoola
51.		Aphrodisiac	<i>Polygala erioperta</i> DC.- Polygalaceae	Whole plant	Whole plant crushed to make a paste	Paste of plant given orally 5 - 10 mL daily for shukrala / aphrodisiac effect.
52.		Toothache	Bruhathi: <i>Solanum indicum</i> auct. non L.- Solanaceae	Seeds	Seeds are heated with Sesame oil	Oil fumigation is given to relieve toothache.
53.		Pitta dosha-vitiated pitta (body humor)	Ingudhi: <i>Balanites aegyptica</i> (L.) Delile- Simaroubaceae	Fruit	Fruit gum separated and grated	1 g of fruit gum is taken before food in Pitta dosha orally
54.		Cancer	Apamarga: <i>Achyranthes aspera</i> L.- Amaranthaceae	Whole plant	Whole plant burnt to prepare alkali	The alkali is to be taken orally in Arbuda / Cancer
55.		Headache	Sariva: <i>Hemidesmus indicus</i> (L.) R. Br.- Asclepiadaceae	Root	Root boiled in water and concentrate prepared	Given orally 5 mL BD before food in Shirashoola / Headache.
56.		Hairfall	Kuchandana: <i>Adenanthera pavonina</i> L.-Fabaceae	Seeds	Seeds burnt to prepare ash	Bhasma of seeds applied to the scalp for treating Hair fall
57.		Dental caries	<i>Stylosanthes fruticosa</i> (Retz.) Alston- Fabaceae	Leaves	Leaves crushed and juice obtained	The juice is applied on the Krimidanta/caries tooth
58.		To enhance Immunity	Kulatha: <i>Dolichos biflorus</i> L.- Fabaceae	Seeds	Seeds boiled in water to obtain decoction	5 - 10 mL of decoction given orally to enhance roga nirodhashakti / Immunity
59.		Infertility	Girishalmaika: <i>Cochlospermum religiosum</i> (L.) Alston	Flowers	Flowers are dried and made into a powder	Powder mixed with honey and used orally in Klaibya / infertility
60.		Throat pain	Maricha: <i>Piper nigrum</i> L.- Piperaceae Lavanga: <i>Syzygium aromaticum</i> (L.) Merr.& Perry-Myrtaceae	Seeds Flower buds	Pepper and clove- 1 part each are made into fine powder	applied on uvula in Gala shoola / throat pain
61.		General tonic	Avarthani: <i>Helicteres isora</i> L.- Sterculiaceae Jaatiphala: <i>Myristica fragrans</i> Houtt.- Myristicaceae Haridra: <i>Curcuma longa</i> auct. non L.-Zingiberaceae Puga: <i>Areca catechu</i> L.-Arecaceae Badami: <i>Prunus amygdalis</i> Batsch.-Rosaceae Kharjura: <i>Phoenix dactylifera</i> L.- Arecaceae	Fruit Fruit aril Rhizome Nut Nut Fruit pulp	All the ingredients are mixed in equal quantity and rolled into pills	Triturated with breast milk and given to infants as a Rasayana / General tonic
62.		Migraine	Aamra: <i>Mangifera indica</i> L.- Anacardiaceae Agnimantha: <i>Clerodendrum serratum</i> (L.) Moon- Verbenaceae Ela: <i>Elettaria cardamom</i> (L.) Maton- Zingiberaceae	Leaves Leaves Seeds	All ingredients are mixed and juice extracted	Fresh juice instilled as nasal drops in Ardhavabhedaka / migraine.
63.	Veterinary	Neurological weakness of legs in ox / bull	Vana palandu: <i>Dipcadi montanum</i> (Dalzell) Baker- Asparagaceae	Fruit juice	Fruit is crushed and juice expressed	Juice is instilled in the nose and ears in neurological weakness of legs in ox / bull

*Achyranthes aspera* L.*Adenanthera pavonina* L*Aegle marmelos* (L.) Correa

		
<i>Aerva lanata</i> (L.) Juss. ex Schultes	<i>Ailanthus excelsa</i> Roxb.	<i>Alangium salvifolium</i> (Linn.f.) Wang.
		
<i>Allium sativum</i> L.	<i>Aloe vera</i> (L.) Burman	<i>Andrographis paniculata</i> (N. Burman) Wall. ex Nees
		
<i>Annona squamosa</i> L.	<i>Areca catechu</i> L.	<i>Argemone mexicana</i> L.
		
<i>Aristolochia indica</i> Linn.	<i>Azadirachta indica</i> A. Juss	<i>Balanites aegyptiaca</i> (L.) Delile

Plate 1: Ethno-medicinal plants of Gadag district, Karnataka.

		
<i>Baliospermum montanum</i> (Willd) Muell.-Arg.	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth	<i>Brassica nigra</i> (L.) G. Koch

		
<i>Butea monosperma</i> (Lam.) Taubert	<i>Cadaba fruticosa</i> (L.) Druce	<i>Caesalpinia bonduc</i> (L.) Roxb.
		
<i>Calotropis gigantea</i> (L.) R. Br.-	<i>Cascabela thevetia</i> (L.) Lippold	<i>Cassia angustifolia</i> Vahl.
		
<i>Cassia auriculata</i> L.	<i>Cassia fistula</i> Linn.	<i>Centratherum anthelminticum</i> (L.) Kuntze
		
<i>Cinnamomum camphora</i> (L.) Nees & Eberm.	<i>Cissus quadrangularis</i> L.	<i>Citrus lemon</i> L.

Plate 2: Ethno-medicinal plants of Gadag district, Karnataka.

		
<i>Clerodendrum inerme</i> (L.) Gaertner	<i>Clerodendrum phlomidis</i> L.f.	<i>Clerodendrum serratum</i> (L.) Moon

		
<i>Cochlospermum religiosum</i> (L.) Alston	<i>Corallocarpus epigaeus</i> (Rottler) Hook.f.	<i>Curcuma longa</i> auct. non L.
		
<i>Diospyros melanoxylon</i> Roxb.	<i>Dipcadi montanum</i> (Dalzell) Baker	<i>Dolichos bifloros</i> L.
		
<i>Ehretia canarensis</i> (C.B.Clarke) Gamble	<i>Elettaria cardamom</i> (L.) Maton	<i>Euphorbia nivulia</i> Buch.-Ham.
		
<i>Fagonia indica</i> N.Burm	<i>Foeniculum vulgare</i> Miller.	<i>Gardenia resinifera</i> Roth.

Plate 3: Ethno-medicinal plants of Gadag district, Karnataka.

		
<i>Gymnema sylvestre</i> (Retz.) R. Br. ex Schultes	<i>Helicteres isora</i> L.	<i>Hemidesmus indicus</i> (L.) R. Br.

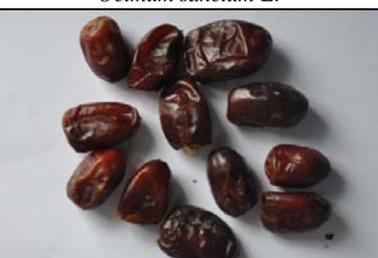
		
<i>Hibiscus rosa-sinensis</i> L.	<i>Mangifera indica</i> L.	<i>Morinda citrifolia</i> L.
		
<i>Moringa oleifera</i> auct. non Lam.	<i>Myristica fragrans</i> Houltt.	<i>Naringi crenulata</i> (Roxb.) Nicolson
		
<i>Ocimum basilicum</i> L.	<i>Ocimum sanctum</i> L.	<i>Trichodesma indicum</i> (L.) R.Br.
		
<i>Oxalis corniculata</i> Linn.	<i>Phoenix dactylifera</i> L.	<i>Phyllanthus amarus</i> Schumach. & Thonn.

Plate 4: Ethno-medicinal plants of Gadag district, Karnataka.

		
<i>Piper nigrum</i> L.	<i>Polygala erioptera</i> DC.	<i>Prosopis juliflora</i> (Sw.) DC.
		
<i>Prunus amygdalis</i> Batsch.	<i>Rhus mysorensis</i> G.Don.	<i>Rticinus communis</i> L.

		
<i>Schefflera venulosa</i> (Wt. & Arn.) Harms	<i>Sesamum indicum</i> L.	<i>Solanum indicum</i> auct. non L.
		
<i>Solanum trilobatum</i> L	<i>Strychnos potatorum</i> Linn.f.	<i>Stylosanthes fruticosa</i> (Retz.) Alston
		
<i>Syzygium aromaticum</i> (L.) Merr.& Perry	<i>Tamarindus indica</i> L.	<i>Terminalia chebula</i> Retz.

Plate 5: Ethno-medicinal plants of Gadag district, Karnataka.

		
<i>Thespisia populnea</i> (L.) Sol. ex Correa	<i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thomson	<i>Tridax procumbens</i> L.
		
<i>Trigonella foenum-graecum</i> L.		

Plate 6: Ethno-medicinal plants of Gadag district, Karnataka.



Plate 7: Interviews with Local Health Traditional Healing practitioners and collection of plant specimens in the forest of Gadag district, Karnataka.

Forests of Gadag district is providing raw drugs for various formulations to treat and manage diseases of local and surrounding district and states populace by using age old traditional medicine system. Unique climatic and geographical conditions of the forest are supporting to have a unique medicinal plant biodiversity. Medicinal flora is helping the traditional healers to treat various lethal and general systems of diseases and intern earning the bread and butter to traditional healer's daily life from diseased family.

5. Conclusion

A total collection of 63 herbal formulations prepared with 79 plants and 02 minerals by traditional healers of Gadag district to treat 47 diseases. Forests with a unique floral biodiversity is a playing an important role get sufficient raw material for the preparations of formulations. Forests are also raw drug resources to local and surrounding people. Most of the saints are regularly noticed in forest area with collection of plant materials and they believed that plants from Kappath hills are having unique property and potency in the treatment. Gadag district is having a dry climatic condition but the Kappath hills are with very cold climate is an exceptional and is only known to crude drug collector. The people who are living in the foot hills are not much educated and forest area is being regularly used for grazing of animals. This is the right time to conserve the available medicinal flora from grazing animals and by educating the surrounding people Kappath hills of Gadag district, Karnataka for the future generation.

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