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RESEARCH ARTICLE

AN ETHNOBOTANICAL SURVEY OF WILD AROMATIC MEDICINAL PLANTS OF DAVANAGERE DISTRICT, KARNATAKA STATE INDIA.

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Abstract

Ethnobotany deals with the study of direct or indirect traditional and natural relationship between human societies. In Davangere district the mjor tribes includes both nomadic and semi nomadic peoples in addition settled ones.Who completely depends on forest regions to procure their dialy needs. The present survey investigate and documents the wild aromatic medicinal plants utilized as a natural medicine by different tribal communities and also analyses the plants emanate odor through physical method ie sensation of smell through nose to determine the type of odor and its intensity can also be recorded in this paper. The field survey was undertaken to gather information from the tribals of different forest regions of the district during 2013-2014. The ethnobotanical information was also collected through interview method and recorded in the field note book. In addition the analysis of odor and its intensity can also be recorded by preparing penalists, who are well experienced academicians belongs to life science department. The present survey yields 62 plant species belongs to 48 genera under 21 families The collected plants were identified and enumerated in alphabetical order and presented in table-1 in the following manner includes Botanical name with family, vernacular names, parts used, type of odor, mode of preparation and utilization of different ailments. In addition different plants having different type of odor and its intensity of odor is varies in different parts of each plant can also be recorded In this investigation Lamiaceae is the dominant aromatic medicinal plant and the leaves are the richest odor intensity.

INTRODUCTION

The ethnobotanical survey of wild aromatic medicinal plants of tribal communities of Davanagere district is much more interesting. The principal tribals of this area are Hakkipikki, Lambani, Nayaka and Kadugolla are major ethnic groups settled in isolated places throughout the district. In addition to this some nomadic and semi nomadic communities like Jogi, Budibudike, Medha Koracha and Kadukuruba are also inhabited in the district. The total population of the Davanagere district is 17, 90,952 (Anonymous, 2001). Indeed Davanagere is a place where ethno botanists get inspiration for work. Studies on medicinal plants of Davanagere district were initiated by limited workers. Singh (1998) in his Flora of Eastern Karnataka reveals only stray collections were made in some parts of Davanagere and Harihara regions of Davanagere district. Later Manjunath *et al.*, (2004) collected and enumerated 867 plant species belongs to 498 genera and 112 families. Naik (2014) reported only 12 plant species commonly used by women and men of Honnali taluk of Davanagere. Murthy (2014) also reported 46 edible medicinal plants for the treatment of different ailments in Harapanahalli Taluk of the district. Thus there are only few reports from the point view of ethno botany of Davanagere district. The present survey was mainly focused on wild aromatic

medicinal plants, its aromaticity and intensity of aroma in different parts of the plants and its medicinal value is also studied in the district. The use of wild aromatic plants has been out of focus throughout the history, at present there is a popular treatment of aroma therapy is a strategy for variety of ailments. Popular knowledge of plants used by humans is based on thousands of years of experience by "trial and error". People learnt how to recognize and use plants including those with a magico-religious function (Lietava, 1992). The notion of the aromatic plant is even less definitive; the attribute of aroma indicates that the plants having an aroma being fragrant or sweet smelling, while the word aroma is also supposed to imply the taste of the material (Mathe and Franz, 1999). The world production and consumption of essential oils and perfumes are increasing very fast. Production technology is an essential element to improve the overall yield and quality of the essential oils. The traditional technologies pertaining to essential oil processing are of great significance and are still being used in many parts of the globe. Aromatic plants also known as herbs and spices have been used since antiquity as folk medicine and as preservative in foods (Christaki, 2012). The occurrence of essential oil is wide spread in plant kingdom. According to market data there are about 400 species and 67 families from which essential oils are produced on large commercial scale. According to WHO about 80% of the total population in developed and developing countries depends directly or indirectly on plants for their medication (Prabhu *et al*., 2010). India has a rich assortment of diversity of medicinal and aromatic plants distributed in different geographical and ecological conditions in the country. Out of total 17,500 species of flowering plants in India, only 1,300 species are of aromatic nature (Uniyal *et al*., 2002). Frequent use of aromatic plants is to treat gastrointestinal disorders including stomach ache, ulcer diarrhea, rheumatism and tooth ache (Pandey and Thripathi, 2010). The role of essential oil has been increased in many folds; the use of essential oil in therapeutics is become popular in Japan and European countries. Today many hybrid plants have lost much of their original fragrance, although breeders are working to create plants that once again spark olfactory pleasure. Still some plants continue to have a powerful impact (Anonymus, 2014). Aroma therapy involves the use of essential oils derived from plants to cure diseases. Some of the essential oils have been reported to be in many ways better than antibiotics due to their safety and wide spectrum of its activity. Application of essential oils in agriculture as an anti-feedants, repellents, insecticidal, biopesticidal and natural herbicides are still open to fascinating realms of research.

Wild aromatic plants are those that are grown in natural habitats, which possess odorous volatile substances. They include essential oils, gums, exudates, balsam and oleoresin in one or more parts of the plants growing in natural habitats. Natural aroma particularly as an essential oils it often a complex chemical mixture, which offers unique and rounded organoleptic characteristics that cannot be replaced by synthetic ones (Dong and Yong, 2009). It has been reported that almost 30% of the modern allopathic drugs are either directly or indirectly derived from plants (Marino-Bettolo, 1980). Thus the significance of medicinal plants in contributing to health care need is self evident. The characteristics of aroma or fragrance are due to a variety of complex chemical compounds generally at low or high concentrations. The safety and affordability of natural products as medicine, food, cosmetics and pesticides has led to a resurgence of interest in medicinal plants. Traditional users have emphasized good collection, storage and maintenance practices to ensure the quality of the medicine prepared from plants (Bhattacharya, 2008). Commercial herbal garden pesticides often contain lethal or toxic chemicals that impose many health risks. But now a day's some of the many different aromatic plants available as natural insect and pest repellants (Anonymous, 2013).

The sense of smell gives rise to the odor or fragrance is mediated by human or animal olfactory nerves. These olfactory receptor cells are neurons that are present in the olfactory epithelium. It is a small patch of tissue present in the back of our nasal cavity; the axon connects the brain to the external air to perceive the sense of smell. The sense of smell depends upon the concentration of the aromatic compound. A single odorant is typically recognized by multiple receptors. The pattern of these neuron signals may helps to identify smell. The odor which can refers to both pleasant and unpleasant. In contrast to this mal-odor, stench, reek and stink are used specifically to describe unpleasant odor. For most even untrained peoples also perceive smell and give little information about the specific ingredients present in the odor. However experienced peoples such as flavourists and perfumers can also recognize individual chemicals present in complex mixtures. Many of our local wild plants are also rich in aromatic compounds that are not used and exploit commercially but used as aromatherapy to cure certain ailments by traditional people includes tribes. The growing interest of consumers in substance of natural origin in addition to increasing concern surrounding potentially harmful synthetic additives have resulted in the use of aromatic plants, their extracts and essential oils as functional ingredients in the pharmaceutical, food and feed industries (Sacchetti *et al*., 2005). Such industries are currently looking for efficacious safe and cost effective substances with clearly defined mode of action and proven benefits. Plants derived components have considerable potential to fulfill such demands. Although there is still a lack of knowledge especially regarding the consistency of *in vivo* trial results and mechanisms of action of various components within the aromatic plants (Giannenas, 2008).

1. Study Area

Davanagere is one of the 30th district in Karnataka state with the creation of the new district on 15th August 1997. The name Davanagere may have been evolved from the word Deven-kere (God's Tank). The district was given the name of its headquarters town called Davanagere**.** It is one of the landlocked district is located in the mid-eastren part of the karnataka state between 14^0 31'N latitude and 75^0 58'E longitude.The district is bounded by Bellary district in North east, Haveri district in North west. In west and South west by shimoga district and in the East and South east by Chitradurga district. The total area of the district is about 5924 Sq Km and 1977 ft. above the sea level. It comprises about six taluks (Fig.1). Geographically it is placed under major sedimentary component called younger Schist belts or Dharwar type of schist belts mainly classified into Kudremukh belt, bababudengiri belt, Shimoga belt Chitradurga belt and Sandur belt. The south east part of the shimoga belt traversed the Davangere district from North west (Honnali) to South west (Channagiri) direction. The main Hill ranges in the district are Ubbarani hill range, Thirtharameshwara hill range. The hill range is the extended part of the western ghats arises from shimoga district. The highest peak of this range is Siddeshwara betta on which core of the forest is located.

The climatic condition of the district is humid monsoon type. The south west monsoon season starts from june to September. The highest temperature in the district is ranges from 26^0 C to 28^0 C . in cold season the temperature ranges from 16^0 C to 18^0 C. Among these six taluks Harapanahalli and Jagalur taluks the temperature is very high compared to other taluks. This may be due to less area under forest cover. Rain fall is heavy in channagiri taluk which is adjacent to western ghats of shimoga district. The annual rainfall in the district is about 644 mm. The district has a transitional belt of forest ranging from moist deciduous (Channagiri range) to scrub jungle (Jagalur taluk) through dry deciduous (Honnali) forest type.Further the district is enjoy the elements of both Western and Eastren ghats bounded by shimoga district but it is characterized by the evergreen forest belt of western ghats. Scrub jungle type of vegetation is found in Chitradurga Bellary and Haveri districts only.

The district lacks the detailed report on the floristic diversity and its status. The district also comprises many ethnic groups inhabited in our study area. These groups were also depend on medicinal plants to cure certain ailments in addition to veterinary medicines. The potential knowledge of ethno medicine is not well explored in the district. In addition there are several well known traditional practioners who are popularly known as *Ayurvedic panditha*s living in the vicinity of the forest ranges. These medicinal practioners also treat various human diseases including veterinary ailments.

2. Materials and methods

The field survey was undertaken during the year 2013-2014 and gather information from the different forest regions of Davanagere district. The important tribal communities are also inhabited in the study area in an isolated places includes Kadugolla Lambadi, Nayaka are settled tribes. In addition other tradition bounded tribal communities viz.Soliga Hakkipikki, Kadukurubas were semi nomadic and jogi budibudike were nomadic tribes also inhabited in the remote forest areas. They were collected wild aromatic plants for medicinal purposes to adapt identification of aroma by using physical methods. i.e squeezing the plant parts and inhalation through nose and used to cure different ailments. Because the nostrils of human nose having an olfactory receptor neurons that acts as sensory signaling cells to perceive the odor. All the plants were collected through personal interview methods and the collected information was recorded in the field note book. The collected plants were dried and pressed and prepare herbarium are deposited in the Department of Botany, Davanagere university Davanagere.

3.1 Detection of odor

The current state of art method for detecting odor emission is via classical olfactory method. By this method odor assessment is based on a sensory panel consisting of a group of selected people known as panelists with 95% probability of average odor sensitivity. However physiological differences in the smelling ability of the panel member scan leads to subjective results. In addition the olfactory method is very costly and requires an exact understanding in an experienced odor laboratory in ordered to achieve reliable results.

3.2 Analysis of odor

The odor can be analyzed by using physical method. In the field survey penalists are collect the plant parts are squeezed by hands to inhale the odor through nose based on this concept, different categorization of primary odors have been proposed which can be recognized into seven types viz. musky (Perfume/After shave), Putrid (Rotten eggs), pungent (Vinegar), Camphoraceous (Moth Balls), Ethereal (Dry cleaning fluid), Floral (Roseous) and peppermint (Mint gum) Anononymus (2010) & Mc Ginley *et al*., (1995) The type of odor and medicinal properties of the aromatic plants also been discussed with well experienced tribal medicine men available in our study area. All the collected information was also recorded in the field note book.

3.3. Analysis of Odor intensity

Odor intensity is the perceived through strength of odor sensation it can be expressed by using odor intensity scale. (Jiang *et al*., 2006). Which is a verbal descriptions of an odor sensation to which numerical value (0-5) is

assigned in each type of odor. Each numerical value is also represented by using mathematical symbols. Based on this concept the odor intensity can be divided into the following categories No odor(-), weak (+), Distinct (++), Strong (+++) and Very strong/Intolerable (++++) respectively. This method is applied in the laboratory is done by a series of suitably trained penalists (observers) who have been trained to appropriately to define intensity. The aromatic plants are also arranged alphabetically and recorded the intensity of their odor in different parts of the plant showed in Table. II

3. RESULTS.

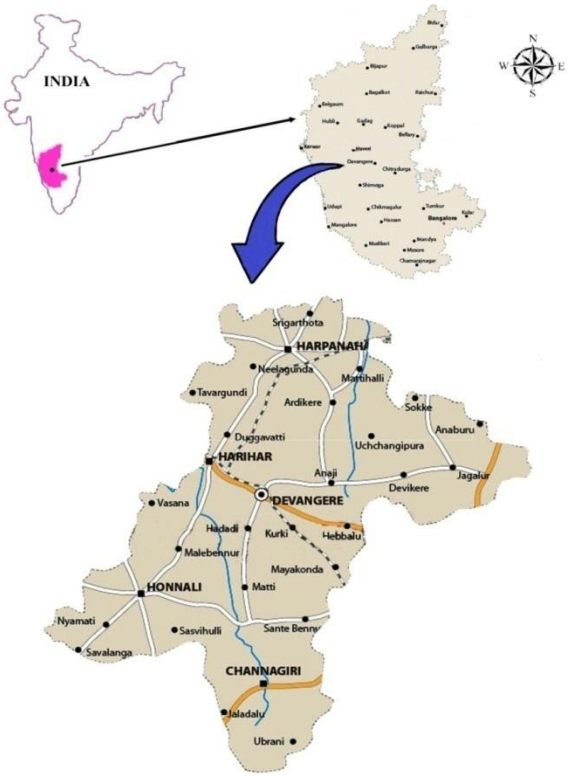

Fig. 1: The location map of Davangere district, Karnataka, India.

In the present survey of wild Aromatic medicinal plants are collected from the different parts of the study area in the rainy season only. The field survey was undertaken along with five members penalists (group of members) who observe and identify the aromatic part of the plants and analyse the odor through nose and evaluate the type of odor and also discuss the intensity of odor. In addition the medicinal properties of all these plants were also discussed with well experienced local herbalists including tribals. The survey yields total of 62 species of wild aromatic medicinal plants belongs to 49 genera under 22 families, among these lamiaceae is the dominant wild aromatic species diversity in our study area. All the collected plants are enumerated and are arranged in alphabetical order with Botanical name with family, vernacular names, Aromatic part/s, type of odor and its medicinal properties of the collected plants were also recorded in the Table-I. Among these 62 plants 16 plants emanate musky (perfume) like odor, 9 plants emanate putid smell, 10 plants for pungent odor, 2 plants emanate camphoraceous (moth ball) like odor, 8 plants emanate floral like odor, 12 plants for peppermint like odor emanated from different parts of the plants. In plants emanate musky, floral and peppermint like odor are highly useful for medicinal as well as perfumery works and pharmaceutical industries. The remaining plants emanate ethereal, putid, pungent and camphoraceous odor will be useful in the preparation of pesticide and insecticidal purposes. In this direction the potentiality of all these wild aromatic medicinal plants have been screened by using modern scientific methods to evaluate the active compound present in these plants.

The odor intensity is also determined in different parts of the plants (Fig.2). Among these, root shows no odor (72.58%), weak (22.58%) and distinct (4%). In stem/rhizome, no odor (40.32%), weak (53.22%), distinct (6%). In bark, no odor (32%), weak (54.83%) and distinct (12.90%). In leaf, no odor (4%), weak (11%), distinct (35.48%), strong (30.64%) and very strong (17.74%). In flower, no odor (58%), weak (25.80%), distinct (9.67%), strong (3.22%) and very strong (3.22%). In fruits, no odor (37%), weak (51.61%), distinct (8%), strong (3.22%) and no

very strong odor. There is no strong and very strong intensity of odor in root and stem/rhizome. In the leaf parts the intensity of the odor is very high comapared to other parts. In root it is very less amount except in *Decalepis hemiltoni*, *Hemidesmus indicus* and *Vetiveria lawsoni*. The environmental factors also play very important role in the changes of odor intensity. In rainy season the intensity of the odor is distinct even in the less odorous plants. In summer the detection of odor type and its intensity is not accurate, because of the stress in plants will decline the essential oil secretion it also affect on the determination of the intensity of odor through physical method.

Table I: Ethno-botanical survey of wild aromatic medicinal plants and its odor type

Sl.No	Botanical Name Family	Vernacular name	Aromatic part/s	Type of Odor	Medicinal uses
1	*Abutilon indicum (L) Sweet* (Malvaceae)	Sreemudre gida	Leaves/stem	Ethereal	The hand squeezed leaves are rubbed on chest to relief respiratory disorder. The unripened tendered fruits are eaten to cure mouth sore.
2	*Acacia farnaceana* (L) Willd. (Mimosaceae)	Kasturi jali	bark	Pepperminty	The decoction of the bark is used for 3-4 days to treat aphrodiasac
3	*Adenostemm laveonia* (L) Ktze. (Asteracae)	Jangli mara	Leaves/bark	perfume	The leaves are made into paste is applied externally for accidental injuries
4	*Aegal marmelos* (L) Corr. (Rutaceae)	Bilva	Leaves	pungent	The leaves are boiled with water and the decoction is used as purgative
5	*Anisomeles indica* (L) Ktze. (Lamiaceae)	Kadu thumbe	Whole plant	musky	The fresh leaves are crushed and inhale its odor to cure headache and fever.
6	*Anisomeles malabarica* (Lamiaceae)	Heddumbe	Whole plant	Musky	The leaf Paste is applied on knee joints to relieve arthritis.
7	*Annona squamosa* L. (Annonaceae)	Seetha phal	Leaves	floral	The squeezed leaf juice is applied externally to expel maggots from wounds.
8	*Artobotrys odoretissima* (Annonaceae)	manoranjini	Flowers	Floral	The flowers are used for adorning and preparation of local scents.
9	*Artemisia* nilagirica (Clarke) Pamp. (Asteraceae)	Machi pathre	Leaves/whole plant	Floral	The leaves are used to prepare garlands and also repel mosquitoes.
10	*Callistemon citrinus* (Myrtaceae)	Bottle brush	Leaves	Floral	The dried leaves are burned and the smoke spread to repel insects and pests in cattle yard.
11	*Cassia tora* (Caesalpiniaceae)	Thagache gida	Leaves	Putid	The decoction with a pinch of pepper powder is used to treat dry cough.
12	*Chenopodium ambrosides*, L. (Chenopodiaceae)	Kadu oma	Leaves	musky	The decoction of the whole plant with candy sugar to take orally to treat hemorrhoids.
13	*Chromolaena odorata* King & Rob. (Asteraceae)	Karpurada gida	Whole plant	camphoraceous	The leaf along with 3-4 pieces of garlic is made into paste is given orally in the form of small pills to cure cough and cold.
14	*Cimbopogan citrates* (Poaceae)	Lemon grass	Root	Musky	The oil extracted from the leaves is used as deodorant during festivals.
15	*Cinnamomum sulphuratum* Nees. (Lauraceae)	Kadu dalchinni	Bark	peppermint	The oil is extracted from the bark is massaged on knee joints to treat arthritis.
16	*Citrus sinensis* (Rutaceae)	Sweet orange	Whole plant	musky	The leaves are boiled with water to take bath for 3-4 days to relieve body pain

17	*Citrus aurantium* L. (Rutaceae)	Bitter Orange	Whole plant	Pungent	The fruits are made into pickles The leaf paste is applied for Abscess and boils.
18	*Cloeme gynandra* L. (Cloemaceae)	Kolikalina gida	Whole plant	putid	Leaf paste is applied externally for rheumatism.
19	*Cloeme viscosa* L. (Cloemaceae)	Kadu sasuve	Whole plant	Putid	The leaves are made into paste and applied externally on Whitlow.
20	*Clerodendrum inerme* (L) Gaertn. (Verbinaceae)	Vishamdari	Leaves/bark	pungent	The plants are cultivated as an hedge plant to grow backyards to avoid the entry of the snakes.
21	*Clerodendrum Serratum* (L) Moon. (Verbinaceae)	Gantu barangi	Leaves	Pungent	Used for ornamental purpose to repel insects and pests in the garden.
22	*Coleus amboinicus* (Lamiaceae)	Doddapathre	Whole plant	peppermint	The fresh leaves are chewed to cure cough and cold The paste is applied on forehead to cure headache.
23	*Coleus mollis* Benth. (Lamiaceae)	Karpurda yele	Leaves	Peppermint	The crushed leaf juice is applied on abscess and boils.
24	*Croton banplandianus* Baill. (Euphorbiaceae)	Seeme gida	Whole plant	Ethereal	The latex is applied externally for skin rashes due to fungal infection.
25	*Datura metel* L. (Solanaceae)	Ummatti	Leaves	Putid	The leaf paste is applied externally on boils and abscess.
26	*Decalepis hemiltoni* Wt & Arn. (Asclepiadaceae)	Makali beru	Root	Floral	The root is boiled with water and the decoction is given orally for Stomach pain at the time of menstrual period in women.
27	*Eucalyptus globulus* Labil. (Myrtaceae)	Eucalyptus	Leaves	Musky	The oil is extracted commercially is used for headache and the leaves are boiled with water to take bath to relief body pain.
28	*Eucalyptus citriodora* (Myrtaceae)	Nimbe Neelgiri	Leaves	Musky	The leaves are boiled with water to take bath to relief body pain.
29	*Eugenia jambolana* Lam.	Jambu Nerale	Fruits/Bark	Peppermint	The decoction of the bark is taken orally to cure dysentery.
30	*Eupatorium odoratum* L. (Asteraceae)	Krpurad gida	Leaves	Musky	The paste is applied externally to cure ring worm
31	*Glycosmis pentaphylla* (Retz) DC. (Rutaceae)	Guruvade	Whole plant	Pungent	The plant is made into paste with garlic and few grains of pepper is applied on fore head to cure migrain
32	*Hemidesmus indicus* (L) R. Br. (Asclepiadaceae)	Nannari beru	Root	Musky	The water boiled decoction with asbestos is used for Hemorrhages in women
33	*Hyptis suaveolens* (L) Poit. (Lamiaceae)	Ganga tulasi	leaves	Peppermint	The leaf paste is applied on wounds caused by diabetics.
34	*Jasminum multiflorum* Andr. (Oleaceae)	kadumallige	Leaves	Floral	Leaf powder is applied on cut wounds to stop bleeding.
35	*Lantana camera* L. (Verbenaceae)	Kadu gulabi	leaves	Pungent	Inhalation of squeezed leaf smell to relief heavy drunker.
36	*Leucas aspera* (Willd) Link. (Lamiaceae)	Thumbe	Leaves	Ethereal	Leaf juice applied externally to cure boils and abscess.

37	*Limonia acidissima* L. =*Feronia elepentum* L. (Rutaceae)	Bela	Leaves	Pepper mint	Inhalation of crushed leaf smell to stop running nose and also cure to headache.
38	*Leonotis nepetifolia* (Lamiaceae)	Kolu thumbe	Leaves	Camphorous	Leaf paste is applied externally on Whitlow.
39	*Mamordica charantia* (L) Roem. (Curcubitaceae)	Hagala	Leaves	Putid	Leaf juice taken orally to control diabetes
40	*Martynia annua* L. (Pedaliaceae)	Chelukondi gida	Leaves	Putid	Leaf paste is applied over the Abscess to become ripen and break to release pus cells.
41	*Michalia champaka* L. (Magnoliaceae)	Sampigemara	Flower	Musky	The flower decoction is given orally to expel intestinal worms.
42	*Ocimum besillicum* L. (Lamiaceae)	Kasturi tulasi	Leaves	Musky	The decoction is taken orally to cure respiratory disorders.
43	*Ocimum canum* Sims. (Lamiaceae)	Nayi tulasi	leaves	Ethereal	The pungent smell repel insect- pests in agriculture fields.
44	*Ocimum sanctum* L. (Lamiaceae)	Krishna tulsi	Leaves	Floral/pepper mint	The fresh leaves are edible to cure dry cough.
45	*Ocimum gratissimum* L. (Lamiaceae	Kasturi Tulasi	Leaves	Musky	The fresh plant fumes repel mosquitoes.
46	*Orthosiphon rubicundus* Benth. (Lamiaceae)	Kallu tulasi	Leaves	Pungent	The leaf juice with ginger given orally to treat lithantriptic.
47	*Pandanus amyrillifolius* (Pandanaceae)	Kedhige	Inflorescence	Floral	The tendered floral leaves are adorned in women and used as a flavoring agent in the preparation of local deodorants.
48	*Passiflora foetida* L. (Passifloraceae)	Kukke balli	Whole plant	Putid	The leaves are used for anxiety and the paste is applied on head injuries to stop bleeding.
49	*Plectanthus mollis* (Aiton) Spreng. (Lamiaceae)	Green coleus	Whole plant	Pungent	The plant decoction is used to control intestinal worms.
50	*Plectanthus nigrescens* Benth. (Lamiaceae)	Crimson coleus	Whole Plant	Pungent	The leaves are boiled with water to take bath to relief body pain and cure skin rashes.
51	*Pogosteman paniculatus* Benth. (Lamiaceae)	Pachhe thene	Leaves	Musky	The leaf powder is applied externally on cut wounds to stop bleeding.
52	*Pterolobium hexapetalum* Sant & Wagh. (Caesalpiniaceae)	Swarna champaka	Leaves	Floral	The fresh leaf juice with turmeric powder is taken orally to treat constipation.
53	*Ruta graveolens* L. (Rutaceae)	Nagadali soppu	Whole plant	Pungent	The leaf juice encourage the on set of belated Puberty. The plants are growing in the backyards to repel snakes.
54	*Salvia officinalis* (Lamiaceae)	Sage plant	Whole plant	Peppermint	The leaf extract is applied externally to avoid maggots' in wounds.
55	*Spheranthus indicus* L.	Mundi kasa	Whole plant	Putid	The plants are used for bed bug repellants.

	(Asteraceae)				
56	*Spheranthus hirtus* Willd. (Asteraceae)	Moode soppu	Whole plant	Putid	The juice is applied externally on maggot wounds.
57	*Syzigium cumini* (L) Skeels. (Myrtaceae)	Nayi Nerale	Leaves	Musky	The leaf decoction with sugar is given orally for dysentery.
58	*Syzigium jmbolanum* (Lam) DC. (Myrtaceae	Jambu Nerale	Bark	Musky	The bark is made into paste is mixed with butter milk the extract is filtered with clean cloth, the filtered juice is taken orally for 3-4 days to cure dysentery.
59	*Toddalia asiatica* (L) Lam. (Rutaceae)	Kadumenasu	Leaves	Peppermint	The leaf paste is mixed with ghee is applied externally to cure cut wounds.
60	*Vetiveria lawsoni* (Hk) Blot. (Poaceae)	Vetiver	Root	Musky	The root is made into powder is soaked in water for overnight to given orally to cure headache.
61	*Vitex negundo* L. (Verbinaceae)	Kari lakki soppu	Leaves	Peppermint	The fresh leaves are used to avoid ticks in chickens.
62	*Vitex trifolia* L. (Verbinaceae)	Lakki pathre	Leaves	Peppermint	The leaves are made into paste and mixed with butter milk to given orally to stop hemorrhages.

- ***Note:*** Musky=Perfume Putid= Rotten eggs pungent= Vinegar Camphoraceous=Mothball Ethereal=Dry cleaning fluid Floral=Roseous Peppermint=Mint gum

Table II : Determination of intensity of odor in different parts of the wild aromatic plants.

Sl.No	Botanical Name Family	Root	Stem/ Rhizome	Bark	Leaves	Flower	Fruit
	ANNONACEAE						
1	*Annona squamosa* L.	-	-	+	+++	+	+
2	*Artobotrys odoretissima*	-	-	+	+++	++++	+
	ASCLEPIDIACEAE						
3	*Decalepis hemiltoni* Wt & Arn.	++	+	+	-	-	-
4	*Hemidesmus indicus* (L) R. Br.	++	-	+	-	-	-
	ASTERACEAE						
5	*Adenostemm laveonia* (L) Ktze.	-	-	-	++	+	-
6	*Artemisia nilagirica* (Clarke) Pamp.	-	+	+	+++	++	+
7	*Chromolaena odorata* King & Rob.	-	+	+	++++	+	++
8	*Eupatorium odoratum* L.	-	+	+	+++	+	+
9	*Spheranthus indicus* L.	+	++	++	++++	++	++
10	*Spheranthus hirtus* Willd.	+	++	++	++++	++	+
	CAESALPINACEAE						
11	*Cassia tora*	-	-	+	++	-	-
12	*Pterolobium hexapetalum* Sant & Wagh.	-	-	-	+	-	-
	CHENOPODIACEAE						
13	*Chenopodium ambrosides* L.	-	-	-	++	-	-
	CLOEMACEAE						
14	*Cloeme gynandra* L.	-	+	+	+++	-	+
15	*Cloeme viscosa* L.	-	+	+	++	-	+
	CUCURBITACEAE						
16	*Mamordica charantia* (L) Roem.	-	+	+	++	-	-
	EUPHORBIACEAE						
17	*Croton banplandianus* Baill.	-	-	+	++	-	+
	LAMIACEAE						
18	*Anisomeles indica* (L) Ktze.	-	+	+	++++	++	+

19	*Anisomeles malabarica*	-	+	+	++++	++	+
20	*Coleus amboinicus*	-	+	+	++++	-	+
21	*Coleus mollis* Benth.	-	+	+	++++	-	+
22	*Hyptis suaveolens* (L) Poit.	-	+	++	++++	+	++
23	*Leucas aspera* (Willd) Link.	+	+	-	++	+	-
24	*Leonotis nepetifolia*	-	-	-	++	+	-
25	*Ocimum besillicum* L.	+	+	+	+++	-	+
26	*Ocimum canum* Sims.	+	-	+	++	-	+
27	*Ocimum sanctum* L.	+	+	+	+++	-	+
28	*Ocimum gratissimum* L.	+	+	+	+++	-	+
29	*Orthosiphon rubicundus* Benth.	-	-	-	++	+	+
30	*Plectanthus mollis* (Aiton) Spreng.	-	-	+	++	-	-
31	*Plectanthus nigrescens* Benth.	-	-	+	++	-	-
32	*Pogosteman paniculatus* Benth.	-	+	+	++	-	-
33	*Salvia officinalis*	-	+	+	++	+	+
	LAURACEAE						
34	*Cinnamomum sulphuratum* Nees.	-	-	+	++	-	-
	MAGNOLIACEAE						
35	*Michalia champaka* L.	-	+	+	+	+++	++
	MALVACEAE						
36	*Abutilon indicum* (L.) *Sweet*.	-	-	+	++	+	+
	MIMOSACEAE						
37	*Acacia farnaceana* (L.) Wild.	-	-	-	+	+	-
	MYRTACEAE						
38	*Callistemon citrinus*	-	-	+	+++	+	+
39	*Eucalyptus globulus* Labil.	-	+	+	+++	-	+
40	*Eucalyptus citriodora*	-	+	+	++++	-	+
41	*Eugenia jambolana* Lam.	-	+	++	++	-	+
42	*Syzigium cumini* (L) Skeels.	+	-	++	+	-	-
43	*Syzigium jambolanum* (Lam) DC.	+	+	++	+	-	-
	OLEACEAE						
44	*Jasminum multiflorum* Andr.	-	-	+	+	+++	-
	PANDANACEAE						
45	*Pandanus amyrillifolius*	+	+	+	-	++++	+
	PASSIFLORACEAE						
46	*Passiflora foetida* L.	-	+	+	++	+	+
	PEDALIACEAE						
47	*Martynia annua* L.	-	+	+	++++	+	+
	POACEAE						
48	*Cimbopogan citrates*	+	+	-	+++	-	-
49	*Vetiveria lawsoni* (Hk) Blot.	++	+	-	+	-	-
	RUTACEAE						
50	*Aegal marmelos* (L) Corr.	-	-	-	++	+	+
51	*Citrus sinensis*	-	-	-	+++	-	+++
52	*Citrus aurantium* L.	-	-	-	+++	-	+++
53	*Glycosmis pentaphylla* (Retz) DC.	-	-	-	++	-	+
54	*Limonia acidissima* L.	-	+	+	++	-	-
55	*Ruta graveolens* L.	+	+	+	+++	++	++
56	*Toddalia asiatica* (L) Lam.	-	-	-	++	-	-
	SOLANACEAE						
57	*Datura metel* L.	+	+	+	+++	-	+
	VERBENACEAE						
58	*Clerodendrum inerme* (L) Gaertn.	+	+	+	++++	-	+
59	*Clerodendrum serratum* (L) Moon.	-	+	+	+++	-	+
60	*Lantana camera* L.	-	-	+	+++	+	+

61	*Vitex negundo* L.	-	++	++	+++	-	-
62	*Vitex trifolia* L.	-	++	++	+++	-	-

Note: No odor (-), Weak (+), Distinct (++), Strong (+++), Very Strong (++++).

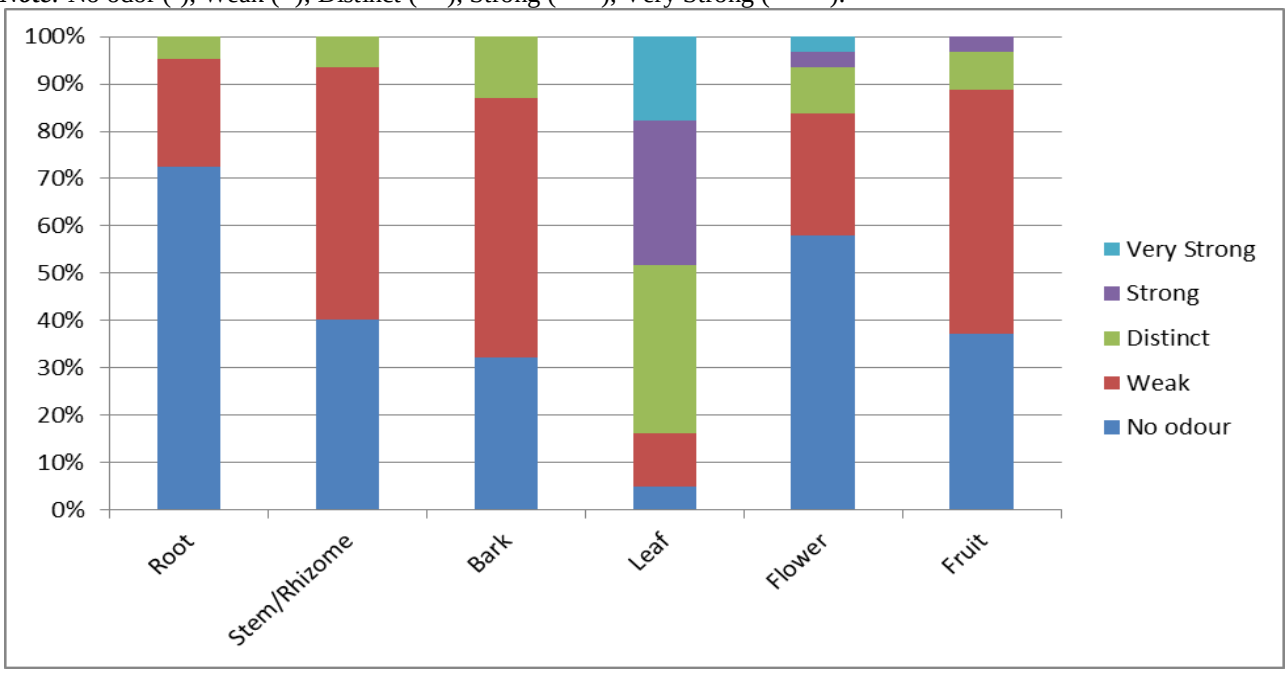

Fig 2: Percentage of odor intensity in different parts of the wild aromatic plants.

4. Discussion

Plants are made up of complex chemical components such as alkaloids, terpenoids, Phenols and aldehydes. Essential oils are extracted from plants and are used for different therapeutic purposes arising from the chemical combinations of these components including those used as an insect and pest repellants. Therefore it is only logical that the source of essential oils. The plant might contain similar properties depending upon the plant. Scientists and botanists are still not certain exactly how the complex make up of plants works in repelling insects and other critters. (Karen, P. O. B. et.al, 2009). Essential oils are generally derived from one or more plant parts such as flowers, leaves, leaves and stem, bark, woody roots, seeds, fruits, rhizome, gums or oleoresin exudations. The collection of the wild herbs from the forests or the natural environment has been practiced in Nepal for centuries. (Rana, B R. 2014). The aromatic and medicinal plants present in the natural environment are the property of the government. However every one free to collect these raw materials and pays the appropriate government royalty. Approaches to recognizing the medicinal and aromatic plants may be varied. In general they can be grouped as traditional method and modern approaches. Traditional methods are cost effective, Non-destructive or Non invasive but relay heavily on skill and expertise of the personal involved. Modern approaches may be invasive or destructive in the sense some amount of specimen may be lost during analysis which may not be recovered. (Poduri 2013). Aromatic plants their extracts and essential oils contains a variety of functional bioactive compounds. The presence of complex mixture of lipophilic compounds, essential oils and probably the terpenoids, flavonoids, and fatty acids was detected in association with alkaloids. These results were consistent with other photochemical data. (Rodrigues, et al,. 2003). Which are possible applications in the field of food, feed, pharmaceutical and cosmetic industries. However aromatic plants and their extracts should be standardized and properly controlled in their extraction and composition. In vitro studies using standardized extracts should be completed prior to in vivo experimental research to confirm the efficacy of the extracts. . Moreover the system based on the human sensory system is not feasible for continuous monitoring. Yuwono & Lammers (2004). According to (WorWood and Valerie, A. 1991). It is believed that the aroma of the plants are the key to controlling unwanted insects, pests, and critters in the garden, whatever the scientific reason is behind the plants and natural pest control. Many gardeners believe in the concept and have success in controlling pests naturally.

5. Conclusion

Wild aromatic plants are those they were growing in natural habitats with or without emanate fragrance. Over exploitation of wild scented plants may cause to threat to certain species. (Samydurai, et al,. 2012). Medicinally these plants are most useful but commercially unexploited. science engaged in multipurpose utilization of aromatic plants. which may leads to decrease in species abundance and finally even to local extinction. (Panday and Thripathi, 2010). These plants were also consists of an essential oils. Pharmaceutical industries also neglect these plants to isolate essential oil commercially due to lack of quality and quantity. Traditional people still depends on these plants to cure certain ailments and avoid insects, pests, bedbugs and mosquitoes. To assess the current status of production, utilization and conservation of these wild aromatic medicinal plants in and around the study area and identify the future needs of conservation and opportunities for their development. In some cases the population size of a species can inherently be low or at times anthropologic pressures in the form of grazing trampling and extraction methods results in the decline of population. (Uniyal et al,.2002). Cultivation is the effective way of conservation and it ensures a steady supply. (Javed, et al,. 2013). It is expected that the results of the study will be useful for decision-makers and those who are responsible for the management of medicinal and aromatic plants to promote a better understanding under which conditions the sustainable use of these plants can be achieved in the national parks (Centinkaya, G 2010). In this study we create an awareness on the value of wild aromatic medicinal plants among the producers in ordered to promote cultivation with a special focus to small scale farmers.

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7. References.

1. **Abhay K.Pandey and N.N. Thripathi (2010).** Diversity and Distribution of Aromatic plants in Forests of Gorakhpur division, U. P., India. Biological Forum-An International Journal. 2(2): pp. 25-33.
2. **Anonymous (2010).** "Your Sense of Smell- the senses" Oracle Education Foundation. **Anonymous (2011).** The Davanagere District Census Report.
3. **Anonymous, (2013)**. Aromatic Plants, That are Natural Insect and Pest Repellants.
4. **Anonymous, (2014).** The Sweet Scents of summer-87 Aromatic Plants.
5. **Auffarth, B. (2013).** Understanding Smell-the Olfactory stimulus Problems. Neuroscience and Biobehavioral Reviews. 37(8): pp. 1667-1679. doi: 10.1016/J. neu bio rev.2013.06.009.
6. **Bhattacharya, P. Prasad, R. Bhattacharyya and A. Asokan (2008).** Towords certification of Wild Medicinal and Aromatic plants in four Indian States, Unasylva,230:59 pp. 35-44.
7. **Bernath, J. (2000).** Cultivated Plants Primarily as Food Sources. Vol.2: Aromatic Plants. pp. 667.
8. **Centikaya Gulay (2010**). Conservation and Sustainable Wild collection of Medicinal and Aromatic plants in Koprulii Kanyon National Park,Turkey. Journal of Medicinal Plants Research. 4(12): pp. 1108-1114. doi: 10.5897 JMPR 10.132.
9. **Christaki, E. Eleftherios Bonos, Illias Giannenas and Panagiota Florou-Paneri (2012).** Aromatic plants as a Source of Bioactive Compounds. Agriculture. 2: PP. 228-243. Doi: 10.3390/agriculture 2030228.
10. **Dong-Fong Chen and Yong-Ming Yuan (2009).** Platforms for Plant made Aromatic chemicals. IFEAT, International Conference in Shanghai, Conference Proceedings. PP. 137-148.
11. **Giannenas , I. (2008).**How to Use Plant Extracts and Phytogenics in Animal Diets. In World Nutrition Forum the future of Animal Nutrition. Binder,E M Schatzmayr, G. Ed: Nottingham University Press, Nottingham, UK. pp. 111-129.
12. **Javed Ahmad, Afaq Ahmad Malik and Leena Shakya. (2013).** Urban Development: A Threat to Wild species of Medicinal and Aromatic plants. Middle-East Journal of Scientific Research. 13(7): pp. 947-951.
13. **Jiang J., Coffey P. and Toohey B. (2006).** Improvement of odor intensity measurement using dynamic olfactometry. Journal of the Air and Waste management Association (1995). 56(5): pp. 675-683. doi: 10.1080/10473289,2006.10464474.
14. **Joana Camejo-Rodrigues, Lia Ascensao, M. Angels Bonet and Joan Valles (2003).** Journal of Ethno pharmacology, 89: 199-209.
15. **Karen Peabody O' Brien. Shari Franjevic and Julie Jones (2009).** The Role of Biopestcides (Report). Green Chemistry and Sustainable Agriculture. PP.1-4.
16. **Mc Ginley C.M., Mc Ginley D.L., Mc Ginley K.J., (1995).** "Curriculum Development for Training Field Odor Investigators" Proceedings of the Odors. Indoor and Environmental Air speciality Conference of the Air and Waste management Association. Bloomington, Minnesota September 13-15. pp.121-130.

17. **Manjunatha B. K. Krishna, V. and Pullaiah, T.** (2004). Flora of Davanagere District Karnataka, India. Regency Publications New Delhi.
18. **Mathe A. and Franz.Ch. (1999).** Good Agricultural Practice and the quality of Phytomedicines. Journal of Herbs, Spices and medicinalplants. 6(3): PP.101-113.
19. **Marino-BETTOLO, G.B (1980).** Present Aspects of the use of plants in traditional medicine. Journal of Ethno pharmacology, (2): pp. 5-7.
20. **Murthy, S. M (2014).** Traditional Knowledge on Edible Medicinal Plants of Harapanahalli Taluk in Davanagere District of Karnataka, India. World Journal of Pharmacy and Pharmaceutical Sciences, 4: 1. pp. 494-504.
21. **Naik T Vasanth (2014).** Ethno botanical Remedies for Gastro-Intestinal Problems from Honnali Taluk, Davanagere District Karnataka, India. J. Chem. Bio. Phy. Sci. An international Peer Review E-3 Journal of Sciences. 4: 2, pp. 1174-1177.
22. **Prabhu, M. Kumar, A. R. and Rajamani, K. (2010).** Influence of different organic substances on Growth and Herb yield of Sacred basil (*Ocimum sanctum*, L.). Ind. J. Agric. Res. 44(1): 48-52.
23. (**Sacchetti, G. Maietti, S. Muzzoli, M. Scaglianti, M. Manfredini, S. Radices, M. Bruni, R. 2005)**. Comparative evaluation of Eleven Essential oils of different origin as functional Antioxidants, Antiradicals and Antimicrobial in Foods. Food Chem. 91: pp. 621-632.
24. **Samydurai, P., S. Jagathesh Kumar, V. Aravinthan and V. Thangapandian (2012).** Survey of Wild Aromatic Ethno medicinal plants of Velliangiri Hills in the Southern Western Ghats of Tamil Nadu, India. Int. J. Med. Aroma. Plants. 2(2): pp. 229-234.
25. **Singh, N. P. (1998).** Flora of Eastern Karnataka. Vol. 1-2: Mittal Publications Delhi.
26. **WorWood and Valerie Ann (1991).** The complete Book of Essential oils and Aromatherapy. U S A. New World Library.
27. **Yuwono, A. & P.S. Lammars (2004).** Odor Pollution in the Environment and the Detection, Instrumentation, Agricultural Engineer in International. The CJGR Journal of Scientific Research and Development. VI. pp.1-33.
28. **Uniyal, S. K., Awasthi, A., and Rawat, G. S. (2002),** Current status and distribution of commercially exploited medicinal and aromatic plants in upper Gori valley Kumaon Himalaya, Uttaranchal. Current Science, 82: PP. 1246-1252.