

An Ethno-botanical Survey of Dadra and Nagar-Haveli (UT), India for Medicinal Plants in use by Traditional Healers

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ABSTRACT: Despite some studies on various uses of plants in forest area of Dadra and Nagar-Haveli, the traditional uses of large number of plants still awaits proper documentation. For the Dadra and Nagar-haveli documentation of ethno-botanical knowledge is limited to a few medicinal plants and folk medicinal uses of medicinal plants are not well-known outside the Dadra and Nagar-haveli forest area. An extensive ethno-medicinal investigation at the village level in different areas and among different tribes of Dadra and Nagar-haveli forest was carried out and comprehensive review of the plants used in the folk medicine in Dadra and Nagar-haveli is presented in this work. Ethno-botanical Surveys were made several times over a couple of years in growing seasons. Plants were identified using Established Flora. Details were sought from Traditional healers to generate baseline data. 25 Plant species belonging to Solanaceae, Verbenaceae, Malvaceae, Papaveraceae Liliaceae, Fabaceae, Asclepiadaceae, Apiaceae, Vitaceae, Poaceae, and various other families. Their ethno-botanical uses in reference to medicinal value are enlisted. The plants of ethno-botanical value identified in this study need immediate conservation measures including *Ex-situ* and *In-situ* measures along with undertaking the cultivation of these plants at Village Level.

Keywords: Ethno-botanical Survey, Dadra and Nagar-Haveli (UT), Medicinal Plants, Traditional Healers

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INTRODUCTION

Ethnobotany is the study of the interaction between plants and people, with a particular emphasis on traditional tribal cultures (Mesfin *et. al.*, 2013). Since then it has been defined as the traditional knowledge of indigenous communities of the surrounding plant diversity and the study of how the people of a particular culture and region make use of indigenous plants. Union Territory of Dadra and Nagar Haveli (DNH) are situated on western coast of India. It is known for its lush green vegetation and has predominance of tribal forming a majority of total population. The entire nourishment of tribal is totally depends upon the forest products which includes plants or plants parts. The traditional healers and the inhabitants use medicinal plants to treat diabetes and related complications (Charjan and Dabhadkar 2014). Results depict that fresh plant materials were invariably preferred for the treatment of long term complications associated with diabetics. Anti-diabetic medicinal plants used by tribals of Amravati district have been listed along with plant parts used. More over tribal have their own system of natural remedies to treat various diseases. However, all these much important valuable information regarding the important uses of plant wealth is yet to be recorded for Dadra and Nagar-Haveli.

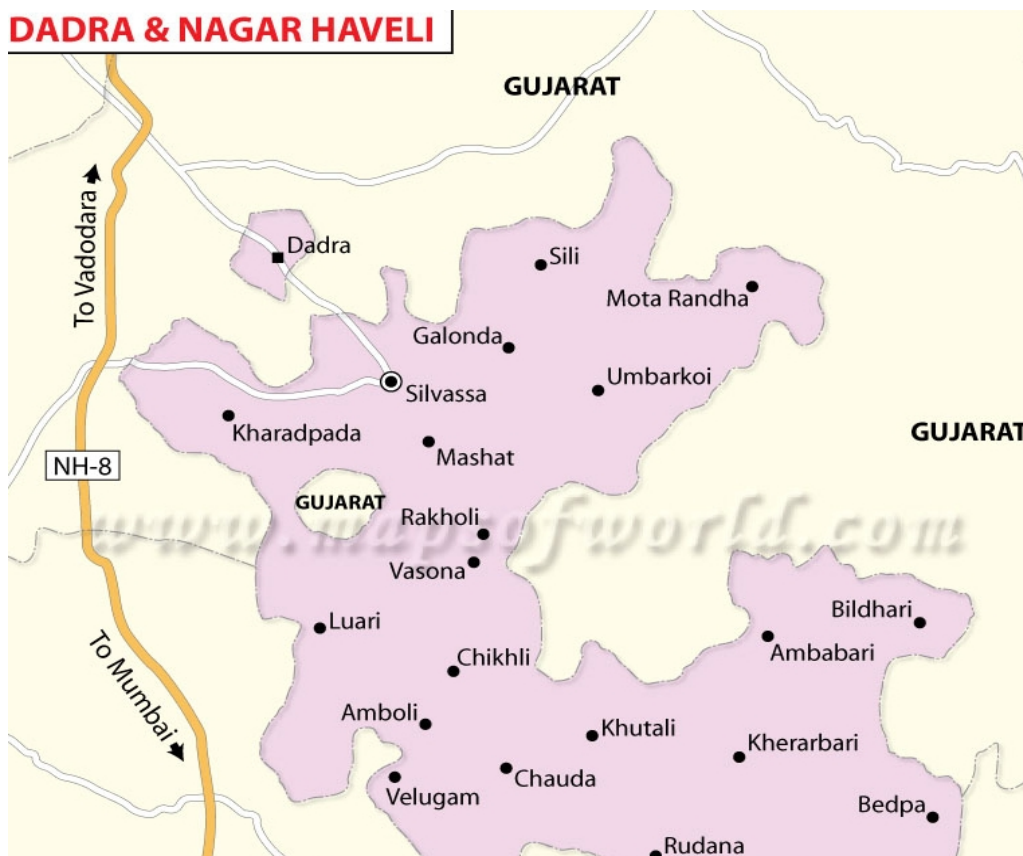
MATERIALS AND METHOD

A. Study Area

The area selected for study was Union Territory of Dadra and Nagar Haveli (DNH) lying in the geographical coordinates between 20.27°N 73.02°E, at 16 meter above m.s.l., covering a total area of 491 Km². Forest areas adjoining tribal regions of Sayli, Amali, Masat, Kaucha, Tokarkhada, Khanvel, Dudhni were surveyed multiple times and the tribal settlements were visited for the purpose of Ethnobotanical Information.

B. Methodology

Extensive field surveys were conducted in the forest areas of Dadra and Nagar-Haveli for the ethno-medicinal information of the study area. A total of 12 field trips were organised of 15 days duration to collect the plant specimens and to record the uses of medicinal plants. Traditional medicinal healers (locally called “Bhagats”) were orally interviewed and local tribal people who shared their knowledge about medicinal uses of plants. The sharing of information was purely based on good faith and it was sought on a voluntary basis from the locals. As the information was primarily drawn from the locals, traditional healers, old people, practicing medicinal use through wisdom collected over generations and not based on scientific aptitude and reasoning.



Therefore no comprehensive questionnaire was setup. The idea was to first create a baseline data on which further work could be initiated. The useful information on 25 important ethno-medicinal plants was recorded and depicted here in result section. Herbarium sheets were prepared for all these medicinal plants, plants were thoroughly identified with the help of Flora books (Cooke, 1903, Rao 1986). All the recorded data has been discussed in results.

RESULTS AND DISCUSSIONS

Following results are presented as per the objectives of present case study. Table 1 shows the list of Medicinal Plants growing in the tribal regions of U.T. of Dadra and Nagar-Haveli as mentioned in the Material and Methods section. The practices of the plant parts used in various diseases and medical cases is recorded and mentioned in the Table 1.

Table 1: List of Medicinal plants, its local name, Family, Plants parts used and its Ethno-botanical uses.

Sr. No	Botanical Name	Local / Vernacular Name	Family	Plant parts used	Ethno-botanical uses
1.	<i>Abrus precatorius</i> L.	Chanothi	Fabaceae	Root , Leaf, Seeds	Paste of roots used to treat Jaundice, abdominal pains, Decoction of dried roots are used to cure Hepatitis and Bronchitis, Fresh leaves or dried leaves are used to cure Fever, Cough, Cold and chewed to cure mouth sores. Seeds cure Tuberculosis (TB).
2.	<i>Acacia chundra</i> (Roxb. ex Rottl.) Willd.	Khair	Mimosaceae	Stem Bark	Bark powder (KATHA) is used to cures hemorrhages. Diarrhea is also cured by bark extract, A small amount of KATHA cures ulcer in the mouth. A remedial treatment on Leprosy.
3.	<i>Adansonia digitata</i> L.	Rukhdo	Malvaceae	Bark, Fruit, Seed	Fruit pulp is used to Malaria fever, Cough, Cold. Also gives relief in bronchial asthma. Seeds are crushed in water and given to cure Diarrhea, Nausea, Vomiting, and Gastroenteritis.

To be continued....

Sr. No	Botanical Name	Local / Vernacular Name	Family	Plant parts used	Ethno-botanical uses
4.	<i>Argemone mexicana</i> L.	Darudi	Papaveraceae	Root, Leaf	The fresh yellow milky sap is applied on warts, cold sores, blisters. Latex also taken orally in the treatment of dropsy and jaundice, Root decoction is given in itches, skin disease. Crushed roots are applied over body for the treatment of eczema in domestic animals.
5.	<i>Asparagus racemosus</i> willd. var. <i>javanica</i> (Kunth.) Baker.	Shatavri	Liliaceae	Root	Dry root Powder is to cure urinary troubles, Uterine bleeding, also used in Diabetes, Root decoction is taken by women as a tonic after delivery to increase lactation.
6.	<i>Butea monosperma</i> (Lamk.) Taub.	Khakhro	Fabaceae	Flower Seed	Flowers are used to treat leprosy, gout, skin diseases, also used as astringent, diuretic, swellings. Seeds are used in piles, eye diseases, also used as anthelmintic for roundworms; Seeds paste is taken orally along with fresh cow milk early in the morning to cure asthma. Juice of flower is given in treatment of burning urinary tract.
7.	<i>Calotropis gigantea</i> (L.) Ait.	Safed Akado	Asclepiadaceae	Flower Stem	Milky latex is used externally to stop bleeding, also used in treatment of Leprosy, rheumatism, ringworms, boils, scabies, stings, burns, cures, sores and wounds. Applied on teeth and gums to treat caries toothaches. Dried powdered flowers with honey are given to cure cough. Fresh milky latex is applied locally to cure Scabies.
8.	<i>Centella asiatica</i> (L.) Urb.	Brahmi	Apiaceae	Leaf	The leaves are used in hair-oil as cooling agent and sedative to nerves and brain, diarrhea, hepatitis, measles also treated, wound healing, trauma, prevent blood clots, used to make smooth vein blood circulation.
9.	<i>Cissus quadrangularis</i> Lz	Hadsankal	Vitaceae	Stem	Stem juice is used to treat scurvy, dental problems, also applied topically on swellings of bone fracture. Also used in muscular pains, back pain and spine, treatment of obesity, Diabetes.
10.	<i>Dendrocalamus strictus</i> Nees.	Vans	Poaceae	Leaf, Stem	Leaf juice is given orally during child birth for easy delivery. Strips of bamboo are tied on fractured bone of leg and water is sprayed over it. Stem is used as walking stick.
11.	<i>Eclipta prostrata</i> (L.) L. Mant.	Bhangro	Asteraceae	Leaf	Fresh juice of leaves is given orally to children to cure diarrhea Leaves boiled in coconut oil and applied to remove dandruff and for greying hair.
12.	<i>Emblica officinalis</i> Gaertn.	Ambla	Euphorbiaceae	Fruit	Powder of dried fruit is given twice a day to cure diarrhea. Fruit is uses in preparations of Jams and mouth fresheners. Dry fruit powder is used in hair cleaner and hair dye.
13.	<i>Helicteres isora</i> L.	Marda Shing	Sterculiaceae	Whole plant	Plant powder is given orally with water to cure diarrhea, dysentery, constipation in newly born baby, also used in treatment Diabetes, applied on of snake bite
14.	<i>Hemidesmus indicus</i> (L.) Schult.	Anantmul	Periplocaceae	Root	Paste of root is applied in wounds, cuts, scratches, also treats joints pains or chronic rheumatic pains, applied on skin diseases like leprosy, root extract cures urinary disorders.
15.	<i>Moringa oleifera</i> Lam.	Saragvo	Moringaceae	Leaf, Bark	Fresh juice of leaves is used in treatment of Night blindness, Leaf extract applied on eye twice a day in cases of inflamed tumor on the eyelid. Paste of leaves and stem bark is fed with sugar to increase lactation for pregnant lady. Fruits used as vegetable.

To be continued....

Sr. No	Botanical Name	Local / Vernacular Name	Family	Plant parts used	Ethno-botanical uses
16.	<i>Mucuna pruriens</i> (L.) DC.	Kavach	Fabaceae	Seed	Seeds are used in treatment of Bone fracture, Seeds paste is also applied on dog-bite, scorpion sting, snake-bite, " Kaucha Pak " is prepared from seeds It is used to improve sexual urges.
17.	<i>Rauwolfia pentaphylla</i> L.	Sarpangandha	Apocynaceae	Root	Dried root powder taken orally twice a day in the morning with milk is effective to control blood pressure. Root extract is very effective in treatment of Pneumonia, malaria, also applied on bites of poisonous animals.
18.	<i>Ricinus communis</i> L.	Arandi	Euphorbiaceae	Seed,	Oil extracted seeds is applied as cooling agent in sunstroke. Oil with ginger juice is given arthritis. Castor oil is given to sick goats against fever. Seed oil is given to animals to cure throat problems.
19.	<i>Sapindus laurifolius</i> Vahl.	Aritha	Sapindaceae	Fruit	Fruit pericarp dry powder and bark powder of Acacia catechu is taken with honey to treat piles. Foam of fruit is applied on snake bite and also fruit juice is given orally.
20.	<i>Solanum nigrum</i> L.	Kangani	Solanaceae	Fruit	Fresh fruit juice is given for treatment of abnormal swelling on liver, fruit juice is rubbed over forehead to cure headache. Leaf extract is applied to cure eye infections such as conjunctivitis.
21.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hk. f. & Th.	Galo	Menispermaceae	Stem	Decoction of stem is given thrice a day in fever. Decoction of stem is taken orally once a day to control diabetes. Aerial root is given to animal to increase lactation.
22.	<i>Tribulus terrestris</i> L.	Gokhru	Zygophyllaceae	Fruit	Fruit are used to cure cold and cough; fruit powder is taken orally with water for month to cure kidney stone. Also applied in treatment of Gonorrhea, seeds are taken with milk to cure urinary diseases and debility, entire plant it used treat impotency.
23.	<i>Tridax procumbens</i> L.	PardeshiBhangro	Asteraceae	Leaf	Leaf extract is directly applied on infectious skin and the pasteas anticoagulant on cuts and wounds to stop bleeding. Also it is used as hair tonic to prevent hair loss,
24.	<i>Vitex negundo</i> L.	Nagod	Verbenaceae	Root	Root decoction is applied in joint pain. Leaf juice is applied on swollen body parts. The leaf decoction used to wash mouth of cattle's in treatment of common disease known as " kharva-mova ". Leaf juice is applied to remove lice in children.
25.	<i>Withania somnifera</i> (L.) Dunal.	Ashvagandha	Solanaceae	Root	Root powder is taken with milk twice a day in cases of general debility. Powdered roots are mixed with husk of Isabgol taken in equal amount given with milk in cases of male impotency.

DISCUSSION

The present work deals with the major plants found in U.T. D&NH which have been in use by traditional healers of the local tribal populations of this region. It has been found that these tribal population rely heavily on their routine needs for medicine and healthcare on these plants. The information generated from the study regarding the medicinal plants used by the local

peoples. This could help in creating mass wakefulness concerning their preservation of ethno-botanical knowledge (Thakur and Waske 2018; Verma 2016; Thakur and Sarika 2016; Radha and Puri 2018; Kumar and Duggal 2019). However, a more detailed phytochemical, biochemical and clinical acumen is required to assess the potential and effectively of these plants in further work.

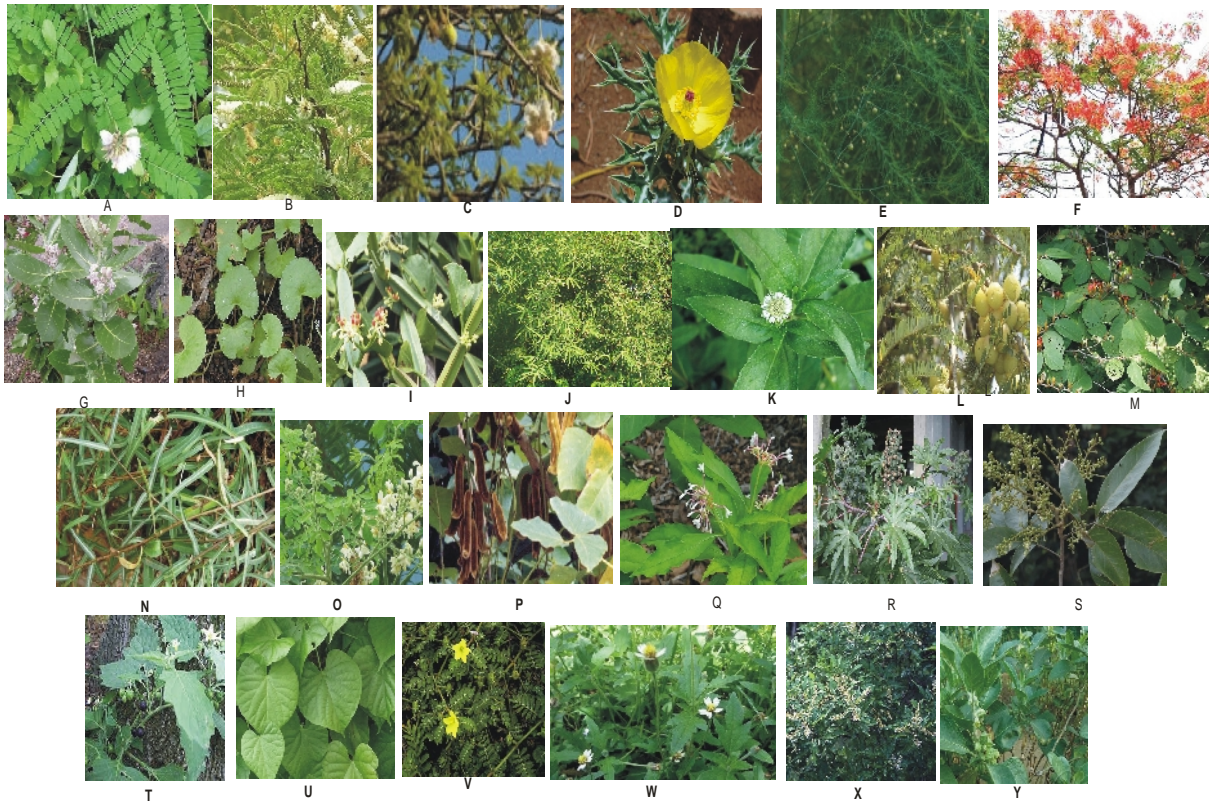
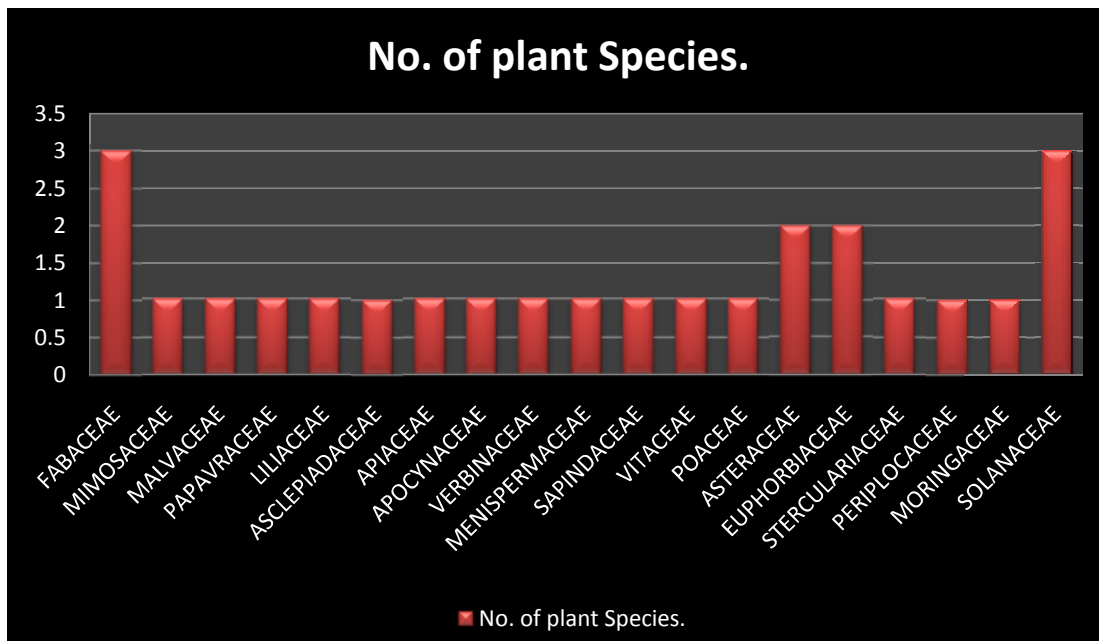


Plate 1. A. *Abrus precatorius* L. B. *Acacia chundra* (Roxb. ex Rottl.) Willd. C. *Adansonia digitata* L. D. *Argemone mexicana* L. E. *Asparagus racemosus* willd. var. *javanica* (Kunth.) Baker. F. *Butea monosperma* (Lamk.) Taub. G. *Calotropis gigantea* (L.) Ait. H. *Centella asiatica* (L.) Urb. I. *Cissus quadrangularis* L. J. *Dendrocalamus strictus* Nees. K. *Eclipta prostrata* (L.) Mant. L. *Emblia officinalis* Gaertn. M. *Helicteres isora* L. N. *Hemidesmus indicus* (L.) Schult. O. *Moringa oleifera* Lam. P. *Mucuna pruriens* (L.) DC. Q. *Rauwolfia pentaphylla* L. R. *Ricinus communis* L. S. *Sapindus laurifolius* Vahl. T. *Solanum nigrum* L. U. *Tinospora cordifolia* (Willd.) Miers ex Hk. f. & Th. V. *Tribulus terrestris* L. W. *Tridax procumbens* L. X. *Vitex negundo* L. Y. *Withania somnifera* (L.) Dunal.



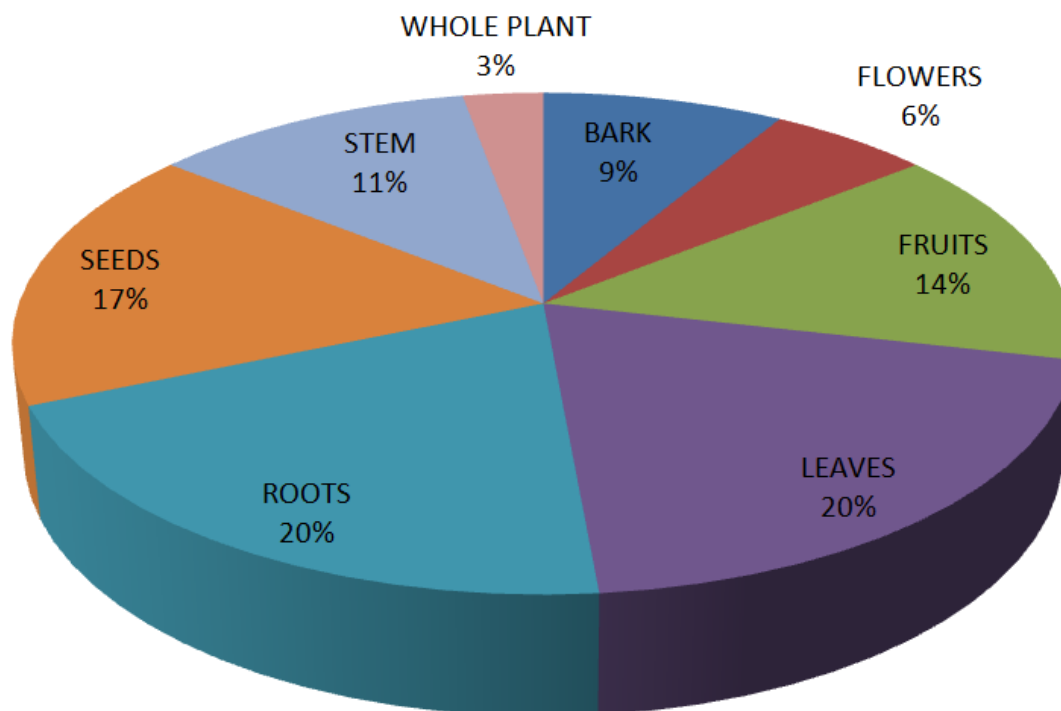


Fig. 1. Pie chart representation showing the part of plants used for Ethno-medicinal uses.

Further, these plants have been in use for several generations and accordingly their management and exploitation are not on a sustainable basis. This needs immediate attention as these plants are now found growing in small patches and specific belts of the hilly tracts and therefore such patchy growth should be made to spread over a larger area to accommodate the needs. Moreover, these plants need to be conserved by undertaking plantation designed by the local government in consultation with community co-operatives wherein these important ethnobotanical resources may be conserved for continued service to the mankind. Some of the conservation strategies that can be immediately adopted include creation of botanical gardens, Biodiversity Parks and Small-Scale Farming at village level for these important plants.

SUMMARY

Overall survey of forest region of Dadra and Nagar Haveli has revealed the following:

1. Tribal regions have extensive information about traditional use of Plants for medicinal purposes.
2. These regions have traditional Medicinal System practiced by Men called "Bhagats".
3. Major diseases that are cured range from Cough, Cold, Fever, Malaria, Jaundice, Diarrhoea and Dysentery, Digestive system's diseases, Asthma and Bronchitis, Respiratory infection and disorders, Scorpion or snake bites, Ulcer, Hair tonic and hair diseases, skin diseases, neurological disorders, and others.
4. A number of medicinal plants have been found closely associated with the lives of these tribal

settlements as they are crucial for their routine medical issues as well as some of the more chronic, age specific problems such as day to day.

5. A detailed Phytochemical, Biochemical and Clinical acumen is required to assess the true potential of some of the species which are endemic to the region.

6. Conservation strategies may be taken up for mass scale cultivation which may also be a good employment opportunity for the locals.

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Conflict of Interest

The Authors declare that there is no conflict.

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