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RESEARCH ARTICLE

SURVEY ON ETHNOMEDICINAL ANTI-DIABETIC PLANTS FROM DEORI TALUKA OF GONDIA DISTRICT (MAHARASTRA)

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Abstract:

The Indian region with a vast heritage of diverse ethnic cultures and rich biodiversity is said to be the great emporium of ethnobotanical health. The use of plants as medicine antedates history. All most all civilization and cultures have employed plants in the treatment of human sickness. Deori being a tribal region people residing here still practices folk remedies for treating Diabetes mellitus and various other diseases. The indigenous people and their rich traditional knowledge not only provide primary health care in the remote rural areas but also treatment for every ailments by using efficacious herbs. Owing to the economic and medicinal value of the plant species an ethno botanical survey was conducted with an objective to collect information about the traditional phytotherapy of some antidiabetic medicinal plants used by the tribals of Deori region. The study led to abundant knowledge of wealth of traditional antidiabetic medicinal plants, about 40 plant species were recorded which were used by the ethnic and rural people of Deori region. It is suggested that future investigations particularly in the field of pharmacology is to be initiated which will be useful for the future studies on modern scientific lines.

Key Words: *Phytotherapy, Ethnobotany, Tribes, Diabetes mellitus.*

Introduction

Diabetes mellitus is a metabolic disorder characterized by increase in high blood glucose level concentration resulting from defects in insulin secretion, insulin action or both (Khan *et al*, 2009). It is a chronic disorder leading to severe complication. Increase in the incidence of diabetes has become a very common problem in our society. It is a challenge to developing countries like India to successfully combat this disorder.

During last few decades there has been an increase in the study of medicinal plants and their traditional use in different parts of world (Lev, 2006). Herbal remedies are considered as the oldest form of health care known to mankind on earth. Various communities have still maintained this as a great traditional knowledge based on herbs (Mukherjee *et al*, 2006).

According to the World Health Organization (WHO) about 65-80% of the world's population in developing countries depends essentially on plants for their primary healthcare. Nearly 1100 species were recognized as source of raw materials for Ayurvedic and Unani formulations (Joseph *et al*, 2011). In spite of the advent of the modern medicines, tribal populations are still practicing the art of herbal medicine. They not only provide primary health care in remote rural areas but also for treatment of almost every ailment by using efficacious herbs. In India it is reported that traditional healers use 2500 plant species and about 100 species of plants serve as regular source of medicine (Pei, 2001). Right from its beginning the documentation of traditional knowledge especially on use of medicinal plants has provided important information for modern drugs and even today this area holds much more hidden thesaurus (Yerge, 2001).

The present study focuses the traditional medicinal plant wealth that is being used by the ethnic and rural people of Deori region for the treatment of Diabetes.

About Study Area

Deori a tribal taluka belonging to Gondia district of Maharashtra state, covers a total geographical area of 1, 21,355 hectares. Amongst which 5,4456 hectares is forest area and 45694 hectares is reserved forest. The taluka comprises about 92 villages and different tribes like Halbi, Gond, Dhever, Mana etc resides here. The region is rich in biodiversity and tribes residing here still practices herbal remedies for treating various ailments. The forest is of dry mixed deciduous type with patches of evergreen growth. The maximum temperature rises up to 48°C in May and

minimum lies up to 9 to 10°C in January. The average rainfall is about 1200 to 1400 Cm. For a proper and systematic study, the sites were selected considering the density of flora. The data were obtained from local aborigines who were hakims, priests, tribal people who have the knowledge of therapeutic value of the plants.

Material and Methods

Following methods were adopted by the authors during the course of investigations.

- The plants used by the ethnic and rural people in the treatment of various diseases were collected by the investigators from the different study sites.
- The data were obtained after carefully planned field trips. During the field trip personal interview was made between the authors and tribes of the regions.
- Data regarding herbal remedies were collected from native informants who were hakims, priests, tribal people and common people who have knowledge of the therapeutic value of the plants and was recorded carefully.
- Plant specimens were collected from different study sites and were identified (Rendle, 1986).
- Flora of our region (Ugemughe) was used to ascertain the nomenclature of the plant species used for identification and authentication of the plant species (Ugemughe, 1986).

The present study presents data which is the general results of the ethnobotanical survey conducted with a view to gather information on antidiabetic medicinal plants used to treat Diabetes by the local people of this area. About 40 such antidiabetic plant species are recorded. The list of such plant species with their correct botanical name, vernacular name, family and plant part used for treatment is given in table no.1. Amongst all the species, *Agel marmelos*, *Andrographis paniculata*, *Ficus species*, *Azadirachta indica*, *Moringa oleifera*, *Butea monosperma*, *Momordica charantia*, *Syzygium cumini*, *Catheranthus roseus*, *Mangefera indica* and *Cassia fistula* are more commonly used by the local people for treatment of diabetes. The phytoconstituents obtained from some of these plants are effectively used for drug formulation which is also being mentioned in Table 2.

Table 1: List of Ethnomedicinal antidiabetic plants of Deori region.

S.N	Scientific Name.	Local Name	Family	Plant part and uses
1.	<i>Agel marmelos</i>	Bel	Rutaceae	The dried and powdered leaves are used for diabetes
2.	<i>Asparagus racemosus</i>	Shatavari	Asparagaceae	Tuberous root, used for Diabetes, jaundice, urinary disorder
3.	<i>Andrographis paniculata</i>	BhuiNeem	<i>Acanthaceae</i>	Leaves, The juice of the leaves used for diabetes.
4.	<i>Azadirachta indica</i>	Neem	Meliaceae	Leaves, Dried and Powdered leaves are used for diabetes
5.	<i>Aristolochia bracteolate</i>	Kiramar	Aristolochiaceae	Leaves, Leaf juice is taken orally to treatment of diabetes.
6.	<i>Aloe vera</i>	Korphad	Liliaceae	Leaves, Leaf gel are taken orally to control diabetes.
7.	<i>Allium sativum</i>	Lasun	Lilliceae	Leaves, Juices of the leaves are used for diabetes.
8.	<i>Allium cepa</i>	Piyaz	Lilliceae	Bulb, Bulb of the onion is used for Diabetes.
9.	<i>Adhatoda vasica</i>	Adhursa	Acantheceae	Leaf, leaf juice from this plant used for Diabetes.
10.	<i>Butea monosperma</i>	Palash	Fabeceae	Bark used to treat diabetes
11.	<i>Brassica juncea</i>	Rai	Brasicaceae	Seed, seed decoction is taken daily
12.	<i>Cajanus cajan</i>	Arhar/ tur	Fabaceae	Seeds, Seeds boiled and taken along with food items.
13.	<i>Coccinia grandis</i>	Kundru	Cucurbitaceae	Aqueous extract of roots leaves and muscilage of fruits is used for the treatment of Diabetes.
14.	<i>Curcuma longa</i>	Halud	Zingiberaceae	Rhizome, it is used for Diabetes.
15.	<i>Ficus benghalensis</i>	Bargad	Moraceae	Bark, Bark decoction is used for

				Diabetes.
16.	<i>Ficus religiosa</i>	Pipal	Moraceae	Bark, Bark decoction is used for Diabetes
17.	<i>Cassia fistula</i>	Amaltas	Caesalpiniaceae	Fruits, fruit juice used for Diabetes.
18.	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae	Leaf extract used for Diabetes.
19.	<i>Embilica officianalis</i>	Amla	Euphorbiaceae	Fruit, Fruit juice and powder used for Diabetes.
20.	<i>Euphorbia hirta</i>	Dudhi	Euphorbiaceae	Leaves, Leaf juice is taken orally for treatment of Diabetes.
21.	<i>Syzygium cumini</i>	Jamun	Mrytaceae	Seeds, Early morning seeded powered is taken to cure Diabetes.
22.	<i>Ficus racemosa</i>	Goolar	Moraceae	Root decoction is taken orally to cure Diabetes.
23.	<i>Gymnema sylvestre</i>	Gurmar	Apocyanaceae	Aqueous extract of Leaf and fruit is taken daily to cure hypoglycemia.
24.	<i>Hibiscus rosa sinensis</i>	Jasvant	Malvaceae	Leaves, Fresh leaf is taken regularly.
25.	<i>Momordica charantia</i>	Krela	Cucurbitaceae	Seed powder is mixed with water and taken orally to treat Diabetes.
26.	<i>Moringa oleifera</i>	Mungna	Moringaceae	Young leaves, Early morning leaf juice is taken orally to cure Diabetes.
27.	<i>Mangifera indica</i>	Aam	Anacardiaceae	Leaves. The powered leaves are mixed with cow milk and taken orally to cure Diabetes.
28.	<i>Melia azedarach</i>	Bakneem	Meliaceae	Seeds, seed are used for the treatment of Diabetes.
29.	<i>Ocimum sanctum</i>	Tulsi	Lamiace/Labiatae	Leaves, early morning a pinch of leaf is taken to treat Diabetes.
30.	<i>Phyllanthus emblica</i>	Amla	Euphorbiaceae	Fruits are very good antioxidant properties.
31.	<i>Psidium guajava</i>	Peru/Jam	Myrtaceae	Fruit, Daily one fruits is taken to cure Diabetes.
32.	<i>Trigonella foenum</i>	Methe	Fabaceae	Seed is hypoglycemic.
33.	<i>Withania somnifera</i>	Musli	Solanaceae	Leaves, The juice of the leaves used for Diabetes.
34.	<i>Catheranthus roseus</i>	Sadaphule	Apocynaceae	The juice of the leaves used for Diabetes.
35.	<i>Madhuca indica</i>	Mahua	Sapotaceae	Bark used for Diabetes.
36.	<i>Termenalia chebula</i>	Herna	Combretaceae	Powdered fruit exhibit hypoglycemic activity.
37.	<i>Acacia nilotica</i>	Babul	Leguminaceae/Subfam. Mimosoideae	Bark extracts and seeds exhibits marked hypoglycemic activity.
38.	<i>Punica granatum</i>	Madulai	Lythraceae	Flowers have good antidiabetic property
39.	<i>Solanum nigrum</i>	Mokoi	Solanaceae	Leaf juice is taken orally.
40.	<i>Cassia auriculata</i>	Avaram	Caesalpiniaceae	Flowers are taken regularly for Diabetes.

Table: 2 List of plants with active principle

Sr. No	Scientific name	Family	Active Principle
1.	<i>Andrographis paniculata</i>	Acantheceae	Andrographolide.
2.	<i>Azadirachta indica.</i>	Meliaceae.	Beta-sitosterol.
3.	<i>Allium sativum.</i>	Liliaceae.	Diallyl trisulfide.

4.	<i>Syzygium cumini.</i>	Mrytaceae.	Jambosin, Tanins.
5.	<i>Gymnemasyvestre.</i>	Apocynaceae.	Gymnemic acid IV.
6.	<i>Momordica charentia.</i>	Cucurbitaceae.	Charantins and Momordicine
7.	<i>Trigonella foenum-graceum.</i>	Fabeceae.	Trigonellin.
8.	<i>Butea monosperma.</i>	Fabeceae.	Palasonin
9.	<i>Catheranthus roseus.</i>	Apocynaceae.	Vindoline and Coromaridine

Discussion and Conclusion

Ethanobotany is a multidisciplinary science defined as the interaction between plants and people which records the history and current state of human kind even while foretelling the future. In every ethnic group there exists a traditional health care system, which is culturally patterned, and in the rural communities health care seems to be the first and foremost line of defense. The present study has highlighted the traditional and indigenous knowledge of ethno medicinal antidiabetic plants, practiced by the ethnic and rural people of Deori taluka.

It was observed that about 40 traditional medicinal plants species are used by the ethnic and tribal people for treating Diabetes. Plant parts like roots, bark, rhizome, seeds, and leaves were used for preparing preparations like decoction, infusion, aqueous extract in milk or honey for the treatment. Amongst the plants used active phyto constituents are isolated from about 9 plants (Table 2) which are being used to formulate drug. It is therefore suggested that efficacy of these ethno medicinal plants or these indigenous practices should be subjected to pharmacological validation. Such studies may provide useful information to scientist and scientific companies for further isolation and identification of more active compounds, which can be used for formulating antidiabetic drugs.

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