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, Ethanobotany, 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). Inspite 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 48ºC 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.

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

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

17. *Cassia fistula*  
   **Amaltas**  
   Caesalpiniaeae  
   Fruits, fruit juice used for Diabetes.

18. *Delonix regia*  
   **Gulmohar**  
   Caesalpiniaeae  
   Leaf extract used for Diabetes.

19. *Embilica officinalis*  
   **Amla**  
   Euphorbiaceae  
   Fruit. Fruit juice and powder used for Diabetes.

20. *Euphorbia hirta*  
   **Dudhi**  
   Euphorbiaceae  
   Leaves, Leaf juice is taken orally for treatment of Diabetes.

21. *Syzygium cumini*  
   **Jamun**  
   Myrtaceae  
   Seeds, Early morning seeded powered is taken to cure Diabetes.

22. *Ficus racemosa*  
   **Goolar**  
   Moraceae  
   Root decoction is taken orally to cure Diabetes.

23. *Gynnema sylvestre*  
   **Gurmar**  
   Apocyanaeae  
   Aqueous extract of Leaf and fruit is taken daily to cure hypoglycemia.

24. *Hibiscus rosa sinensis*  
   **Jasvant**  
   Malvaceae  
   Leaves, Fresh leaf is taken regularly.

25. *Momordica charantia*  
   **Krela**  
   Cucurbitaceae  
   Seed powder is mixed with water and taken orally to treat Diabetes.

26. *Moringa oleifera*  
   **Mungna**  
   Moringaceae  
   Young leaves, Early morning leaf juice is taken orally to cure Diabetes.

27. *Mangifera indica*  
   **Aam**  
   Anacardiaceae  
   Leaves. The powered leaves are mixed with cow milk and taken orally to cure Diabetes.

28. *Melia azedarach*  
   **Bakneem**  
   Meliaceae  
   Seeds, seed are used for the treatment of Diabetes.

29. *Ocimum sanctum*  
   **Tulsi**  
   Lamiace/Labiateae  
   Leaves, early morning a pinch of leaf is taken to treat Diabetes.

30. *Phyllanthus emblica*  
   **Aamla**  
   Euphorbiaceae  
   Fruits are very good antioxidant properties.

31. *Psidium guajava*  
   **Peru/Jam**  
   Myrtacea  
   Fruit, Daily one fruits is taken to cure Diabetes.

32. *Trigonella foenum*  
   **Methe**  
   Fabaceae  
   Seed is hypoglycemic.

33. *Withinia somnifera*  
   **Musli**  
   Solanaceae  
   Leaves, The juice of the leaves used for Diabetes.

34. *Catheranthus roseus*  
   **Sadaphule**  
   Apocynaceae  
   The juice of the leaves used for Diabetes.

35. *Madhuca indica*  
   **Mahua**  
   Sapotaceae  
   Bark used for Diabetes.

36. *Termenalia chebula*  
   **Herna**  
   Combretaceae  
   Powdered fruit exhibit hypoglycemic activity.

37. *Acacia nilotica*  
   **Babul**  
   Leguminaceae/Subfam. Mimosoideae  
   Bark extracts and seeds exhibits marked hypoglycemic activity.

38. *Punica graminatum*  
   **Madulai**  
   Lythr aceae  
   Flowers have good antidiabetic property

39. *Solanum nigrum*  
   **Mokoi**  
   Solanaceae  
   Leaf juice is taken orally.

40. *Cassia auriculata*  
   **Avaram**  
   Caesalpiniaeae  
   Flowers are taken regularly for Diabetes.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Scientific name</th>
<th>Family</th>
<th>Active Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Andrographis paniculata</em></td>
<td>Acantheceae</td>
<td>Andrographolide.</td>
</tr>
<tr>
<td>2.</td>
<td><em>Azadirachta indica</em></td>
<td>Meliaceae</td>
<td>Beta-sitosterol.</td>
</tr>
</tbody>
</table>
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 ethnomedicinal 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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References


