ANTI-HYPERGLYCEMIC PLANTS USED BY THE TRADITIONAL HEALER OF WEST GODAVARI DISTRICT, ANDHRA PRADESH, INDIA

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Keywords: Anti-hyperglycemic, Traditional healer, Diabetes

ABSTRACT: A survey was conducted to collect information about the effective medicinal plants used by the Traditional healer to treat diabetes. The use of herbal drugs increased worldwide because of the lack of side effects and efficacy. Traditional healing is practicing throughout the world to treat several diseases. Glycemic disease has become a severe issue in India and all over the world. The traditional healer of West Godavari district studied for the use of medicinal plants to treat diabetes. We report 19 species of plants which are active against diabetes and about the scientific studies that have been conducted on them.

INTRODUCTION: Due to the effect of traditional plant healing, the whole scientific community is shifted towards the plant kingdom in search of new herbal drugs especially for diabetes. India has a rich source of medicinal plants. Medicinal plants have a long history and are providing useful tools for treating various diseases. In developing countries, increased use of traditional medicines taking especially herbal preparations in the local health care system and urban people are turning to herbal medicines. Now a day’s researchers have been focussed on the medicinal plants because of lack of side effects and efficacy. Diabetes mellitus is characterized by the hyperglycemia that is induced by decreased cellular glucose uptake and metabolism. This metabolic disorder is rising global and is likely to hit 300 million by 2025 with India projected to have largest number of diabetic cases.

Currently, dietary changes, oral hypoglycemic agents or insulin injections are utilized to prevent hyperglycemia. Nowadays there is some allopathic drugs are available to treat diabetes, but all the agents are causing serious side effects after prolonged use. Chronic hyperglycemia causes damages to eyes, kidneys, nerves, heart and blood vessels. To overcome adverse effects, many traditional plant medicines are used throughout the world to treat diabetes. Plants contain glycossides, alkaloids, terpenoids, flavonoids, carotenoids, etc. that are frequently implicated as having antidiabetic activity.

MATERIALS AND METHODS: The present study was undertaken in Somarajucheruvu, in penugonda Mandal, West Godavari District, Andhra Pradesh, India. The total geographical area is 4000 square km. This study was conducted in May 2015. Relevant information gathered from the traditional healer about the anti-diabetic plants. Interviews were also conducted on patients who have been taking these medications.

RESULTS:
List of Medicinal Plants Used by the Traditional Healer: Abutilon indicum: It belongs to the family...
Malvaceae. The local name is Duvvena kayalu. Leaves of *Abutilon indicum* made in to paste mixed with water and taken orally to treat diabetes. Y. N. Seetharam et al., (2002) proved alcohol and water extract of *Abutilon indicum* leaves showed significant hypoglycemic effect 12.

**Annona reticulate:** It belongs to the family Annonaceae. The local name is Ramaphalamu. A decoction of leaves of *Annona reticulata* mixed with cow’s milk and taken orally to treat diabetes. Soumya P. Rout et al. (2013) reported that Hydro-Alcoholic extract of leaves of *Annona reticulata* showed potent glucose lowering effect 13.

**Carica papaya:** It belongs to the family Caricaceae. The local name is Boppayi. Unripe fruits along with seeds made in to paste and given with milk orally to treat diabetes. Venkateshwarlu E et al., (2013) proved that the aqueous extract of seeds of *Carica papaya* has antihyperglycemic effect 14.

**Azadirachta indica:** It belongs to the family Meliaceae. The local name is Vepa. Leaves of *Azadirachta indica* made in to paste mixed with water taken internally to treat diabetes. S. K. Dholi et al., (2011) reported that the ethanol leaf extract of *Azadirachta indica* indicators showed significant hypoglycemic effect 15.

**Anacardium occidentale:** It belongs to the family Anacardiaceae. The local name is Muntha mamidi. Leaves of *Anacardium occidentale* made in to paste with water and taken internally to treat diabetes. S. D. Sokeng et al., (2007) proved that the methanol leaf extract, dichloromethane, ethyl acetate, and n-hexane fractions from *Anacardium occidentale* has hypoglycemic effect 16.

**Coccinia grandis:** It belongs to the family Cucurbitaceae. The local name is Donda kaya. Leaves of *Coccinia grandis* made in to paste mixed with milk and taken orally to treat diabetes. Kavitha A et al., (2015) reported that the ethanolic leaf extract of *Coccinia grandis* caused a significant reduction in the glucose level of diabetic rats 17.

**Gymnema Sylvestre:** It belongs to the family Asclepiadaceae. The local name is Podapatri. Dried leaf powder of *Gymnema Sylvestre* mixed with water taken orally to treat diabetes. Pankaj Kishor Mishra et al., (2009) proved that the aqueous leaf extract of *Gymnema Sylvestre* has significant antidiabetic activity 18.

**Mangifera indica:** It belongs to the family Anacardiaceae. The local name is Mamidi chettu. Leaves of *Mangifera indica* ground in to paste along with the bark of tree mixed with water to treat diabetes. P. Venkatalakshmi et al., (2011) reported that that the ethanolic extract of *Mangifera indica* leaves has anti-diabetic activity 19.

**Piper nigrum:** It belongs to the family Piperaceae. The local name is Miriyalu. The whole plant of *Piper nigrum* made in to paste mixed with milk taken orally to treat diabetes. ONYESIFE, Chioma et al., (2014) proved that the ethanolic leaf extract of *Piper nigrum* has hypoglycemic effect 20.

**Zingiber officinale:** It belongs to the family Zingiberaceae. The local name is Allamu. The rhizome of *Zingiber officinale* made in to paste mixed with water to treat diabetes. Venkata K. S. N et al. (2011) Proved that the ethanolic extract of *Zingiber officinale* showed pronounced blood glucose-lowering in alloxan-induced diabetic rats 21.

**Ficus bengalensis:** It belongs to the family Moraceae. The local name is Marri chettu. The bark of *Ficus bengalensis* made in to powder mixed jaggery along with water taken orally to treat diabetes. K. Kannabiran et al., (2008) reported that the aqueous extract of the bark of *Ficus bengalensis* has antidiabetic and ameliorative potential in streptozotocin-induced diabetic rats 22.

**Psidium guajava:** It belongs to the family Myrtaceae. Local name is Jamachettu. A decoction of leaves of *Psidium guajava* mixed with water and taken internally to treat diabetes. R. Manikandan et al., (2013) proved that the antidiabetic activity of methanolic extract of *Psidium guajava* leaves by in-vitro studies 23.

**Hibiscus rosiness:** It belongs to the family Malvaceae. The local name is Mamdaram. Leaves ground in to paste mixed with water and milk took orally to treat diabetes. Moqbel et al., (2011) reported that the ethanolic extract fractions of *Hibiscus rosiness* might contain potential oral hypoglycemic agents 24.
**Moringa oleifera:** It belongs to the family Moringaceae. The local name is Munagakaya. Fruit juice along with leaves and flowers mixed with milk taken orally to treat diabetes. D. Jaiswal et al., (2009) proved scientifically that the widely claimed use of *Moringa oleifera* as an ethnomedicine to treat diabetes mellitus.

**Cassia auriculata:** It belongs to family Caesalpiniaceae. The local name is Tangedu. Leaf juice of *Cassia auriculata* mixed with bark and boiled milk taken orally to treat diabetes. Daisy et al., (2012) reported that methanol extract of the bark of *Cassia auriculata* found to be more active when compared with hexane, ethyl acetate aqueous extract.

**Ocimum sanctum:** It belongs to the family Lamiaceae. The local name is Thulasi. Leaves of *Ocimum sanctum* made in to paste mixed with water taken orally to treat diabetes. Anjana Talwar et al., (2012) reported that the leaves of *Ocimum sanctum* have antidiabetic activity and antioxidant activity.

**Murraya koenigii:** It belongs to family Rutaceae. The local name of the plant is Karepaku. Leaves of *Murraya koenigii* made in to paste mixed with water and taken orally to treat diabetes. Vinuthan M. K. et al., (2004) reported that Aqueous and methanol extracts of *Murraya koenigii* leaves showed a significant reduction as compared to diabetic control groups.

**Lawsonia inermis:** It belongs to the family Lythraceae. The local name of the plant is Gorintaku. Stem bark powder and leaves of *Lawsonia inermis* mixed with water and taken orally to treat diabetes. Arati chikaraddy et al., (2012) showed that the ethanolic extract of *Lawsonia inermis* showed a significant fall in blood glucose.

**Momordica charantia:** It belongs to the family Cucurbitaceae. The local name of the plant is Kakarakaya. Leaves and fruits crushed in to paste mixed with milk and taken internally to treat diabetes. Savula Jyothsna et al. (2012) reported that ethanolic extract of *Momordica charantia* fruit and the combination of macerated extracts of both *Momordica charantia* and *Momordica dioica* showed significant antidiabetic activity.

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**TABLE 1: SHOWS THE ANTI DIABETIC PLANTS USED BY THE TRADITIONAL HEALER**

<table>
<thead>
<tr>
<th>S. no.</th>
<th>Medicinal Plant</th>
<th>Family</th>
<th>Local name</th>
<th>Plant part used</th>
<th>Scientific evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Abutilon indicum</em></td>
<td>Malvaceae</td>
<td>Duvvena kayalu</td>
<td>Leaves</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td><em>Annona reticulata</em></td>
<td>Annonaceae</td>
<td>Ramaphalamu</td>
<td>Leaves</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td><em>Carica papaya</em></td>
<td>Caricaceae</td>
<td>Boppayi.</td>
<td>Unripe fruit and leaves</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td><em>Azadirachta indica</em></td>
<td>Meliaceae</td>
<td>Vepa</td>
<td>Leaves</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td><em>Anacardium occidentale</em></td>
<td>Anacardiaceae</td>
<td>Muntha mamidi</td>
<td>Leaves</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td><em>Coccinia grandis</em></td>
<td>Cucurbitaceae</td>
<td>Donda kaya</td>
<td>Leaves</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td><em>Gymnema sylvestre</em></td>
<td>Asclepiadaceae</td>
<td>Podapatri</td>
<td>Dried leaves</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td><em>Mangifera indica</em></td>
<td>Anacardiaceae</td>
<td>Mamidi chettu</td>
<td>Leaves and bark</td>
<td>19</td>
</tr>
<tr>
<td>9</td>
<td><em>Piper nigrum</em></td>
<td>Piperaceae</td>
<td>Miriyalu</td>
<td>Whole plant</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td><em>Ziziphus officinalis</em></td>
<td>Zingiberaceae</td>
<td>Allamu</td>
<td>Rhizome</td>
<td>21</td>
</tr>
<tr>
<td>11</td>
<td><em>Ficus bengalensis</em></td>
<td>Moraceae</td>
<td>Marri chettu</td>
<td>Bark</td>
<td>22</td>
</tr>
<tr>
<td>12</td>
<td><em>Psidium guajava</em></td>
<td>Myrtaceae</td>
<td>Jamachettu</td>
<td>Leaves</td>
<td>23</td>
</tr>
<tr>
<td>13</td>
<td><em>Hibiscus rosasinensis</em></td>
<td>Malvaceae</td>
<td>Mamdaram</td>
<td>Leaves</td>
<td>24</td>
</tr>
<tr>
<td>14</td>
<td><em>Moringa oleifera</em></td>
<td>Moringaceae</td>
<td>Munagakaya</td>
<td>Fruits, Leaves, and Flowers</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td><em>Cassia auriculata</em></td>
<td>Caesalpiniaceae</td>
<td>Tangedu</td>
<td>Leaves</td>
<td>26</td>
</tr>
<tr>
<td>16</td>
<td><em>Ocimum sanctum</em></td>
<td>Lamiaceae</td>
<td>Thulasi</td>
<td>Leaves</td>
<td>27</td>
</tr>
<tr>
<td>17</td>
<td><em>Murraya koenigii</em></td>
<td>Rutaceae</td>
<td>Karepaku</td>
<td>Leaves</td>
<td>28</td>
</tr>
<tr>
<td>18</td>
<td><em>Lawsonia inermis</em></td>
<td>Lythraceae</td>
<td>Gorintaku.</td>
<td>Stem bark</td>
<td>29</td>
</tr>
<tr>
<td>19</td>
<td><em>Momordica charantia</em></td>
<td>Cucurbitaceae</td>
<td>Kakarakaya.</td>
<td>Leaves and fruits</td>
<td>30</td>
</tr>
</tbody>
</table>
DISCUSSION: Medicinal plants are gaining a lot of importance nowadays because of efficacy they have been showing in the traditional healing. Researchers are focussing on the traditional healers to find plant-based drugs. The present study focused on the conventional diabetes healing revealed the efficient antidiabetic medicinal plants, and also they have been proved scientifically as well. Traditional healer suggests these medications in the early morning, afternoon and night. These medications have specific doses, and they have to be taken for months and years to cure. The interviews of the patients revealed that these herbal medicines had shown wonderful results without any side effects. They also revealed that the economic status of the people turning towards these medicines. The results obtained through this study are in agreement with the previous reports by M. Pavani et al (2014) 31 and Aswini Kumar Dixit et al. (2011) 32. The documented medicinal plants are given in Table 1.

CONCLUSION: Herbal medications are safe and effective in curing diseases. Effective work should be done by the researchers to provide cost-effective and efficient drugs to society.

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CONFLICT OF INTEREST: Nil

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