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

Venkata Narasimha Kadali * and B. V. Sandeep

Department of Biotechnology, Andhra University, Visakhapatnam - 530003, Andhra Pradesh, India.

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Correspondence to Author:
Venkata Narasimha Kadali

Department of Biotechnology, Andhra University, Visakhapatnam - 530003, Andhra Pradesh, India.

E-mail: vnsimhakadali@gmail.com

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 [1]. 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 [2, 3]. Now a day's researchers have been focussed on the medicinal plants because of lack of side effects and efficacy [4]. Diabetes mellitus is characterized by the hyperglycemia that is induced by decreased cellular glucose uptake and metabolism [5]. 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 [6].

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Currently, dietary changes, oral hypoglycemic agents or insulin injections are utilized to prevent hyperglycemia [7]. Nowadays there is some allopathic drugs are available to treat diabetes, but all the agents are causing serious side effects after prolonged use [8]. Chronic hyperglycemia causes damages to eyes, kidneys, nerves, heart and blood vessels [9]. To overcome adverse effects, many traditional plant medicines are used throughout the world to treat diabetes [10]. Plants contain glycosides, alkaloids, terpenoids, flavonoids, carotenoids, *etc.* that are frequently implicated as having antidiabetic activity [11].

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 ethanolic leaf extract of *Azadirachta indica*tors 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 rosasinesis* 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 [25].

***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 [26].

***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 [27].

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 [28].

***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 enemies showed a significant fall in blood glucose [29].

***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 charity* and *Momordica diocia* showed significant antidiabetic activity [30].

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

S. no.	Medicinal Plant	Family	Local name	Plant part used	Scientific evidence
1	*Abutilon indicum*	Malvaceae	Duvvena kayalu	Leaves	12
2	*Annona reticulata*	Annonaceae	Ramaphalamu	Leaves	13
3	*Carica papaya*	Caricaceae	Boppayi.	Unripe fruit and leaves	14
4	*Azadirachta indica*	Meliaceae	Vepa	Leaves	15
5	*Anacardium occidentale*	Anacardiaceae	Muntha mamidi	Leaves	16
6	*Coccinia grandis*	Cucurbitaceae	Donda kaya	Leaves	17
7	*Gymnema sylvestre*	Ascelpiadaceae	Podapatri	Dried leaves	18
8	*Mangifera indica*	Anacardiaceae	Mamidi chettu	Leaves and bark	19
9	*Piper nigrum*	Piperaceae	Miriyalu	Whole plant	20
10	*Zinziber officinale*	Zingiberaceae	Allamu	Rhizome	21
11	*Ficus bengalensis*	Moraceae	Marri chettu	Bark	22
12	*Psidium guajava*	Myrtaceae	Jamachettu	Leaves	23
13	*Hibiscus rosasinesis*	Malvaceae	Mamdaram	Leaves	24
14	*Moringa oleifera*	Moringaceae	Munagakaya	Fruits, Leaves, and Flowers	25
15	*Cassia auriculata*	Caesalpiniaceae	Tangedu	Leaves	26
16	*Ocimum sanctum*	Lamiaceae	Thulasi	Leaves	27
17	*Murraya koenigii*	Rutaceae	Karepaku	Leaves	28
18	*Lawsonia inermis*	Lythraceae	Gorintaku.	Stem bark	29
19	*Momordica charantia*	Cucurbitaceae	Kakarakaya.	Leaves and fruits	30

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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