



Received on 12 August, 2015; received in revised form, 04 September, 2015; accepted, 18 September, 2015; published 30 September, 2015

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, Andhra Pradesh, India.

Keywords:

Anti-Hyperglycemic,
Traditional Healer, Diabetes

Correspondence to Author:

Venkata Narasimha Kadali

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

E-mail: vnsimhakadali@gmail.com

ABSTRACT: A survey was conducted to collect the information about the effective medicinal plants used by the Traditional healer to treat diabetes. The use of herbal drugs increased worldwide because of lack of side effects and efficacy. Traditional healing is practising throughout the world to treat several diseases. The glycemic disease has become a serious 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 long history and are providing useful tools for treating various disease¹. 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 medicines²⁻³. Now a day's researchers have been focussed on the medicinal plants because lack of side effects and efficacy⁴. Diabetes mellitus is characterized by the hyperglycemia that is induced by decreased cellular glucose uptake and metabolism⁵. This metabolic disorder is rising global and is likely to hit 300 million by 2025 with India projected to have largest number of diabetic cases⁶.

Currently dietary changes, oral hypo glyceemic agents or insulin injections are utilized to prevent hyperglycemia⁷. Now a days there are number of allopathic drugs are available to treat diabetes but all the agents causing serious side effects after prolonged use⁸. Chronic hyperglycemia causes damages to eyes, kidneys, nerves, heart and blood vessels⁹.

In order to overcome adverse effects many traditional plant medicines are used throughout the world to treat diabetes¹⁰. Plants contain glycosides, alkaloids, terpenoids, flavonoids, cardenoids, etc. that are frequently implicated as having antidiabetic activity¹¹.

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.

| | |
|---|--|
|  | <p>DOI:</p> <p>10.13040/IJPSR.0975-8232.IJP.2(9).473-77</p> |
| | <p>Article can be accessed online on: www.ijpjournal.com</p> |
| <p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.IJP.2(9).473-77</p> | |

RESULTS:**List of medicinal plants used by the traditional healer.****1. *Abutilon indicum*:**

It belongs to the family Malvaceae. 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 affect ¹².

2. *Annona reticulata*:

It belongs to the family Annonaceae. Localname is Ramaphalamu. 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.

3. *Carica papaya*:

It belongs to the family caricaceae. Localname is Boppayi. Unripped 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 anti hyperglycemic effect ¹⁴.

4. *Azadirachta indica*:

It belongs to the family Meliaceae. Localname 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* has showed significant hypoglycemic effect ¹⁵.

5. *Anacardium occidentale*:

It belongs to the family Anacardiaceae. Localname 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, dichloro methane, ethyl acetate, and *n*- hexane fractions from *Anacardium occidentale* has hypoglycemic effect ¹⁶.

6. *Coccinia grandis*:

It belongs to the family Cucurbitaceae. 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 on the glucose level of diabetic rats ¹⁷.

7. *Gymnema sylvestre*:

It belongs to the family Asclepiadaceae. Localname 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.

8. *Mangifera indica*:

It belongs to the family Anacardiaceae. Local name is Mamidi chettu. Leaves of *Mangifera indica* grinded in to paste along with 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 antidiabetic activity ¹⁹.

9. *Piper nigrum*:

It belongs to the family Piperaceae. 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.

10. *Zinziber officinale*:

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

11. *Ficus bengalensis*:

It belongs to the family Moraceae. Localname is Marri chettu. 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 bark of *Ficus bengalensis* has antidiabetic and ameliorative potential in streptozotocin induced diabetic rats ²².

12. *Psidium guajava*:

It belongs to the family Myrtaceae. Local name is Jamachettu. 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* studies²³.

13. *Hibiscus rosasinesis*:

It belongs to the family Malvaceae. Local name is Mamdaram. Leaves grinded in to paste mixed with water and milk taken orally to treat diabetes. Moqbel *et al* (2011) reported that the ethanolic extract fractions of *Hibiscus rosasinesis* may contain potential oral hypoglycemic agents²⁴.

14. *Moringa oleifera*:

It belongs to the family Moringaceae. 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 mellitus²⁵.

15. *Cassia auriculata*:

It belongs family caesalpiniaceae. 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 bark of *Cassia auriculata* found to be more active, when compared with hexane, ethyl acetate aqueous extract²⁶.

16. *Ocimum sanctum*:

It belongs to the family Lamiaceae. 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* has antidiabetic activity and antioxidant activity²⁷.

17. *Murraya koenigii*:

It belongs to family Rutaceae. 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 significant reduction as compared to diabetic control groups²⁸.

18. *Lawsonia inermis*:

It belongs to the family Lythraceae. 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 significant fall in blood glucose²⁹.

19. *Momordica charantia*:

It belongs to the family Cucurbitaceae. 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 diocia* showed significant antidiabetic activity³⁰.

DISCUSSION: Medicinal plants gaining lot of importance now a days because of efficacy they have been showing in the traditional healing. Researchers focussing on the traditional healers in order to find plant based drugs. The present study focussed on the traditional healing of diabetes 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 have 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 given in **Table 1**.

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 | <i>Abutilon indicum</i> | Malvaceae | Duvvena kayalu | Leaves | 12 |
| 2 | <i>Annona reticulata</i> | Annonaceae | Ramaphalamu | Leaves | 13 |
| 3 | <i>Carica papaya</i> | caricaceae | Boppayi. | Unripped fruit and | 14 |

| | | | | | |
|----|-------------------------------|-----------------|---------------|--------------------------------|----|
| | | | | leaves | |
| 4 | <i>Azadirachta indica</i> | Meliaceae | Vepa | Leaves | 15 |
| 5 | <i>Anacardium occidentale</i> | Anacardiaceae | Muntha mamidi | Leaves | 16 |
| 6 | <i>Coccinia grandis</i> | Cucurbitaceae | Donda kaya | Leaves | 17 |
| 7 | <i>Gymnema sylvestris</i> | Asclepiadaceae | Podapatri | Dried leaves | 18 |
| 8 | <i>Mangifera indica</i> | Anacardiaceae | Mamidi chettu | Leaves and bark | 19 |
| 9 | <i>Piper nigrum</i> | Piperaceae | Miriyalu | Whole plant | 20 |
| 10 | <i>Zinziber officinale</i> | Zingiberaceae | Allamu | Rhizome | 21 |
| 11 | <i>Ficus bengalensis</i> | Moraceae | Marri chettu | Bark | 22 |
| 12 | <i>Psidium guajava</i> | Myrtaceae | Jamachettu | Leaves | 23 |
| 13 | <i>Hibiscus rosasinesis</i> | Malvaceae | Mamdaram | Leaves | 24 |
| 14 | <i>Moringa oleifera</i> | Moringaceae | Munagakaya | Fruits , Leaves and Flowers | 25 |
| 15 | <i>Cassia auriculata</i> | Caesalpiniaceae | Tangedu | Leaves | 26 |
| 16 | <i>Ocimum sanctum</i> | Lamiaceae | Thulasi | Leaves | 27 |
| 17 | <i>Murraya koenigii</i> | Rutaceae | Karepaku | Leaves | 28 |
| 18 | <i>Lawsonia inermis</i> | Lythraceae | Gorintaku. | Stem bark | 29 |
| 19 | <i>Momordica charantia</i> | Cucurbitaceae | Kakarakaya. | Leaves and fruits | 30 |

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

ACKNOWLEDGEMENTS: The authors thank the Villagers, Patients and Traditional healer for providing the information. The authors also thank Prof. B.V. Sandeep (Head), Department of Biotechnology Andhra University, Dr. Sudhrakara rao. P, Dr. P. Bindiya for continuous support.

REFERENCES:

- Goleniowski ME, Bongiovanni GA, Palacio L, Nunezc CO, Centro JJ. Medicinal plants from the Sierra de comechingones, Argentina. *J Ethnopharmacol* 2006; 107 (3):324-341.
- N Joroge GN, Busmann RW. Ethnotherapeutic management of skin diseases among the kikuyus of central kenya. *J Ethnopharmacol* 2007; 111:303-307.
- Wondimu T, Asfaw Z, Kelbessa E. Ethnobotanical study of medicinal plants around Dheera town, Arsi zone, Ethiopia. *J Ethnopharmacol* 2007; 112:152-161.
- V N Kadali, K R Kindangi. Ethnomedicinal plants used by the Traditional healer of West Godavari district, Andhra pradesh, India. *Journal of Pharmacognosy and Phytochemistry* 2015; 3(6):117-118.
- Bressler R, Johnson D. Pharmacological regulation of blood glucose levels in non-insulin-dependent diabetes mellitus. *Arch Intern Med* 1997; 157:836-48.
- Mohan V Why are Indians more prone to diabetes? *J Assoc Physicians India*. 2004 Jun; 52:468-74.
- A.M. Gallagher, P.R. Flatt, G. Duffy, Y.H.A. Abdel-Wahab. The effects of traditional antidiabetic plants on in vitro glucose diffusion. *Nutrition Research* 23 (2003) 413-424.
- M. Siddaiah, Jayaveera K.N, K. Souris, Yashodha Krishna J.P and P. Vasanth Kumar. Phytochemical Screening and Anti Diabetic Activity of Methanolic Extract of Leaves of

- Ximenia Americana* in Rats. *International Journal of Innovative Pharmaceutical Research*. 2011, 2(1), 78-83.
- Mayfield J.: *Am. Fam. Physician* 58, 1355(1998).
- Syed Mansoor Ahmed, Vrushabendra Swamy BM, Gopkumar, Dhanapal R, Chandrasekhar VM. *Iranian J Pharmacol Therapeutics*, 2005; 4(1):36-39.
- Neelesh Malviya, Sanjay Jain, and Sapna Malviya. Antidiabetic potential of medicinal plants. *Acta Poloniae Pharmaceutica n̄ Drug Research*, Vol. 67 No. 2 pp. 113-118, 2010.
- Y.N. Seetharam, G. Chalageri, S.R. Setty, Bheemachar. Hypoglycemic activity of *Abutilonindicum* leaf extract in rats. *Fitoterapia*, April 2002, Vol.73 (2):156-159.
- Soumya P. Routi, Durga M. Kar, Santosh B. Mohapatra, Sharada P. Swain. Anti hyper glycemic effect *Annona reticulata* L. leaves on experimental diabetic rat model. *Asian J Pharm Clin Res*, Vol 6, Suppl 1, 2013, 56-60.
- Venkateshwarlu E, Dileep P, Rakesh Kumar Reddy P, Sandhya P. Evaluation of Anti diabetic activity of *Carica papaya* seeds on Streptozotocin-induced type-II diabetic rats. *J Adv Sci Res*, 2013, 4(2): 38-41.
- S.K. Dholi, R. Raparla, S.K. Mankala, K. Nagappan. In vivo Antidiabetic evaluation of Neem leaf extract in alloxan induced diabetic rats. *Journal of Applied Pharmaceutical science* 01(04):2011:100-105.
- S.D. Sokeng, D. Lontsi, P.F. Moundipa, H .B. Jatsa et al. Hypoglycemic Effect of *Anacardium occidentale* L. Methanol Extract and Fractions on Streptozotocin-induced Diabetic Rats. *Global Journal of Pharmacology* 1(1): 01-05, 2007.
- Kavitha.A, K. Sasi Kala, Krishna Reddy. B, Venkata Rao. V, Narendra Babu. A. *Coccinia grandis* leaves extracts Ameolarates Alloxan induced diabetic in rats. *World Journal of Pharmacy and Pharmaceutical sciences*.2015; 4(05):567-572.
- Grijesh Kumar Mall, Pankaj Kishor Mishra, and Veeru Prakash. Antidiabetic and Hypolipidemic Activity of *Gymnema sylvestris* in Alloxan Induced Diabetic Rats. *Global J. Biotech. & Biochem.* 4 (1): 37-42, 2009.
- P. Kemasari, S. Sangeetha and P. Venkatalakshmi. Antihyperglycemic activity of *Mangifera indica* Linn. in alloxaninduced diabetic rats. *J. Chem. Pharm. Res.*, 2011, 3(5):653-659.
- Onyesife, Chioma O, Ogugua, Victor N. and Anaduaka, Emeka G. Hypoglycemic Potentials of Ethanol Leaves

- Extract of Black Pepper (*Piper Nigrum*) on Alloxan-Induced Diabetic Rats. *Annals of Biological Research*, 2014, 5 (6):26-31.
21. Venkata Kullai Setty N. Santhosh D. Narasimha Rao D. Preliminary phytochemical screening and anti diabetic activity of *Zingiber officinale* rhizomes. *Int. J. of Pharm. & Life Sci. (IJPLS)*, Vol. 2, Issue 12: Dec.: 2011, 1287-1292.
 22. Mahalingam Gayathri and Krishnan Kannabiran. Anti diabetic and Amelorative potential of *Ficus bengalensis* bark extract in Streptozotocin induced diabetic rats. *Indian Journal of Clinical Biochemistry*, 2008 / 23 (4) 394-400.
 23. R. Manikandan, A. Vijaya Anand, G. Durai Muthumani. Phytochemical and in vitro anti-diabetic activity of methanolic extract of *Psidium guajava* leaves. *Int. J. Curr. Microbiol. App. Sci* (2013) 2(2):15-19
 24. Fahmi S Moqbel, Prakash R Naik, Najma Habeeb M, Selvaraj S. Antidiabetic properties of *Hibiscus rosasinesis* L. Leaf extract fractions on non obese diabetic (NOD) mouse. *Indian journal of Experimental Biology*, vol.49, January 2011, pp 24-29.
 25. Dolly Jaiswal, Prashant Kumar Rai, Amit Kumar, Shikha Mehta, Geeta Wata. Effect of *Moringa oleifera* Lam. leaves aqueous extract therapy on hyperglycemic rats. *Journal of Ethnopharmacology* 123 (2009) 392-396.
 26. P. Daisy, Feril.G. Jeevakani. Evaluation of antidiabetic activity of various extracts of *Cassia auriculata* Linn. Bark on streptozotocin-induced diabetic wistar rats. *Int J Pharm Pharm Sci*, Vol 4, Suppl 4, 312-318.
 27. Jyoti Sethi, Sushma Sood, Shashi Seth, Anjana Talwar. Evaluation of Hypoglycemic effect and Anti-oxidant effect of *Ocimum sanctum*. *Indian Journal of Clinical Biochemistry*, 2004, 19 (2) 152-155.
 28. Vinuthan M.K, Girish K.V, Ravindra J.P, Jayaprakash, Narayana K. Effect of Extracts of *Murraya koenigii* leaves on the levels of blood glucose and plasma insulin in Alloxan-induced diabetic rats. *Indian J Physiol Pharmacol* 2004; 48 (3): 348-352.
 29. Arati chikaraddy, Yasmeen manihaar, Basavaraj mannapur. Hypoglycemic effect of ethanolic extract of *Lawsonia inermis* Linn. (Henna) in alloxan induced diabetic albino rats. *Int J Pharm Bio Sci* 2 (4) Oct-Dec 2012, 287-292.
 30. S. Jyothsna, C.S. Reddy, S. Sutrapu, Jagadeeswar K. Antidiabetic activity of combined extracts of various *Momordica* species. *Int.J.PharmTech*.2012, 4(2):568-571.
 31. M. Pavani, M. Sankara Rao, M. Mahendra Nath, Ch. Appa Rao. Ethnobotanical explorations on Anti-Diabetic plants used by the Tribal inhabitants of Seshachalam forest of Andhra Pradesh, India. *Indian Journal of Fundamental and Applied Life Sciences*. 2012, 2(3):100-105.
 32. Aswini K. Dixit, Sudurshan M. Review of Flora of Anti-Diabetic Plants of Puducherry. UT. *International Journal of Applied Biology and Pharmaceutical Technology*.2011, 2(4):455-462.

How to cite this article:

Kadali VN and Sandeep BV: Anti-hyperglycemic plants used by the traditional healer of west Godavari District, Andhra Pradesh, India.. *Int J Pharmacognosy* 2015; 2(9): 473-77. doi link: [http://dx.doi.org/10.13040/IJPSR.0975-8232.IJP.2\(9\).473-77](http://dx.doi.org/10.13040/IJPSR.0975-8232.IJP.2(9).473-77).

This Journal licensed under a Creative Commons Attribution-Non-commercial-Share Alike 3.0 Unported License.

This article can be downloaded to **ANDROID OS** based mobile. Scan QR Code using Code/Bar Scanner from your mobile. (Scanners are available on Google Playstore)