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**Swati Shrivastava**

Department of Botany  
Govt. N.P.G. College of science,  
Raipur, 492010 C.G, India.

**V.K.Kanungo**

Department of Botany  
Govt. N.P.G. College of science,  
Raipur, 492010 C.G, India.

## Ethnobotanical Survey of Surguja District with Special Reference to Plants Used by Uraon Tribe in Treatment of Diabetes

Swati Shrivastava \*, V.K. Kanungo

**ABSTRACT**

An Ethnobotanical survey was conducted in the Surguja district of Chhattisgarh, India, during the year 2011. Study was done in 10 villages of Surguja district involves various steps like field study in which 300 questionnaire was filled by the people of Uraon tribe and personal interview was conducted with 30 people in each village which included 15 male and 15 female people. Plant specimens were collected during the survey for the preparation of herbarium and identification of plants was done by following the flora of Haines and Hooker. In the present study 15 plant species belonging to 11 families were recorded, found to be used by Uraon tribe in Surguja district for the treatment of diabetes. The method of drug preparation, drug administration and cost per episode was also recorded during the survey. The results of the study revealed that people of Uraon tribes have rich knowledge of plants and are using the plants for their health security like in treatment of diabetes.

**Keywords:** Ethnobotany, Diabetes, Medicinal plants, Uraon tribe.

**1. Introduction**

Surguja district which lies in the northern part of Chhattisgarh state is biodiversity rich area, dominated by tribal communities. Borders of Uttar Pradesh, Jharkhand, Orissa, and Madhya Pradesh states are adjoining to the district. The district has over extension between southeastern parts of Vindhya-Chal-Baghelkhand region of peninsular India. Surguja lies between 23° 37' 25" to 24° 06' 17" north latitude and 81° 03' 40" to 84° 4' 40" east longitude. The land area of Surguja is 16359 sq Km. the major tribes of Surguja region are the major tribes of Surguja region are Nagesiya, Baiga, Kanwar, Panika, Korwa and Uraon. Uraon is one of the dominating populations amongst all tribes found in Surguja. The tribal's are 55.4 % of the total population. The total forest area in the region is 18,188.44 sq km which constitute 44 % of the total area of the district. The tropical deciduous type of forest is found in Surguja district. In recent years, there has been renewed interest in the treatment against different diseases using herbal drugs as they are generally non-toxic and World Health Organization (WHO) has also recommended the evaluation of the effectiveness of the plants in condition where safe modern drugs are not available. Plant derivatives with hypoglycemic properties have been used in folk medicine and traditional healing systems around the world<sup>[1, 2]</sup> from very ancient time. Despite the introduction of hypoglycemic agents from natural and synthetic sources, diabetes and its secondary complications continue to be a major medical problem to people<sup>[3, 4, 5, 6]</sup>. The World Health Organization recommended the search for beneficial use of medicinal plants for the treatment of diabetes mellitus<sup>[7]</sup>. Several investigations have been conducted and many plants have shown positive activities<sup>[8]</sup>. Diabetes mellitus (Madhumeha) is the most common disorder in human beings and is caused by inherited or acquired deficiency in production of insulin by the pancreas, which results in an increased concentration of sugar in blood. The symptoms of the disease is well marked which include excessive secretion of urine (Polyuria) Thirst (Polydipsia) weight loss and feeling of lassitude<sup>[9]</sup>.

**Correspondence:**

Swati Shrivastava  
Department of Botany  
Govt. N.P.G. College of science,  
Raipur, 492010 C.G, India.  
**Email:** [swatibotanyss4@gmail.com](mailto:swatibotanyss4@gmail.com)

The earliest mention of this disease is found even in ancient Ayurvedic literature such as 'Charak Samhita' written possibly before 1000 BC.

More than 1200 plants are used around the world in the control of diabetes mellitus as per the ethnobotanical study in India medicinal plants like the *Andrographis paniculata*, Linn., *Wrightia tinctoria*, (Roxb.), *Gymnema sylvestre*, R. Br., *Tinospora cordifolia*, Miers., *Pterocarpus marsupium*, Roxb., *Anogeissus latifolia*, Roxb., *Asparagus racemosus* Willd., *Azadirachta indica* A. Juss., *Cassia fistula* L., *Clitoria ternatea* L., *Madhuca longifolia* var *latifolia*, Roxb., *Catharanthus roseus*, G. Don, *Momordica charantia*, L., *Syzygium cumini*, L. Skeels., *Terminalia chebula*, Retz. are consistently used by the tribal communities for the treatment of diabetes [10]. In light of the above knowledge the present study was done with the aim of producing an inventory of the plants used by traditional healers of Uraon tribes in Surguja district for treating diabetes.

## 2. Materials and Methods

The survey was carried out by following Jain and Singh [11]. Interviewees were chosen without distinction of gender after seeking the consent from each respondent. People of Uraon tribe from all age groups, except children below 18 years were interviewed for their knowledge about the uses of plant in treatment of diabetes. The random sampling technique was used and a total of 300 questionnaires (30 in each village which included 15 male and 15 female) were filled during the survey. Information regarding the vernacular name, habit of the plant and plant parts used in drug preparation for treatment of diabetes was recorded. Informants were asked to name the plant and to reveal the uses of the respective species in treatment of diabetes. Informants often accompanied with investigators collected the plant material from the field which is used in drug preparation. In cases of illiterate informants, photographs and fresh plant specimens from the field were presented to them and questionnaires were filled from their responses. Information was also recorded about the medicinal use of plant, plant parts used, diseases treated, modes of drug preparation and administration. The cost of treatment / episode was also noted. Friendly chats were also made with teenagers, youngsters and school children of both genders of tribal people. Participatory and group interaction approach was used for further cross check of data. Surveys were also made in the wilderness along altitudinal transects reaching timber line zones, surrounding natural habitats and the agricultural areas of villages. The help of local people was taken for the collection of plants growing in the area. Plant species were identified by using Flora of Haines [12] and Hooke [13]. The gathered field information was analyzed to draw an ethnomedicinal use of plants by Uraon tribe of Surguja district in treatment of diabetes.

## 3. Results

Ethnobotanical survey was carried out in the 10 villages of Surguja district of Chhattisgarh. A total of 15 plant species belonging to 11 families were found to be effectively used for treating diabetes by the tribal people of Surguja district (Table-1). Out of 11 families 10 were found to belong to dicotyledonous like Myrtaceae, Meliaceae, Cucurbitaceae, Fabaceae, Asclepiadaceae, Combretaceae, Acanthaceae, Sapotaceae, Apocynaceae, Menispermaceae, and 01 family Liliaceae belong to monocotyledon. All the 15 plants and their parts were found to be used separately for the treatment of diabetes. Roots of *Asparagus racemosus*, Willd. Plants stem of

*Tinospora cordifolia*, Miers plants, bark of *Pterocarpus marsupium*, Roxb, *Anogeissus latifolia*, Roxb, *Madhuca longifolia* var *latifolia* Roxb plants, and leaves of *Andrographis paniculata*, Linn, *Catharanthus roseus* G. Don, *Gymnema sylvestre*, R. Br, *Azadirachta indica* A. Juss, *Syzygium cumini* (L.) Skeels plants, flower of *Clitoria ternatea* L, *Madhuca longifolia* var *latifolia* Roxb plants, fruits of *Cassia fistula* L, *Momordica charantia* L, *Terminalia chebula* Retz plants, seeds of *Wrightia tinctoria*, (Roxb.) R.Br plants were found to be used for drug preparation. The commonest method of drug preparation was noted as powder. Most of the drug was noticed to be taken by water. The method of Drug preparation using 15 plants was documented.

### 1. *Andrographis paniculata*, Linn.(Chiraita):-

Dried leaves are grinded to powder. 1-2 teaspoon of this powder was found to be put in to 1 glass of water and kept overnight. It is strained through cloth and then taken in morning before breakfast for a period of 5-6 month for the relief from the diabetic problem. The total cost of treatment is Rs 160/ episode.

### 2. *Wrightia tinctoria*, (Roxb.) R.Br.(Indrajau , Safed Korea ):-

The seeds are dried and grinded on a stone to obtain powder. Two teaspoons of this powder are taken daily with water for 4 months to get relief from diabetes. The total cost of treatment is Rs 150/ episode.

### 3. *Gymnema sylvestre*, R. Br.(Gudmar):

The leaves are grinded with water to prepare decoction. One teaspoon of this decoction is taken thrice a day for a period of 6 months to get relief from diabetes. The total cost of treatment is Rs 170/ episode.

### 4. *Tinospora cordifolia*, Miers. (Guluchi):-

The stem is pounded with water and it is then strained through cloth to obtain decoction. Half cup of this decoction is taken daily in morning gives relief from diabetes. The total cost of treatment is Rs 150/ episode.

### 5. *Pterocarpus marsupium*, Roxb.(Beeja):-

The bark is dried and grinded to powder. 2-3 teaspoons of this powder is put in to half cup of water and taken once daily in morning gives relief from diabetes. The total cost of treatment is Rs 160/ episode.

### 6. *Anogeissus latifolia*, Roxb.(Dhawa):-

The bark pounded with water to prepare decoction. One teaspoon of the decoction is taken daily in an empty stomach for 3-4 months to get relief from diabetes. The total cost of treatment is Rs 170/ episode.

### 7. *Asparagus racemosus* Willd. (Satawar):-

Tuberous root is boiled with 25 ml of water and eaten once a day for getting relief from diabetes. The total cost of treatment is Rs 150/ episode.

### 8. *Azadirachta indica* A. Juss. (Neem):-

Leaves were shade dried and grinded to make powder. 4 gram of powder mixed with 1 mg of black pepper dissolved with water and taken once a day for 1 month to get relief from diabetes. The total cost of treatment is Rs 170/ episode.

**9. *Cassia fistula* L. (Amaltas)**

50 gram fruit pulp is eaten once a day for getting relief from diabetes. The total cost of treatment is Rs 160/episode.

**10. *Clitoria ternatea* L. (Aparajita):-**

The flower juice is mixed with cup of water. 20-25 ml of mixture is taken twice a day cures for diabetes. The total cost of treatment is Rs 165/ episode.

**11. *Madhuca longifolia* var *latifolia* Roxb. (Mahua), *Catharanthus roseus* G. Don. (Sadabahar):-**

25ml Bark and 25ml flower extract of *Madhuca longifolia* mixed with 25ml of leaf extract of *Catharanthus roseus* (sadabahar) and given with one cup of water twice a day to get relief from diabetes. The total cost of treatment is Rs 170/ episode.

**12. *Momordica charantia* L. (Karela):-**

2-3 fresh unripe fruits are taken per day with meal for 3 months to get relief from diabetes. The total cost of treatment is Rs 165/episode.

**13. *Syzygium cumini* (L.) Skeels. (Jamun):-**

Juice extracted from the leaf is mixed with honey or cow's milk .2 teaspoon of juice is taken twice a day after food for 3 months to get relief for diabetes. The total cost of treatment is Rs 150/ episode.

**14. *Terminalia chebula* Retz. (Harra):-**

Fruit were shade dried and grinded to powder. This powder was taken with cow's milk twice a day after meals for 3 month to get relief from diabetes. The total cost of treatment is Rs 150/episode. The Bohmand Kocipai-Abyazan method <sup>[12]</sup> was used for the determination of tannins, while saponin was analyzed using that of Peng and Kobayasli method <sup>[13]</sup>.

**Table 1:** Plants used by Uraon tribe of Surguja district of Chhattisgarh for the treatment of Diabetes

S No.	Botanical name	Common name	Family	Habit of the plant	Plant part used for the treatment of Diabetes
1.	<i>Andrographis paniculata</i> , Linn.	Chiraita	Acanthaceae	Herb	Leaves
2.	<i>Wrightia tinctoria</i> , (Roxb.) R.Br	Safed Korea	Apocynaceae	Tree	Seed
3.	<i>Gymnema sylvestre</i> , R. Br.	Gudmar	Asclepiadaceae	Climber	Leaves
4.	<i>Tinospora cordifolia</i> , Miers.	Guluchi	Menispermaceae	Climber	Stem
5.	<i>Pterocarpus marsupium</i> , Roxb.	Beeja	Fabaceae	Tree	Bark
6.	<i>Anogeissus latifolia</i> , Roxb	Dhawa	Combretaceae	Tree	Bark
7.	<i>Asparagus racemosus</i> , Willd.	Satawar	Liliaceae	Climber	Root
8.	<i>Azadirachta indica</i> , A. Juss.	Neem	Meliaceae	Tree	Leaves
9.	<i>Cassia fistula</i> , L.	Amaltas.	Fabaceae	Tree	Fruit
10.	<i>Clitoria ternatea</i> , L.	Aparajita	Fabaceae	Climber	Flower
11.	<i>Madhuca longifolia</i> , var <i>latifolia</i> Roxb.	Mahua	Sapotaceae	Tree	Flower/Bark
12.	<i>Catharanthus roseus</i> , G. Don.	Sadabahar	Apocynaceae	Shrub	Leaves
13.	<i>Momordica charantia</i> , L.	Karela	Cucurbitaceae	Climber	Fruit
14.	<i>Syzygium cumini</i> , (L.) Skeels	Jamun	Myrtaceae	Tree	Leaves
15.	<i>Terminalia chebula</i> , Retz.	Harra	Combretaceae	Tree	Fruit

**4. Discussion**

The study of ethnomedical systems and plants as therapeutic agents is of importance in addressing health problems of traditional communities. The wealth of tribal knowledge on medicinal plants points to a great potential for research and the discovery of new drugs to fight diseases including diabetes. Some of these plant derived medicines, however, offer potential for cost-effective management of diabetes through dietary interventions, nutrient supplementation, and combination therapies with synthetic drugs in the short term, and as the sole medication from natural sources over the long term.

Present findings are similar to the reporting's made by Erato <sup>[14]</sup> in an ethnobotanical research for anti-diabetic medicinal plants in eastern Cape Vade province of South Africa ,however very higher number of plants (54) reported by Jouad <sup>[15]</sup> in a similar study in

North centre (Fez – Boulemane) region of Morocco. Aiyeloja and Bello <sup>[4]</sup> reported only seven medicinal plants with potential of anti diabetic property. The anti-diabetic activity of aqueous leaves of *Mangifera indica* had been reported by Aderibigebe <sup>[1]</sup>. However similar use was not found in the present investigation. The anti diabetic effect of *Vernonia amygdalina* aqueous leaves extract in rats was reported by Nwanjo <sup>[16]</sup> but the similar was not reported in the present study. Anti diabetic potentials of some of these plants cited in this study have been similar to the findings of workers like Ahmad <sup>[3]</sup>, Elavarasi <sup>[17]</sup>, Ojewole <sup>[18]</sup>, Rajasekaran <sup>[19]</sup>, Scoones <sup>[20]</sup>, Sofowora <sup>[21]</sup>. The results of present study indicated that Surguja region of Chhattisgarh is rich in biodiversity and people of Uraon tribe have rich knowledge of using plants and plant products for the treatment of diseases like Diabetes.

## 5. Conclusion

The ethnobotanical survey conducted in the Surguja district of Chhattisgarh showed that 15 species of plants are being used by the Uraon tribes for the treatment of diabetes. The drugs are obtained from flower, fruit, leaf, bark and seeds. The indigenous knowledge of drug preparation and administration and expenses per episode was documented. It was found that peoples of Uraon tribes control the diabetes by their own dugs prepared from plant source, this proves the efficiency of traditional system of treatment used by the Uraon tribe in Surguja.

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## 5. Reference:

- Aderibigebe AO, Emudianughe BA. Antihyperglycemic effect of mangifera indica in rats. *Phytother Res*; 1999;13:504-507.
- Yeh GY, Eisenberg Dka M, Ptchuk, TJ, Phillips RS. Systematic review of herbs and dietary supplements for glycemic control in diabetes. *Diabetes Care*; 2003;26:1277 – 1294.
- Ahmad M, Khan MA, Qureshi RA. Ethnobotanical study of some cultivated plants of chung region (District Attock). *Journal of Hamdard Medicus*; 2003;3: 15-19.
- Aiyeloja AA, Bello OA. Ethnobotanical potentials of common herbs in Nigeria: A case study of Enugu state. *Acad.c J. Education Res. Rev*; 2006;1 (1):16-22.
- Etuk EU, Bello SO, Isezuo SA, Mohammed BJ. Ethno botanical survey of medicinal plants used for the treatment of Diabetes mellitus in the North Western region of Nigeria *Asian J Exp. Biol.Sci*; 2010;1(1):55-59.
- Ravi K, Rajasekaran S, Subramanian S. Antihyperlipidemic effect of *Eugenia jambolanaseed* kernel on streptozotocin induced diabetes in rats. *Food and Chemical Toxicology*; 2005;43:1433 – 1439
- World Health Organization. Diabetes mellitus report of a WHO study group on diabetes mellitus. Geneva: WHO.WHO Technical Report; 1985, pp 1-727.
- Shinwaikar A, Rajendran K, Dinesh C. Oral ant diabetic activity of *Annona squamosa* leaf alcohol extract in NIDDM rats. *J. Ethnopharmacol*; 2004;42:30-35.
- Ayyanar M, Sankarasivaraman K, Ignacimuthu S. Traditional herbal medicines used for the treatment of diabetes among two major tribal groups in South Tamilnadu, India *Ethno botanical leaflets*; 2008;12: 276-280.
- Rana TS, Singh KK, Rao RR. Studies on indigenous herbal remedies for diabetes mellitus in India. *Journal of economic and taxonomic botany*; 1999;23: 115 – 120.
- Jain SK, Jain SP, Singh SC. An ethnomedicobotanical survey of Ambikapur district M.P.,Contribution to Indian ethno botany *Scientific Publ*: 1997;8: 3-91.
- Haines HH. The Botany of Bihar and Orissa. Vol. I. II Bishen Singh Mahendra, Pal Singh, Cannought place, Dehradun, India.
- Hooker JD. The Flora of British India, Reeve and Co., London, England.
- Erato P, Adebola PO, Grierson DS, Afolayan AJ. An ethnobotanical study of plants used for the treatment of diabetes in the Eastern Cape Province, South Africa. *Afr. J. Biotech*: 2005: 4:1458-1460.
- Jouad H, Haloui M, Rhiouani H EL, Hilaly J, Eddouks M. Ethnobotanical survey of medicinal plants used for the treatment of diabetes, cardiac and renal diseases in North centre region of Morocco (Fez-Boulemane). *J. Ethnopharmacol*; 2001;77 (2-3):175-182.
- Nwanjo HU. Efficacy of aqueous leaf extract of *vernonia amygdalina* on plasma lipoprotein and oxidative status in diabetic rat models. *Nigerian journal of physiological sciences*; 2005;20(1-2): 39-42.
- Elavarasi S, Saravanan K. Ethnobotanical study of plants used to treat Diabetes by Tribal people of Kolli hills, Namakkal district, Tamilnadu, Southern India. *International journal of pharm tech research*; 2012;4 (1): 404-411.
- Ojewole JA. Antinociceptive, antiinflammatory and antidiabetic properties of *Hypoxis hemerocallidea*. and c.a. Mey. (*hypoxidaceae*) corm [African potato] aqueous extracts in mice and rats. *J.Ethnopharmacol*; 200;103:126-134.
- Rajasekaran S, Subramanian S. Antihyperlipidemic effect of *Eugenia jambolana* seed kernel on streptozotocin induced diabetes in rats. *Food and chemical toxicology,y*; 2005: 43:1433 – 1439.
- Scoones I, ED. Living with uncertainty, new directions in pastoral development in Africa. London; 1995, pp 1-36.
- Sofowora A. Medicinal plants and traditional medicine in Africa. John Wiley and Sons Ltd. 1982, pp 1-256.