

MEDICINAL PLANTS USED FOR THE TREATMENT OF DIABETES BY THE BAIGA TRIBE LIVING IN REWA DISTRICT M.P.

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ABSTRACT

The present communication deals an Ethno-Botanical survey carried out among the Baiga tribes in Rewa district, Madhya Pradesh for the exploration of anti-diabetic herbal remedies. Diabetes mellitus is one of the common metabolic disorder with micro and macro vascular complications that results in significant morbidity and mortality. A total of 28 plants belonging to 20 families were identified which are being used for the treatment of diabetes. Anti-diabetic medicinal plants used by Baiga tribals have been listed along with plant parts used. The collected information's are arranged in the alphabetic order of the plant botanical name, family with the local name and mode of use is listed.

KEYWORDS : Ethnobotany, Diabetes, IDDM, NIDDM, Baiga, Rewa

Since olden days, plants are used to treat many ailments. India has about 45,000 plant species and several thousands have been claimed to possess medicinal properties (Grover et.al, 2002). Medicinal plants used to treat hypoglycemic or hyperglycemic conditions are of considerable interest for ethno-botanical community as they are recognized to contain valuable medicinal properties in different parts of the plant and number of plants have shown varying degree of hypoglycemic and antihyperglycemic activity. The active principles of many plant species with desired properties are isolated to cure ailments, such as diabetes type-I and type-II respectively.

India holds credibility of diverse social, cultural and medical heritage with an unbroken tradition coming down across millennia. Though, medical heritage is centuries old, million people in rural area still depend on traditional medicine to congregate their healthcare needs (Ved and Goraya, 2008). Collection of information and documentation of traditional knowledge plays an important role in scientific research on drug development (Ragupathy et al., 2008). A study of WHO depicts that over 80% of world's population depends on biological resources for their primary healthcare demands. Ethnobotanical studies of traditional herbal remedies used for diabetes around the world have identified more than 1,200 species of plants with hypoglycemic activity (Babu et al., 2006). Medicinal plants used to treat diabetic conditions are of considerable interest and a number of plants have shown varying degrees of hypoglycemic and antihyperglycemic (Ignacimuthu et al.,

2006). The present investigation has been carried out to explore the medicinal plants of tribal areas of Rewa district of Madhya Pradesh, in the treatment of diabetes. The district Rewa inhabited by a large number of tribes such as Gond, Kol, Baiga, Panika, Khairwar, Manjhi, Mawasi and Agaria. Among these, the Baiga tribe is the dominant in the pursuit of therapeutic uses of plants in the treatment of diabetes.

Diabetes

Diabetes is a metabolic syndrome of etiologies characterized by chronic hyperglycemia with abnormalities in carbohydrate, fat and protein metabolism due to defect in insulin secretions. Diabetes is associated with long term damage such as malfunction of eyes, kidneys, nerves, heart and blood vessels. Diabetes mellitus is the major endocrine disorder, responsible for renal failure, blindness or diabetic cataract, (Thylefors, 1990) poor metabolic control, increased risk of cardiovascular disease including atherosclerosis and AGE (Advanced Glycation End) products, (Yokozawa and Nakagawa, 2004). Different types of diabetes have been identified and categorized as :

1. Type I Diabetes : It is also referred as IDDM (Insulin dependent diabetes mellitus or Juvenile diabetes). Type I DM results from the body's failure to produce insulin and presently requires the person to inject insulin.

2. Type II Diabetes : It is also referred as NIDDM (Non insulin-dependent diabetes mellitus or "adult-onset" diabetes). Type II DM results from insulin resistance, a condition in which cells fail to use insulin properly. Sometimes combined with an absolute insulin deficiency.

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3. Gestational Diabetes : Is when pregnant women, who have never had diabetes before, have a high blood glucose level during pregnancy. It may precede development of type II DM i.e. non insulin dependent diabetes mellitus. Other forms of diabetes mellitus include congenital diabetes, which is due to genetic defect of insulin secretion, cystic fibrosis related diabetes, steroid diabetes induced by high dose of gluco corticoids and several forms of monogenic diabetes.

MATERIALS AND METHODS

Geographical Position of The Study Area

The study area lies on the Vindhyan Plateau in the Rewa district of Madhya Pradesh (24°18'-25°12'N Latitude and 81°2'-82°18'E Longitude) the elevation of above the mean sea level ranges between 90 to 600m. It is formerly the capital the princely state of Rewa and former state of Vindhya Pradesh is central India. It is an important city of Madhya Pradesh bordering Allahabad, Mirzapur and Banda districts of Uttar Pradesh and Satna and Sidhi districts of Madhya Pradesh. The total population of Rewa is 2,363,744 (acc. To 2011 census). The main tribes in this district is Kol Baiga, Gond etc. Among these the Baiga tribes is the dominant in the pursuit of therapeutic uses of plants.

Research Site

The systematic ethnobotanical survey was carried out in different villages of Rewa district namely Kuraily, Koni, Mahaniya and Kuthila during 2007-2009 for collection of information on medicinally significant wild plants being used by the rural population of the area and the plants were collected from different locations of the study area.

Interview And Discussion With The Local People

The entire study was divided into following two parts :

- a) First part was based on the interview and discussion with the local people of the area about the use of medicinal plants available for the treatment of diabetes.

- b) Second part was based on the non-usage of indigenous medicinal plants by the local people.

Criteria For Selection of Local Informants

During the survey, local people were identified for interview and discussion on the basis of following criteria

- a) Tribal and non-tribal
- b) Vaidhyas, Hakims, Ojhas, Gunias, Saperas, etc.
- c) A person who was resident of a village.
- d) A person who has ability to identify the medicinal plants, and
- e) Specialists in the field of herbal medicines.

The basis of our fields survey among the tribal and non-tribal villages, we identified 28 plants that were used medicinally for the treatment of diabetes.

Collection of Data

All the plant specimens were collected during the maturity stage with the help of the knowledgeable persons of the area. The collected plants were preserved and the locality of the collection and information regarding uses in the field book. The collected plants thus pressed, mounted and properly numbered were identified with the help of local floras and other useful works in Hooker ,(1872-1897) and Haines, (1921-1924).

RESULTS AND DISCUSSION

The ethnobotanical survey was conducted in different villages of Rewa district to know the utilization of indigenous medicinal plants by the Baiga tribes for the treatment of diabetes. The Baiga tribes use locally available plant species for the treatment of diabetes. A total of 28 plant species were identified which are being used for the treatment of diabetes. Anti-diabetic medicinal plants used by Baiga tribals have been listed along with the plant parts used. Plant parts used more frequently were in order

Leaf > Seed > Stem-bark > Fruit > Root

The collected information are arranged in the alphabetic order of the plant botanical name, family with the local name and mode of used (Table , 1).

Table 1: Enumeration of Medicinal Plants of Tribal Areas of District Rewa used to Treat Diabetes

| S. No. | Botanical Name | Family | Local Name | Parts used | Mode of application |
|--------|---|------------------|----------------------|-----------------|--|
| 1. | <i>Abrus precatorius</i> L. | Fabaceae | Ghumchi | Leaf | Leaf juice (2 teaspoon) given orally twice a day till cure. |
| 2. | <i>Aegle marmelos</i> (L.) Corr. | Rutaceae | Bel | Leaf | Leaf powder with cow's milk is taken orally/extracted juice mixed with a pinch of black pepper is taken orally with water daily for about one month. |
| 3. | <i>Allium cepa</i> Linn. | Liliaceae | Piyaz | Leaf | Leaf juice is taken orally with honey or milk till cure. |
| 4. | <i>Allium sativum</i> Linn. | Liliaceae | Lahsun | Leaf & bulb | Leaf and bulb taken orally to treat diabetes. |
| 5. | <i>Andrographis lineata</i> Wall. Ex Nees | Acanthaceae | Kalmega, Kirayat | Leaf | Leaf powder mixed with cow's milk is taken orally. |
| 6. | <i>Andrographis paniculata</i> (Burm.f.) | Acanthaceae | | Leaf | Decoction of the leaves i.e. 50ml is given three times a day after food or fresh raw leaves eaten daily. |
| 7. | <i>Annona squamosa</i> L. | Annonaceae | Sitaphal | Leaf | 25g. leaves are taken orally with milk daily in the morning. |
| 8. | <i>Aristolochia indica</i> L. | Aristolochiaceae | Kalesar | Seed | Ground seeds are mixed with black pepper and made into a paste and given three times a day for about 15 days to cure diabetes. |
| 9. | <i>Azadirachta indica</i> A. Juss | Meliaceae | Neem | Leaf | Leaves antidiabetic |
| 10. | <i>Brassica juncea</i> (Linn.) Czern. | Brassicaceae | Sarson | Seed | Ground powdered seeds mixed with lime juice is given for about 15 days to cure diabetes. |
| 11. | <i>Cajanus cajan</i> (Linn.) Millsp. | Fabaceae | Arhar | Seed | Seeds cooked and taken along with food. |
| 12. | <i>Cassia fistula</i> L. | Caesalpiniaceae | Amaltas | Seed | One tea spoon powder of seeds is given once in the morning for about 15 days or more. |
| 13. | <i>Cassia occidentalis</i> Linn. | Caesalpiniaceae | Chakwad | Seed | One teaspoon seeds with water is taken orally for about 15 days |
| 14. | <i>Cassia sophera</i> L. | Caesalpiniaceae | Kasundi | Bark | Bark infusion is given in diabetes. |
| 15. | <i>Cassia tora</i> L. | Caesalpiniaceae | Chokar | Root | Root juice i.e. 10g. of root in 400ml of water, is boiled and taken orally once a day for about 15 days. |
| 16. | <i>Coccinia grandis</i> L. | Cucurbitaceae | Kundru, Ram Kachriya | Leaf | Leaf juice is used in diabetes. |
| 17. | <i>Ficus benghalensis</i> Linn. | Moraceae | Bargad | Bark | Ground powder mixed along with honey is given twice a day for about 21 days. |
| 18. | <i>Ficus racemosa</i> L. | Moraceae | Gular | Fruit | Dried frits taken with warm water are helpful in diabetes. |
| 19. | <i>Garuga pinnata</i> Roxb. | Burseraceae | Kharpat | Bark | Powdered bark is used in diabetes. |
| 20. | <i>Hibiscus rosa-sinensis</i> L. | Malvaceae | Gurhal | Leaf | Tender leaf used to treat diabetes. |
| 21. | <i>Lantana camara</i> Linn. | Verbenaceae | Raimunia | Leaf and fruit | Leaf and fruits consumed raw to treat diabetes. |
| 22. | <i>Lawsonia inermis</i> | Lythraceae | Mehndi | Flower and leaf | Decoction prepared and is taken once a day for about 14-21 days to treat diabetes. |
| 23. | <i>Mangifera indica</i> L. | Anacardiaceae | Aam | Seed | Dry kernel powder with cow's milk is taken till care. |
| 24. | <i>Musa paradisiaca</i> L. | Musaceae | Kela | Stem | Stem extract reduces diabetes. |
| 25. | <i>Nelumbo nucifera</i> Gaertn. | Nelumbonaceae | Kamal | Flower | Flowers made to juice and taken orally for about 15 days. |
| 26. | <i>Ocimum sanctum</i> L. | Lamiaceae | Kalitulasi | Leaf | Leaf powder is taken orally with honey. |
| 27. | <i>Punica granatum</i> L. | Punicaceae | Anar | Fruit | Fruits used to treat diabetes. |
| 28. | <i>Syzygium cumini</i> | Myrtaceae | Jamern | Seed | Seed powder reduces blood sugar/diabetes. |

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