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Ethnobotanical studies on plants used in folk medicines to cure of diabetes in gondwana of vindhyan region of Madhya Pradesh India

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Abstract

The present paper deals the medicinal plants used against diabetes in Gondwana of Vindhyan region of Madhya Pradesh. The district Sidhi, Shahdol, Umaria and Anuppur is taken for study. The name of plant, common name, family, habit plant parts used, formulation and dose administered is also described. 6 plants in Umaria and 11 plants in Sidhi district were observed and tabulated in tables 1 & 2.

Keywords: Gondwana Vindhyan region, Gond tribes, diabetes, formulations, plant parts

1. Introduction

The Gond tribe belongs to Dravidian clan of tribes. The clan is one of the most important non-aryan community living in forests of Central India since ancient period. The word Gond has originated in the medieval period from the word “Kond” which means people living in forest, a community which was earlier called as “Koitur”. The community has been grouped into different groups based on regional basis. The community has migrated in Central India in different regions in state of Madhya Pradesh, Chhattisgarh, Maharashtra, Andhra Pradesh and Orissa and grouped into different groups based on regional basis.

Diabetes mellitus (DM), long has considered as disease of minor significance to world health, has now been found to be considered as main threat to human health (Zimmet, *et al.* 2001) ^[1]. It is most common non communicable disease and patients have been found, suffering from ailment across the globe. In developed countries like USA, China, Japan, U.K., Germany a large number of chronic patients have been recorded, with an estimate of 4/5th of leading patients die due to high rise in blood sugar leading to failure of Kidney, Heart, Pancreas and other complication in human body. As per latest estimates about 150 million people throughout the world wide are suffering from diabetes type 1, almost five times more than was estimated in 1998 about a decade ago. The global figure of persons affected with diabetes is estimated to increase from 150 million to 220 million in 2010 and 300 million by 2025 (King, *et al.* 1998) ^[2]. In developing countries like India the current prevalence of type 2 diabetes is 2.4% in rural areas and 11.67% in urban areas. A large number of ethnical communities living in forest fringes have been observed as suffering from disorders.

The floristic study conducted in Madhya Pradesh have been carried out by numerous ethnobotanist. These studies revealed that folk healers collected medicinal plants and have inherited the art of healing, curing the patients from use of herbal medicines prepared from medicinal and aromatic plants of their different parts such as root, rhizome, stem, leaves, flowers, fruits, bark etc. making different formulations of such plants having medicinal value are used by traditional healers (Rai and Nath, 2004, Jain *et al.* 2011 & Srivastava, 2000) ^[3-5].

2. Materials and Methods

The study was conducted in tribal belts of Gondwana Vindhyan region (M.P.). The gond tribes are spread in districts of Sidhi, Shahdol, Umaria and Anuppur in M.P. Observations on wild plants used in cure diabetes were recorded on Gond tribes. Field trips were conducted in different seasons in during years 2014-2016 in the study sites were selected in tribal pockets of Gond tribes in villages, in districts of Sidhi, Shahdol, Umaria and Anuppur through rapid roving survey method for selection of Gond localities in Gondwana belts for recording floristic diversity and their ethnomedicinal uses. During the visits a rapport was made with a number of

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elderly person of tribal communities and traditional herbal healers who were contacted to collect the information and interviewed. The discussion revealed local name of species, plant part used, formulation and dosages of herbal drug used by traditional healers and tribal communities. The specimens were collected, processed and identified with help of flora. The information recorded in field were further screened in laboratory as per work pertaining to Indian ethno-botany (Jain, 1981 & 1991) [6-7] and plants recorded (Chopra, *et al.* 1965; Kapur, 1990 and Jain, 1996) [8-10].

The information as genus of plant species, local name, family, plant part used of plant species, formulation in cure of ailments prevalent among tribal community have been tabulated in the present investigation.

3. Results and Discussion

The results of the study carried out in districts of Sidhi, Shahdol, Umaria and Anuppur in Madhya Pradesh with help of local traditional healer or vaidraj in pockets of Gond tribes in controlling blood sugar in patients suffering from Diabetes revealed that the out of 500 persons suffered from Diabetes who were tested and examined for infestation in tribal pockets of Madhya Pradesh state were administered different herbal plant formulation based on availability of medicinal plants in their habitat.

About 29% of tribal patients were able to control blood sugar who in ailment of diabetes by use of leaf extract of *Gymnera sylvestris*, 18% of tribal patients controlled blood sugar by use of leaf juice of *Ocimum sanctum*, 15% of tribal patients controlled blood sugar by use of bark gum resins of *Pterocarpus marsupium*, whereas 15% of tribal's patients controlled blood sugar by use of fruit / leaf juice of *Aegle marmelo*, 13% of tribal patients controlled blood sugar by use suffering from ailment of diabetes by use of whole plant of *Convolvulus arvensis* and 21% of tribal patients controlled blood sugar in ailment of diabetes by use leaf juice of *Azadirachta indica*, whereas 4% of tribal's could not controlled blood sugar by any herbal medicine found in their localities has been presented in table- 1.

The study conducted in Vindhyan region of Sidhi district is presented in table 2 reveals formulations prepared as seed powder of *Abrus precatorius* Linn, leaf mesh *Aegle marmelos* (Linn.) Correa, bark powder of *Ailanthus excelsa* (Roxb), leaf powder of *Andrographic lineate* Wall Ex Nees *Azadirachta indica* A. Juss., leaf powder of *Caesalpinia bonduc* Linn, root powder of *Coccina grandis* (L.) Voight, tuber extract or decoction *Caralluma adscendes* (Roxb.) R.Br, leaf powder of *Costus speciosus* (Koen) Smith, leaf powder of *Tinospora cordifolia* (Willd) Hook. F. and Th., and stem bark of

Pterocarpus marsupium Roxb. had been found effective in controlling blood sugar of patients suffering from Diabetes.

The medicinal plants are subject to various process to prepare leaf, stem, seed, root, bark powder and mode of administration in cure of ailment. These plants vary from community to community and locality to locality within ethnic communities as per knowledge which is orally communicated from one generation to another and is prevalent since the dawn of the civilization (Rai and Nath, 2004; Shukla, 2004 and Balasubramanium and Radhika, 1981) [3, 11-12]. The results obtained and presented in table-1 and 2 reveals that large number of plants are being used in the ailment. Changes in human behaviour and lifestyle over the last century have resulted in a dramatic increase in the incidence of diabetes worldwide (Zimmet, *et al.* 2001 and Kind, *et al.* 1998) [1-2].

Similarly a number of ethno- botanists had reported many other plants as prevalent among ethnic communities and aboriginals in controlling blood sugar, other than those mentioned in table 1 for Shahdol and Umaria district and in table 2 in Sidhi district had been reported in different tribal pockets of Madhya Pradesh, among Kol tribes in Rewa district (Dwivedi and Singh, 1984 and Dubey, *et al.* 2008) [13-14], Baiga and Gond tribes in Mandla district in MP (Jain, 1962 & 1963) [15-16], among indigenous community in Bastar (Rai, 2006) [17], among Bharia tribes Patalkot valley in Chhindwara district (Rai and Nath, 2004) [3], among Sahariya tribes of Chambal region (Jain and Virale, 2007) [18], among aboriginals in Betuls district (Jain, *et al.* 2010) [19] among Bhil tribes in Jhabua district (Jain, *et al.* 2011) [4], local indigenous communities in Pachmarhi biospheres (Kala, 2010) [20], among aboriginals in Chhatisgarh region (Kala, 2009) [21], in abujhmaria region of Bastar (Maheshwari, 1996) [22], in tribal pockets of Gond tribes of Bastar (Srivastava, *et al.* 2000) [5]. These traditional healers have specialized skill and knowledge for time of collection of plant part, preparing formulations and dose of administration without having formal education (Shukla, 2004 and Balasubramanium and Radhika, 1981) [11-12]. Herbal drugs obtained from plants are supposed to be much safer, this has been proved in the treatments in cure of various ailments (Shukla, 2004) [11].

During the survey carried out it was found that this knowledge is restricted to traditional healers, folk healers and elderly people. It was also observed that elderly people had a strong belief in the efficacy and success of plants based therapies. But this vital knowledge is lacking among new and younger generations and that had a tendency to migrate to urban areas and towns. Hence, it has become essential to document the information scientifically

Table 1: Plants in cure of Diabetes prevalent among Gond tribes in Shahdol and Umaria District (Gondwana Vindhyan region) in Madhya Pradesh

S. No.	Species (Common name)	Family	Habit	Plant part used	Formulations	Dose administered
1.	<i>Aegle marmelos</i> (Linn.) Correa (Bel)	Rutaceae	Tree	Fruit and Leaf	Juice	15 ml. of fruit / leaf juice is orally administered twice a day regulated the blood sugar.
2.	<i>Convolvulus arvensis</i> Linn. (Hirankhuri)	Convolvulaceae	Herb	Leaf or Whole plant	Decoction	15 gms. of leaf or whole plant decoction is prepared and orally administered 2-3 times a day to regulate blood sugar.
3.	<i>Gymnema sylvestris</i> R.Br. (Gudmar)	Asclepiadaceae	Herb	Leaf /Whole plant	Extract	50 ml. of extract is orally administered twice a day, empty stomach early in the morning and 3-4 hours after meals in evening before dinner regulates sugar The insulin requirement is also reduced among patients.

4.	<i>Ocimum sanctum</i> Linn (Tulsi)	Lamiaceae	Herb	Leaf	Juice	15 -20 ml. of leaf juice is orally administered twice a day regulates the blood sugar.
5.	<i>Pterocarpus marsupium</i> Roxb. (Bija sal)	Fabaceae	Tree	Bark - Gum resin	Extract	3-5 ml. of extract is orally administered empty stomach twice a day in fore-noon and 3-4 hours after meals in evening before dinner. The extract helps in reducing blood sugar in patients.
6.	<i>Azadirachta indica</i> A. Juss (Neem)	Meliaceae	Tree	Leaf	Juice	3-5 ml. of extract is orally administered empty stomach twice a day to regulate blood sugar.

Table 2: Plants in cure of Diabetes prevalent among Gond tribes in Sidhi District (Gondwana of Vindhyan region) in Madhya Pradesh

S. No.	Species (Common name)	Family	Habit	Plant part used	Formulations	Dose administered
1.	<i>Caralluma adscendens</i> (Roxb.) R.Br	Asclepiadaceae	Herb	Tuber	Extraction	Extracts of <i>Caralluma adscendens</i> are orally administered 3-5ml empty stomach for a period of 45-55 days to reduce blood glucose level.
2.	<i>Andrographis paniculata</i> Wall Ex Nees (Kadu Chirayata)	Acanthaceae	Herb	Leaf	Powder	One table spoon of leaf powder is orally administered wit cow milk twice a day for a period of 2-3 months to reduce blood sugar.
3.	<i>Costus speciosus</i> (Koen) Smith (Keukand)	Zingiberaceae	Herb	Leaf	Powder	One table spoon of leaf powder is orally administered wit cow milk twice a day for a period of 2-3 months to reduce blood sugar.
4.	<i>Ailanthus excelsa</i> (Roxb) (Adu)	Simaroubaceae	Tree	Bark	Powder	Bark of <i>Ailanthus excelsa</i> are collected and dried it. Dried bark is powdered. Prepared powder is orally administered at least 2-3 times a day for a period of 5-6 days to patient in cure in Diarrhea.
5.	<i>Azadirachta indica</i> A.Juss. (Neem)	Meliaceae	Tree	Bark	Powder	Bark of <i>Azadirachta indica</i> are collected and dried it. Dried bark is powdered. Prepared powder is mixed with 150 gm of <i>P. nigrum</i> and is orally administered twice a day, in morning and evening for a period of 30-35 days to patient to control blood sugar suffering from Diabetes.
6.	<i>Tinospora cordifolia</i> (Willd) Hook.F. and Th. (Gurich)	Menispermaceae	Climber	Leaf	Powder	Fresh leaves of <i>Tinospora cordifolia</i> are collected, dried and powdered. Prepared powder is mixed with 150 gm of <i>P. nigrum</i> and 60 gm bark powder of <i>Azadirachta indica</i> and is orally administered two spoons of tea daily for a period of 20-25 days to patient to control blood sugar suffering from Diabetes.
7.	<i>Coccinia grandis</i> (L.)Voight (Kundru)	Cucurbitaceae	Climber	Roots	Powder	Root of <i>Coccinia grandis</i> is collected, dried and powder is prepared. Prepared powder is mixed with sugar and is orally administered thrice a day to patient for a period of 35- 45 days to control blood sugar suffering from Diabetes.
8.	<i>Pterocarpus marsupium</i> Roxb. (Bija)	Fabaceae	Tree	Stem	Bark	Stem bark of <i>P.marsupium</i> are collected, dried and glass is prepared. Prepared glass is filled with water on night and then the water is orally administered to drink on morning for a period of 20-25 days to control blood sugar suffering from Diabetes.
9.	<i>Abrus precatorius</i> Linn. (Ghungchi)	Fabaceae	Climber	Seeds	Powder	Seeds of <i>Abrus precatorius</i> are collected, dried and powdered. Prepared powder is mixed with honey and is orally administered twice a day, morning and evening to patient for a period of 20-25 days to control blood sugar suffering from Diabetes.
10.	<i>Aegle marmelos</i> (Linn.) Correa (Bel)	Rutaceae	Tree	Leaves	Mesh	Fresh leaves of <i>Aegle marmelos</i> are collected and mesh is prepared. Prepared mesh is orally administered twice a day morning and evening to patient days to control blood sugar suffering from Diabetes.
11.	<i>Caesalpinia bonduc</i> Linn. (Kantkarej)	Caesalpinaceae	Tree	Leaves	Powder	Leaves are collected, dried and powder is prepared. Prepared powder d is orally administered thrice a day to patient for a period of 40-45 days days to control blood sugar of patients suffering from Diabetes

4. Conclusion

A number of plants with different plant parts and formulations are prevalent among Gond tribes in controlling blood sugar among patients in ailment of diabetes used by tribal communities in Gondwana, Sidhi district (M.P.) since several years in Madhya Pradesh.

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