



A REVIEW ON FLORA FOR ANTI-DIABETIC PLANTS FROM NORTH MAHARASHTRA

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Abstract

Diabetes Mellitus (Madhumeh) is a common metabolic disorder. It is a fact that diabetes can't be cured; and it has never been reported that someone recovered totally from diabetes. Allopathic medicinal system is expensive, provides only symptomatic relief, fails to revert the body to its normal state and after a long term therapy, includes several side effects. Therefore, the management of diabetes is still a major challenge. Thus, a large number of herbs have been successfully tested in the laboratory and confirm that they have blood sugar lowering activity. North Maharashtra covers Dhule, Jalgaon, Nandurbar, and Nashik district. It is inhabited by various tribes and villagers. They have a good knowledge of the medicinal uses of their local flora. In this paper 62 medicinal plants used by the tribal people of Nandurbar, which are used as ant diabetic plants, have been described.

Key words: Diabetes, North Maharashtra, Ethnobotany, and Tribes.



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Introduction

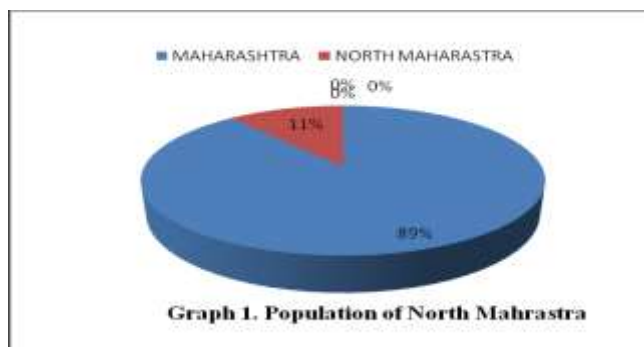
The fundamental defect in diabetes mellitus is the lack of biologically active insulin. Consequently, sugar level increases in blood (Hyperglycemia). This metabolic abnormality is characterized by long term complications involving eyes, kidneys, nerves, blood vessels and the

immune system which are more serious and difficult to treat. In the current millennium, due to socio-economic and technological changes, our society is facing the problem of stress. Stress has long been suspected as the prime cause of metabolic disorder. Due to the close and long association with forests, the tribal's and villagers have acquired tremendous knowledge of plants and their uses in daily needs for health care. Researchers had mentioned about a number of herbs for studies on hypoglycemic effects¹⁻⁶. North Maharashtra is also known as Kandesh, located in rural area of Maharashtra. Tribal area of North Maharashtra covers three district including which is about 11.1% of the total state area of state includes Dhule, Jalgaon, Nandurbar, and Nashik district covers total population is 14,036,261 from 112,374,333 population of the state¹³.

Tribal dominated district of North Maharashtra, located in the hilly and forest areas of Satpuda and Tapi valley, where habitation is mostly scattered. The district lies almost entirely in the catchment of river Tapi and its tributaries. Area comprises of many rivers and is endowed with rich forests, and covering around 11 percent of total state population (Graph 1.). Pawara, Padavi, Valavi, Gond, Kokani, Bhils, Mahadev koli, Mavachi, Tadvi, Vasave, and Gavit tribes are common tribal communities of this region. They are partially or completely dependent on plants for the suitable preparation for treating various ailments⁷⁻¹¹.

Materials and Methods

The present study has been conducted in tribes dominated pockets in North Maharashtra. It covers Dhule, Jalgaon and Nandurbar district of Maharashtra During the survey consultation with knowledgeable persons of tribal communities and traditional herbal healers was done, so as to get information regarding folk medicines. The information revealed the local names of species of the plants parts used and formulation of herbal drugs used by them. The specimen plants were collected and then properly identified and a voucher specimen of each is preserved in herbarium record. On the basis of the survey and collection 62 hypoglycemic plants were recorded in which blood sugar lowering activity has been reported in Table 1 from different parts of North Maharashtra.



Results and Discussion

After an extensive survey it has been observed that Nandurbar district is rich in flora including medicinal plants among other all district of study area. Diabetes mellitus is one of the most common diseases in developing countries like India where 60% of the population lives below poverty line and for them herbal medicines are the only hope. The present finding indicates that the tribes of the studied area depend upon the plants for curing diabetes. A few traditional anti diabetic plants and their beneficial effects have been utilized by the tribal's and villagers of Nandurbar district. In conclusion, the results of study demonstrated the persistence of folk medicine practices in North Maharashtra region, especially in rural people covering around 5-6 percent of total state populations, are still dependent on indigenous knowledge for health are that are being influenced by culture and socioeconomic aspects, providing a cheaper and accessible alternative to the high cost pharmaceutical remedies. Which recording information's from all parts of study area its recorded that populations of rural area is much more in comparison with urban population and hence showing important indigenous stores of knowledge among them (Graph. 2). In spite of the overwhelming influence and our dependence on modern medicine and tremendous advances in synthetic drugs, many people still rely on herbal drugs the reason is that, if the herbal medicines are used properly they don't have any side effects. Hence, the survey need to be subjected to pharmacological studies in order to discover their true potential, as it is very difficult to judge the effectiveness of the herbal medicine. The main purpose is not to be prescribing any remedies for any of the disease but to be document the use and draw the attention of pharmacologist, botanist, phytochemist and pharmacognosist for further scientific research in the field.

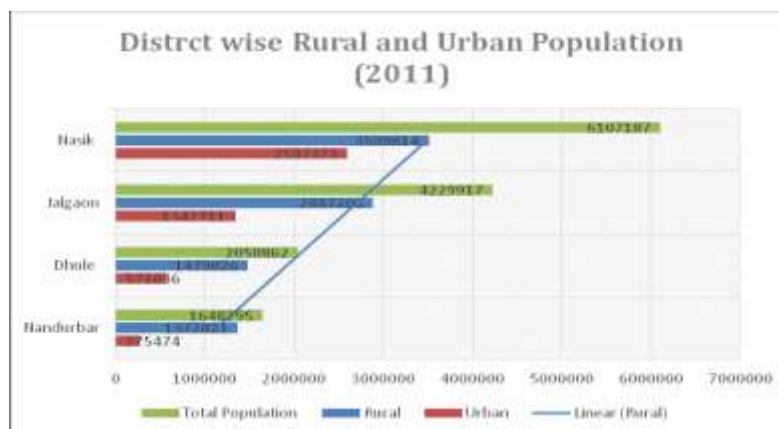


TABLE 1: HYPOGLYCEMIC PLANTS FOR BLOOD SUGAR LOWERING ACTIVITY.

Sr. No	Botanical Name	Local Name	Family	Mode of Application
1	<i>Abutilon indicum</i> (L.) Sweet	Sikka	Malvaceae	Leaf extract used for treating diabetes.
2	<i>Acacia nilotica</i> (L.)	Babool	Mimosaceae	Decoction of bark powder and gum with water, taken twice a day.
3	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Leaf extract mixed with black pepper, taken twice a day to control sugar.
4	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC. A	Koypa	Amaranthaceae	The whole plant of <i>Alternanthera sessilis</i> is used to treat diabetes.
5	<i>Anacardium occidentale</i> L.	Bhilawa	Anacardiaceae	Leaf extract used for treating diabetes.
6	<i>Andrographis paniculata</i> (Burm.f.)	Oli-kiryata	Acanthaceae	About 10 mL of leaf/root decoction given once a day for six months against both hyperglycaemia and gastric disorder.
7	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Decoction of leaf and bark taken twice a day to control sugar. Seeds made into a paste with 50 ml rice wash and 5 ml of ghee should be given after meal in case of long standing diabetes
8	<i>Allium cepa</i> L.	Kanda	Liliaceae	Leaf extract and bulb taken to treat diabetes
9	<i>Annona squamosa</i> (L.)	Sitaphal	Annonaceae	Leaf powder is taken with milk or water daily in the morning.
10	<i>Bacopa monnieri</i> (Linn.) Pennell		Scrophulariaceae	Leaf juice is used for treating diabetes
11	<i>Boerhaavia diffusa</i> Linn	Punarnava	Nyctaginaceae	Leaf juice (10 mL) is used to reduce sugar in urine. Leaves and tender branch tips as vegetables.
12	<i>Butea monsperrma</i> (Lam.) Taub.	Apta, Sone	Fabaceae	Leaf extract (10 mL) is administered once a day for 5-10 days on empty

13	<i>Carica papaya</i> Linn.	Papaya	Caricaceae	stomach. This reduces blood sugar. Green fruits are boiled and made into a paste and given with a pinch of common salt and jeera powder (<i>Cuminum cyminum</i>) for six months to cured diabetes.
14	<i>Cassia auriculata</i> L.	Awali	Ceasalpiniaeae	Leaf juice (10 mL) mixed with 5g old jiggery given once daily for one month at early stage of the 1 diabetes
15	<i>Cassia tora</i> L.	Tarota	Ceasalpiniaeae	Root juice with boiled water taken orally for 7 days.
16	<i>Cassia occidentalis</i> L.	Tarota	Ceasalpiniaeae	Root juice with boiled water taken orally for 7 days.
17	<i>Cassia fistula</i> (L.)	Amaltas	Ceasalpiniaeae	Decoction of bark powder and seeds taken orally twice a day to control sugar.
18	<i>Catharanthus roseus</i> (Linn.) G. Don.	Sadafuli	Apocynaceae	Flower decoction taken orally twice a day. Fresh twig with two leaf buds is given daily for 7 days on empty stomach.
19	<i>Cissampelos pareira</i> Linn.	Nirgundi	Menispermaceae	About 60 g of the rood is boiled in half a liter of water for 20-30 minutes in a closed vessel. About 30-60mL of this preparation is given two or three times daily to correct the kidney disorder caused by diabetes.
20	<i>Coccinia grandis</i> (L.)	Kundru	Cucurbitaceae	Whole plant extract of plant taken in diabetes.
21	<i>Cressa cretica</i> Linn.	Rudravanti	Convolvulaceae	Infusion of the whole plant, sweetened with jiggery of weight caused by diabetes.
22	<i>Cucumis sativus</i> Linn.	Kakadi	Cucurbitaceae	Seeds (2g) made into paste with liquorices (<i>Glycyrrhiza glabra</i>) is given daily for 15 days to reduce the sugar level in blood. Those who suffer from diabetes and those who want to lose weight should be advised to consume unripe fruits.
23	<i>Curcuma longa</i> Linn.	Halad	Zingiberaceae	15-20 mL of fresh juice of the rhizome with equal amount of fresh juice of Awala (<i>Emblica officinalis</i>) given three times in a day for 15 days against glycosuria.
24	<i>Emblica officinalis</i> L.	Awala	Euphorbiaceae	Fresh leaves paste given daily for one month in empty stomach. Paste of equal quantity of boiled fruits of this plant and fruits of Behada (<i>Terminalia bellirica</i>) given with cup of cow's milk twice a day, for a month.

25	<i>Ficus benghalensis</i> L.	Wad	Moraceae	A teaspoonful barks powder taken orally with water early in the morning daily. Lactiferous sap of this tree is also effective in controlling the diabetes.
26	<i>Ficus racemosa</i> (L.)	Pimpal	Moraceae	A teaspoonful barks powder taken orally with water early in the morning daily.
27	<i>Gmelina arborea</i> Roxb.	Shivan	Verbenaceae	Juice of the young leaves with 2-3 drops of honey given three times a day after food for a week to rectify eyesight during diabetes.
28	<i>Gymnema sylvestris</i> (Retz)R.Br.	Gudmar	Asclepiadaceae	A teaspoonful leaves powder taken with honey and warm water once in a day. Dried leaf powder (2-3g) is given with water. Seven fresh leaves are prescribed daily in the morning for 15 days
29	<i>Helicteres isora</i> Linn	Murudsheng	Sterculiaceae	One teaspoonful root/bark powder given once daily for 15 days early in the morning before breakfast to reduce sugar.
30	<i>Hemidesmus indicus</i> (Linn/) R. Br	Anantmool	Asclepiadaceae	A teaspoonful powdered roots, given 2-3 times a day in a cup of hot milk for a month to reduce sugar.
31	<i>Hydrophila auriculata</i> (Schum.) Heine	Talim Khana	Acanthaceae	Leaf and stem extract used for treating diabetes.
32	<i>Ichnocarpus frutescens</i> (Linn.) R. Br.	Krishnasarwa	Apocynaceae	Fresh juice of leaf and fruit along with 2 black pepper (<i>Piper nigrum</i>) given early in the morning on empty stomach to control increased sugar level.
33	<i>Jatropha indica</i> L.	Erand	Euphorbiaceae	Leaf extract used for treating diabetes.
34	<i>Jatropha gossipifolia</i> L.	Ratanjyot	Euphorbiaceae	Root barks extract used for treating diabetes.
35	<i>Lawsonia inermis</i> L.	Mehandi	Lythraceae	Decoction of equal quantity of flowers and seeds given once a day for 15 days to reduce the sugar level in urine.
36	<i>Luffa acutangula</i> Roxb.	Dodake	Cucurbitaceae	Extract of the fruit bark (10g) and roots (5g) administered once daily on empty stomach to reduce blood sugar.
37	<i>Madhuca indica</i> Gmel	Mahu	Sapotaceae	Decoction of dried bark given orally one tablespoonful for diabetes mellitus.
38	<i>Mangifera indica</i> L	Amba	Anacardiaceae	Leaf juice is taken in empty stomach for used for treating diabetes.

39	<i>Momordica charantia</i> L.	Karle	Cucurbitaceae	Half cup of fruit juice taken orally once in a day.
40	<i>Moringa oleifera</i> Lam.	Shewaga	Moringaceae	Fruits, flower and leaves are used as vegetables in daily diet at least 15 days per year.
41	<i>Murraya koenigii</i> (Linn.) Sprengel.	Karipatta	Rutaceae	Eat seven fresh fully grown leaves every morning for three months. Leaves have weight reducing properties.
42	<i>Musa paradisiaca</i> L.	Leli	Musaceae	Pseudo stem used for treating diabetes.
43	<i>Nelumbo nucifera</i> Gaertner.	Kamal	Nelumbonaceae	Leaf and root extract used for treating diabetes.
44	<i>Ocimum sanctum</i> L.	Talas	Lamiaceae	Half cup of whole plant decoction taken orally once in a day. Equal amount of tulasi and neem leaf paste is very effective for treating diabetes.
45	<i>Paspalum scrobiculatum</i> L.	Kodo	Poaceae	Seeds are eaten as rice. It is best food for diabetic patients.
46	<i>Pistia stratiotes</i> Linn. var. <i>cuneata</i>	Akashamuli	Araceae	Young plant juice (10mL) mixed with equal amount of green coconut milk is given to reduce sugar content in blood.
47	<i>Plumbago indica</i> Linn.	Chitramul	Plumbaginaceae	Root extract (5 mL) with 5g of old jaggery given two times in a day for 5 days.
48	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Fabaceae	Stem bark used for treating diabetes.
	<i>Psidium guajava</i> L.	Peru	Myrtaceae	Leaf decoction used for treating diabetes.
49	<i>Pterocarpus marsupium</i> Roxb.	Bija Sal	Fabaceae	Leaf extract taken orally daily. Heart wood soaked overnight in water and taken orally early in the morning daily.
51	<i>Punica granatum</i> Linn.	Dalimb	Punicaceae	Root, bark and fruit rind ground in equal proportions and a tablespoonful paste given twice a day.
52	<i>Ricinus communis</i> L.	Erand	Euphorbiaceae	Flower decoction used for treating diabetes.
53	<i>Sphaeranthus indicus</i> Linn	Mundi	Asteraceae	Whole plant is made into paste. About 15g of paste given with old jaggery twice a day for 3 days to check the excessive urination.
54	<i>Syzygium cumini</i> L.	Jamun	Myrtaceae	Decoction or powder of the seeds, bark and leaves taken daily.
55	<i>Trigonella foenum-graecum</i> L.	Methi	Fabaceae	Powder of dried leaves and seeds taken orally twice a day.
56	<i>Terminalia bellirica</i>	Behada	Combretaceae	Fruit used for treating diabetes.

(Gaertner) Rorb.				
57	<i>Terminalia catappa</i> L.	Herda	Combretaceae	Leaf and Fruit used for treating diabetes.
58	<i>Terminalia chebula</i> Retz	Hirda	Combretaceae	Mixture of powder of ripe fruits with leaves and seeds of jamun taken orally twice a day.
59	<i>Tinospora cordifolia</i> (Wild.) Hook.f.Thomson	Gulvel	Menispermaceae	Delicate stem juice of 15-20mL with 2 drops of honey is given twice a day for 15 days. Stem powder (5g) of this plant and 2-3g of long pepper powder (<i>Piper longum</i>) are prescribed for 7 days.
60	<i>Tribulus terrestris</i> Linn.	Gokharu	Zygophyllaceae	Half cup of Fruit decoction given orally once in a day.

Indigenous knowledge of North Maharashtra tribe's has been explored with respect to blood sugar level problems in Ethnobotanical aspects. The valuable folk plants information obtained from fields work, authentic literature and resource persons of the area regarding diabetic problems of local people. It provide the effective perspective for the future purposes of drug designed and the common medicinal purposes for all.

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