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Antidiabetic plants in Madhya Pradesh, India

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Abstract
Chitrakoot region is characterized by a rich floral diversity and an equally rich ethnomedicinal tradition. Herbal medicine is the dominant system of medicine practiced by the local tribes of this region for the treatment of diabetes during the course of the present studies it was found that 20 species of plants belonging to 18 Families are used as antidiabetic agents in the folk medicinal practices in the region and 81% of these plants are hitherto unreported as hypoglycemic agents. This finding may lead to serious research towards developing new and efficient drugs for diabetes.

Keywords: antidiabetic, ethnomedicinal, hypoglycemic, Chitrakoot

Introduction
Chitrakoot region is rich in floral diversity, many endemic elements and a number of species, which have become rare, threatened or endangered. Diabetes affects about 5% of the global population [1] and management of diabetes without any side effects is still a challenge to the medical system [2]. To treat diabetes, the tribal people in these parts of the Chitrakoot region are found to use herbal treatments either alone or in combination with other forms of treatments. Herbal drugs are prescribed widely because of their effectiveness, less side effects and relatively low cost[6]. Therefore, investigation on such agents from traditional medicinal plants has become more important[5]. Here, I report 20 species of plants used as antidiabetic agents by the traditional healers of Chitrakoot.

Fig 1: Map of Madhya Pradesh

Methodology
Regular field trips to different areas of Chitrakoot were conducted between September 2010 and April 2011 to collect the ethnomedicinal information and herbarium specimen. The tribal people including healers, Atarra, Karwi and village elders were interviewed. Organizations of each group were taken for approaching and building up of rapport with the traditional healers of each community. Preliminary identification of collected plant materials, their local names and information regarding their mode of use were recorded with the help of these traditional medicine practitioners and village elders. Information obtained and cross checked with at least seven different informants only has been incorporated here. Consequently the collected plants were identified with the taxonomist. In the enumeration, data on the plants used as hypoglycemic agents are presented which consist of the botanical name, family, habit, local name. references used for identification have been mentioned as superscript letters against the name of each plants. The present study report the use of medicinal plants in the form of infusion or decoction,

extract or juice (by crushing the fresh plant parts with or without water) and paste or powder (by grinding the fresh or dried plant parts with stones, silbatta).

Table 1: Antidiabetic medicinal plants from Chitrakoot, M.P

S. No	1	2	3	4	5
	Botanical name	**Family**	**Habit**	**Local name**	**Methed of use**
1	*AAbroma augustaa (L)*	Sterculiaceae	Shrub	Ulatkamal	Stem bark and leaf decoction (10-20 ml)
2	*Abutilum indicum*	Malvaceae	Shrub	Ghantiphool	Decoction of stem bark (25-50ml) given two times daily
3	*Aconitum palmatum*	Ranunculaceae	Herb	Bhongnanuko	Root decoction(10-15ml) taken for 7-10 days
4	*Aloe barbadensis*	Liliaceae	Herb	Ghee kwar	Fresh leaf pulp(40-50gm) for 10-12 weeks
5	*Asparagus racemosus* wild.	Liliaceae	Climbing shrub	Satavar	Decoction of tender shoots (25ml) takenonce a dayfor 6-8 weeks.
6	*Berberisaristataa DC*	Berberidaceae	Shrub	Kand	Root bark extract(5-10ml) taken twice daily for 1-2 days
7	*Boenninghauseniaalbiflorad* (Hook. f.)	Rutaceae	Herb	Chirbirpatay	The whole plant crushed without water taken 1 or 2 times daily for 3-4 weeks
8	*Calamusrotanga* (L.)	Arecaceae	Climbing shrub	Bet	Raw fruit (1-2)taken as masticatory two times daily
9	*Campylandraaurantiacad*Baker	Liliaceae	Herb	-	Flower are made into curry and taken with staple food
10	*Cannabis sativus (l.)*	Cannabiaceae	Shrub	Bhang	Leaf extract5-10ml taken daily
11	*Catharanthusroseus* (L.)G. Don	Apocyanaceae	Herb	Sadabahar	Raw leaf(1-2) chewed daily for 2 weeks
12	*Cinnamomumtamala*	Lauraceae	Tree	-	Decoction of stem bark taken 3 times daily for 3-4 weeks
13	*Cissampelsopareira (L.) var.hirsua*	Menisperaceae	Climber	Batulpatay	Root bark extract(5-10ml) taken daily for 2-3 weeks
14	*Coccinea grandisa* (L.)Voigt	Cucurbitaceae	Climber	Jangli kundru	Fresh root extract(5-10ml) for 3-4 weeks
15	*Costus speciosub* (koening)	Costaceae	Herb	Kevkand	Decoction of rhizome
16	*Ficus recemosa (L.)*	Moraceae	fruit	Ajeeri	Juice (20-25ml) for 4-8 weeks
17	*Girardiana heterophylla*	Urticaceae	Shrub	Bhangre	Root decoction (25-50ml) taken daily for 4-8 weeks
18	*Gynocardia odorata* R. Br.	Flacourtiaceae	Tree	-	Juice (10-15ml) taken one time daily
19	*Ipomoea batata (*L.)Lamk	Convolvulaceae	Herb	Gang	The juice of the aerial part of the plant 25-30ml for 3-4 weeks
20	*Momordica charantia* (L.)	Cucurbitaceae	Climber	Karela	Fruit extract (25ml) taken two times daily for 12-14 weeks

Fig 2: *Catharanthus roseus, Ipomoea batata, Ficus racemosa, Cannabis sativus, Asparagus racemosus, Aloe barbadensis*

Result and Discussion

In the present study, it was found in Table-1, that a total of 20 species of plants belonging to 18 different families are utilized as antidiabetic agents by the tribal people of Chitrakoot region. Of these some species of plants (81%) have not been reported as hypoglycemic agents in the Dictionary of Indian Folk Medicine and Ethnobotany. This embolden me to conclude that herbal medicine is still the dominant medicine for diabetes in this area. The efficacy of these ethnomedicinal plants needs to be subjected to pharmacological justification. Some antidiabetic plants may exert their action by stimulating the function or number of the cells and thus increasing insulin release [3]. In some other plants, the effect is due to decreased blood glucose synthesis due to enzymes like Glucose-6-phosphatase, Fructose-1,6-biphosphatase etc. however, these products may interact with the conventional diabetes medicines [4]. Therefore, a cautious approach should be adopted before administering these drugs. Of course, this primary information is important in view that it may lead to serious pharmacological research as indicated by some authors and can provide great value in selecting plants material for drug discovery.

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