

Anti- Diabetic Plant *Pterocarpus Marsupium* Roxb. Used By Tribals Of Shahdol District M.P. INDIA.

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Abstract: The present study carried out in Shahdol district, Madhya Pradesh India led to documentation one Plant species "*Bijhra or Bija*" (*Pterocarpus marsupium* Roxb.) used as anti-diabetic medicines. The paper discloses details of botanical identity, local names, parts of the plant used, mode of preparation and administration of the drug and diseases for which the given plants are used.

Key words – Anti-diabetic Plant, *Pterocarpus marsupium*.

1. Introduction

Ancient people closely observed the diabetic disease of **rich man** (like of king Raja, Maharaja) over centuries through trial and error and acquired knowledge on curative properties of plant's against various diseases of men. This knowledge about diseases and their treatment was transmitted by one generation to the other only verbally. Due to modernization the traditional knowledge is vanishing rapidly day by day. In the present study, an attempt has been made to investigate and document this oral heritage that has occurred over the age.

Shahdol district is rich in herbal wealth. The area is predominantly tribal and rural. People of this area usually practice agriculture for meeting their economic needs. Most of the population depends largely on plant resources growing in their surroundings to meet their requirements, including herbal therapy for sick men.

Shahdol district lies between 23.15⁰ - 24.3⁰ N Latitude and 18⁰ - 81.45⁰ E Longitude. It is surrounded by Anuppur district on East, Dindauri on South, Umariya on West and Satana on North. Sidhi on North East side. The total area of Shahdol district is 14028 Sq. Km. Total population of the district is about 10,66,063 lacs (2011 Census) Maikal Mountain range on its southern boundary and Son river flanks on its western with northern boundary. Its major part is covered with dense forest. The survey was conducted repeatedly from January 2012 – December 2013. In different seasons and areas detailed information was

documented about plants, human diseases and recipes.

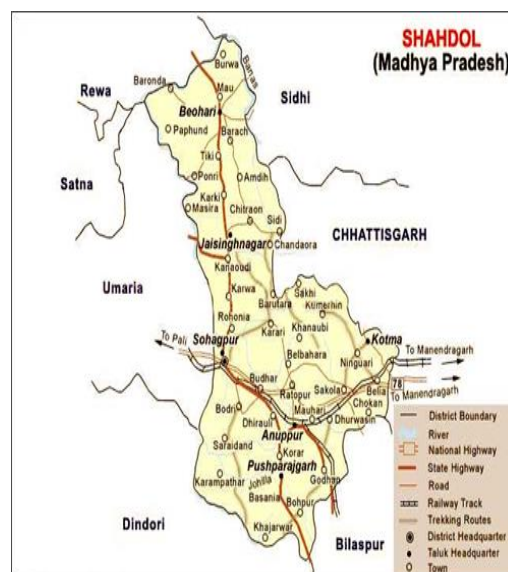


Fig.1 Shahdol District

2. Methodology

During methodology 18 villages were surveyed to observe the use of anti-diabetic plants by the local inhabitants. A very small number of tribals (about 09) were found to treat the diabetic persons by anti-diabetic plants. Majority of such persons were found illiterate while a few with primary or middle education practices to treat diabetic patients. Such persons treating diabetes are usually called as medicine men. The quantity of plant parts used to treat diabetes was not standard. The another worker that plants was studied e.g. Ambasta, (1986); Ghos and Das, (2000), Jain,(1991); Johnson,(1998); Sarin,(1996); Singh and Maheshwari, (1983); Sivarajan and Balachandran, (1994); Warman, (1999); Warrier et al.,(1999).

3. Enumeration

Based on the information collected from the local inhabitants and tribal communities living in the area following plant with botanical names,

habit and habitat, distribution and mode of uses are given below.

They will not only lead to discovery of new medicinal plants, but also result in better understanding of the relationship between the local inhabitants. The benefit of indigenous knowledge can be harnessed and improved upon by its appropriate use, establishing validity of such knowledge and integrating it with health care program.

Distribution & Habit- A large deciduous tree, 20-25 m. high. Stem- woody rough branched, pale brown. Leaves- compound leaflet broadly ovate, elliptic. Flower- pale yellow, Fruit- pod, sub orbicular winged. Flowering- Mar -Apr. commonly occur in forest (hilly) regions, of Shahdol, Rewa, bark Jabalpur, Sagar, & Hoshangabad division. Parts used wooden.

4. Used

Decoction of "Beeja" (*P.marsupium* Roxb.) Heartwood and bark, ½ glass mixed with "Gurij" (*Tinospora cordifolia* Willd.) Stem paste ½ spoons taken once a day for three weeks to control of diabetes.

5. Pharmacognostical studies

Pharmacognostical characteristic of *P. marsupium* including the macroscopically and microscopical feature of the heartwood have been reported. The heart wood is golden yellowish brown with dark streaks, staining yellow damp and turning darker on exposure, strong and tough.

6. Chemical Constituents

These contain - Liquiritigenin, oleanolic acid, pterostilbene, 4, 2'- trihydroxy chalcone (heart-wood) (-) epicatechin (bark). Alkali-soluble portion of (*P. marsupium* Roxb.) heartwood contains isoliquiritigenin, Liquiritigenin, and pterostilbene, whereas the sapwood showed the presence of pterostilbene, along with very small quantities of isoliquiritigenin. The ether extract of the heartwood contains a novel methylhydrobenzoin (Subba Rao & Methew, 1982); a novel 2-hydroxy-2-benzylcoumaranone named carpusin, the structure of which was established as 2-benzyl-2,4', 6-trihydroxy-4-methoxybenzo (b) furan-3(2H) one (Mathew & Subba Rao, 1983), propterol identified as 1, 3-bi (hydroxyphenyl) propane -2-ol (Subba Rao et al., 1984) and propterol B identified as [1-(2,4-dihydroxyphenyl)3-(4-dihydroxyphenyl) propan-2-ol] (Mathew & Subba Rao, 1984), photo oxidation of derivatives of

pterostilbene was also reported (Mathew et al., 1977).

The ethyl acetate fraction of the alcoholic extract of the heartwood gave 4'-dimethoxy-8-methylisoflavone-7-O- α -L- rhamnopyranoside (Mitra & Joshi, 1982) along with retusin 7-O- β -D-glucopyranoside and irisolidone -7-O- α -L-rhamnopyranoside. *Marsupium* extract was confirmed in normal rabbits (Shah, 1967; Saifi et al., 1971).

7. Pharmacological studies

The pharmacological studies have therefore, concentrated more on the hypoglycaemic activity of *P. marsupium* Roxb. on account of its reputation in the traditional system medicine include folklore.

Glucose absorption from the gastrointestinal tract in mice treatment *P. marsupium* aqueous extract for (15 day) was studied. Reduced glucose absorption observed in *P. marsupium* extract treated mice was attributed to non-specific action of tenants (Joglekar et al., 1959). This finding was confirmed by Gupta (1963a), who studied the effect of *P. marsupium* wood (aqueous extract) on glucose tolerance in albino rats and found low blood sugar levels after a glucose meal in animals pretreated with (Gupta, 1963a).

The hypoglycaemic activity of *P. marsupium* extracts was confirmed in normal rabbits (Shah, 1967; Saifi et al., 1971).

In a series of studies carried out in rats, Chakravarthy and co-authors claimed a novel antidiabetic mechanism of *P. marsupium* as revealed by pancreatic β -cell regeneration by the flavonoid fraction (Chakravarthy et al., 1980), and the pure flavonoid (-) epicatechin isolated from the ethyl acetate soluble fraction of the ethanol extract of the bark (Chakravarthy et al., 1981a b). The authors further claimed significant antidiabetic effective in an authentic sample of (-)-epicatechin obtained from Australia, by the same mechanism (Chakravarthy et al., 1981c). They also reported functional β -cell regeneration by (-) - epicatechin in the islets of pancreas in alloxan diabetic rats, as assessed immune-reactive insulin (Chakravarthy et al., 1982a).

8. Clinical Studies

The first clinical trial (apply) carried out on 09 patients (in the age group of 35-60 years) of diabetes mellitus, the extract of *P. marsupium* heartwood along with bark (extract given two methods as 1. water store over night in a glass & 2. Heartwood & bark after decoction with water)

encouraging hypoglycaemic effects in 09 in different doses. It is an improvement in glucose tolerance in 7 patients after 2-3 weeks treatments.

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10. References

- 1 Agarwal, J.L., 2003., Defeating Diabetes. Sci. Reporter: 44-47.
- 2 Ambasta, S.P., (Ed.) 1986., The Useful Plants of India. CSIR, New Delhi.
- 3 Bhattacharjee, S.K., 1998., Hand Book of Medicinal Plants. Pointer Publisher, New Delhi.
- 4 Anonymous, 1968., Medicinal Plants of india. Vol.1. ICMR, New Delhi.
- 5 Ambasta, S. P. (ed.) 1986., The useful plants of India. CSIR, New Delhi.
- 6 Bhalla, N.P.Sahu, T.R.Mishra, G.P. and Dakwale, R.N. 1982., traditional plant's medicines of sugar, Distt., of Madhya Pradesh India. J. Econ. Taxon. Bot. 3:23-32.
- 7 Binu, Nayar, T. S. R. & Pushpangadan, P., 1992., An outline of ethnobotanical research in India. J.econ.taxon. Bot. (Addl.Ser.) 10:405-428.
- 8 Chopra, R.N., Chopra, I.C. and Verma, B.S. 1968., supplement to Glossary Indian Medicinal Plant's. CISR, New Delhi.
- 9 Das, A., 1976., Bitters and Diabetes. Indian Drugs. 14-168.
- 10 Jain, S. K., 1963., Studies in Indian ethnobotany Plants used in medicine by tribals of Madhya Pradesh Bull. Reg. res. Lab. Jammu. 1126-128.
- 11 Jain, S.K., 1964., Native Plant remedies for snake bite along Adivasis of central India. Indian Med. J.57:307-369.
- 12 Jain, S. K. 1968., Medicinal Plant, National Book Trust, New Delhi.
- 13 Jain, S. K., 1965., Medicinal Plant Lore of Tribal's of Baster Econ. Bot. 19:236-250.
- 14 Jain, S. K., 1961., Dictionary of Indian Folk Medicine and Ethnobotany, Deep Publication, New Delhi.
- 15 Jain, S.K., (Ed.) 1987., A manual of Ethnobotany. Scientific Publishers, Jodhpur.
- 16 Kapale, R., Prajapati, A. K., Napit R. S. & Ahairwar, R. K. 2013., Traditional Food Plants of Baiga Tribal's : A Survey Study in Tribal Village of Amarkantak-Achanakmar Biosphere, Central India. (2):27-30.Ind. J. Sci. And Tech. 2013.
- 17 Kumar, Ramesh; et al.: Traditional Use of Plants of Amarkantak; Indian Journal of Traditional Knowledge Vol. 3(4) October 2004,pp. 383-390.
- 18 Maheshwari, P. & Singh, W. 1965. Dictionary of Economic Plants in India. I. C. A. R. New Delhi.
- 19 Maheshwari, J.K., 1970., New vistas in ethnobotany. J. econ. Taxon Bot. (Addl.ser): 1-11.
- 20 Napit, R. S., and Kumar K. 2012., Ethnomedicinal use Euphorbia Plants by Tribal Communities of Shahdol District of M. P. Agrobios News Letter Page. NO. 47-48.
- 21 Napit, R. S., Shrivastava D. K. & Mishra S. K. 2011., Ethno-medico Botanical Study of Paliha Tribe of Gohparu Block Distt. Shahdol M. P. (India) Journal of Tropical Forestry Vol. 27. Pag NO. 62-64.
- 22 Napit, Dr. Radheshyam, 2015., Ethnomedicinal Studies on Baiga Tribes in Jaisinghnagar Block District Shahdol M.P. Central India. Research Hunt An International Multi Disciplinary e-journal, Vol.χ Issue. I, Jan-Feb -2015 Pag. 9- 12.
- 23 Napit, Dr. Radheshyam, 2015., *Medicinal Plant King of Bitters "Swertia chirata Buch.Ham." (Gentianaceae) Chirayata Used by Tribals of Amarkantak regions District Anuppur Central India.* Research Hunt An International Multi Disciplinary e-journal., Vol.χ Issue. I Jan-Feb -2015 Pag.1-4.
- 24 Napit, Dr. Radheshyam, 2015., Ethnomedicinal Plants (Pteridophytes) Study and Indegenous Knowledge of Pushprajraha block with Special Reference to Amarkantak Anuppur District M.P. India. Research Hunt An International Multi Disciplinary e-journal, Vol.χ Issue. I Jan-Feb -2015 Pag.5-8.
- 25 Napit, Dr. Radheshyam, 2015., Calotropis (Asclepiadaceae) Plants Used By The Tribal And Local Peoples. In The Administered Of Skin Disease "Leucoderma" District Shahdol Central India. Naveen Shodh Sansar (An International Refereed Research Journal) Jan. to March Vol.1 Pag.34-35.
- 26 Ramachandran, V.S. and Nair, N.C. 1981., Ethnobotanical observation on rurals of Tamil Naidu (India). J.Econ. Taxon. Bot. 2:183-190.
- 27 Sinha, A., 1959 a, Chemical examination of the seeds of *Jatropha curcas* Linn. J. Inst. Chem. (India) 31, 213.
- 28 Sinha, B. K. and Dixit, R.P. 2001., Ethnobotanical studies on *Sarcostemma acidum* (Asclepiadaceae) from Khargaon Distt. Madhya Pradesh Ethnobotany 13:116-117.
- 29 Shah, N.C. 1994a., Ethnobotany of some well-known Himalayan Composites: Biology & Utilization. Proceedings of the International Composite Conference Eds. PDS Caligan & DJN Hind. (D.J.N. Hind, Editor-in-Chief). Kew: Royal Botanic.
- 30 Shah, N. C., 1987., Ethnobotany in the Mountainous Region of Kumaon Himalaya. Thesis Submitted to the Kumaon University, Nainital for the Degree of Doctor of Philosophy in Botany. 1-255.

Fig.1. *Pterocarpus marsupium* Roxb.



Fig.2. Medicineman Collection of Plant



Fig-1. Photosource-
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