

**THERAPEUTIC USE OF SOME ETHNOMEDICINAL PLANTS OF HADAGARH  
WILDLIFE SANCTUARY AGAINST DIABETES BY THE TRIBALS OF KEONJHAR  
DISTRICT, ODISHA**S. K. Sen<sup>\*1</sup>, M. R. Pattnaik<sup>2</sup> and L. M. Behera<sup>3</sup><sup>1</sup>Department of Botany, Panchayat College Bargarh: 768028 (India).<sup>2</sup>Angul Forest Division, Angul: 759122 (India).<sup>3</sup>Ex-Reader in Botany, Modipara (Near Water Tank), Sambalpur: 768002 (India).**\*Corresponding Author: S. K. Sen**

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**ABSTRACT**

Based on ethnobotanical a survey of Hadagarh Wildlife Sanctuary was conducted during Feb 2017 to September 2108. The present paper highlights on ethnomedicinal plants used against diabetes collected from Hadagarh Wildlife Sanctuary of Keonjhar District. A total number of 29 plant species belonging to 28 genera and 22 families have been recorded and comparison of data with the available literatures reveal that no such work was done previously so far from this area. Out of 29 species 21 are wild or semi-wild while 8 are cultivated species.

**KEYWORDS:** Ethnomedicinal plants, Hadagarh Wildlife Sanctuary, Tribals, Keonjhar district.**INTRODUCTION**

India is a rich repository of medicinal plant wealth. Medicinal plants, since time immemorial, have been used in virtually all cultures as a source of medicine. The use of traditional medicines and medicinal plants in most developing countries has been widely spread and become essential for the maintenance of good health. The interest in ethnobotanical research has increased considerable for the last couple of decades. People depend on traditional medicine as it is easily accessible, low cost medicine, does not cause any side effects and the only source of healthcare for the poor.

The food habit of man has been changing day by day inviting several diseases to his body. Diabetes is one among them. It is a chronic metabolic disorder. When the body is unable to make proper use of glucose that causes high blood sugar or increasing concentration of glucose level in the blood (hyperglycaemia). The main causes of diabetes may be due to intake of oily and excessive junk food which is difficult to digest, overeating, obesity, excessive sleep, lack of exercise and above all mental stress and strain. Besides, heredity is also a factor that causes diabetics.

**Study area**

The study area is confined to Hadagarh Wildlife Sanctuary, situated in the Keonjhar and Mayurbhanj District of Odisha. It has been established in 1978. It is located at 86° 12' to 86° 21' East latitude and 21° 12' to 21° 23' North longitude and covers an area of 191.06 sq

Km. The sanctuary lies in the catchment of Salandi river, a major tributary of the river Baitarani. Besides the Salandi river, there are some perennial and other seasonal streams like Andheri stream, Bentokholi stream, Chakratirtha stream, Ghagara stream, Mukta stream, Pitanau stream, and Suranga stream found in the sanctuary. A large stagnant water body (31.83 Km<sup>2</sup>) of river Salandi, called as Hadagarh dam (reservoir) is found inside the Sanctuary and is the important wetlands of this Sanctuary that attracts variety of water birds both migratory and resident. Besides, Hadagarh dam is a beautiful place for the tourist and has been made over the Salandi River. The dam is situated inside the Baula reserve forest and it is interesting to note that the dam is located between two mountains namely "Pita Nava" and "Baula". It is 110 Km away from Keonjhar town and 28 Km from Anandapur. The sanctuary comprises of entire Boula RF of Anandapur (under Keonjhar district) and Satakosia R.F. (part) of Karanjia Forest Divisions (under Mayurbhanj district). Hadagarh sanctuary is also linked to Similipal tiger reserve and Kuladhia wildlife sanctuary.

The River Salandi is passes through the forest and is said to be the lifeline of Hadagarh sanctuary. The region is rich with mixed deciduous forests and shelters a variety of flora and fauna. Sal (*Shorea robusta*) is an important plant in this region. The Baula hill range lying on the east and west of Salandi River, the valley engaged by the reservoir and its catchment are the main features. This hill range forms the lower edge of the sanctuary and is

absolutely a solid demarcation line between the sanctuary and the revenue village. It is located at a distance of 20 kilometres away from Bhadrak and 28 km from Anandapur.

The Hadagarh wildlife sanctuary is one such remote area which possesses a rich medicinal plant diversity and traditional knowledge on the use of medicinal plants which is yet to be exploited. The study area is dominated mostly by some backward class people and the hill tribes. The Santhals and Ho are the main hill tribes residing in the Hadagarh wildlife sanctuary and have migrated from Mayurbhanj, Singhbhum and Chhotanagpur. The local inhabitants of study area use these medicinal plants for their primary healthcare. The knowledge regarding the proper use of medicinal plants is confined only to a small number of people and they do not reveal their knowledge to any one for the fear of being misused. Therefore, the study was conducted with the aim to document about uses of medicinal plants species, herbal formulations and their importance in local healthcare practices.

## MATERIALS AND METHODS

An ethnobotanical study in the Hadagarh wildlife sanctuary was conducted during 2015-17. The aim of the study was to explore the vegetation of the sanctuary area. The study area was visited frequently and close intimacy was established with the local inhabitants. The voucher specimens and information on ethnomedicinal uses were gathered through interviews and discussions with village headmen, traditional healers and some senior tribal people having interest on herbal medicines.

The information regarding the use of plants and plant products were collected from them during the interaction. Some of the elderly people practicing such medicines did not easily reveal the truth directly, so indirect methods were adopted to extract information directly or indirectly. Moreover common tribal people were also contacted to know about the use of medicinal plants for curing diseases and ailments. Identification of plant specimens were done with some regional flora.<sup>[1,2,3]</sup> Besides the collected information was cross-checked with some relevant published scientific literatures.<sup>[4-11]</sup>

## RESULTS AND DISCUSSION

In the present investigation, 29 plant species belonging to 28 genera and 22 families found to be used by the local people in traditional healthcare system have been arranged alphabetically according to their scientific names, families, local names, parts used and method of use along with dosages.

***Abrus precatorius*** L. (Fabaceae) 'Kaincha', Pitanau- 624  
Leaf juice is taken twice daily in empty stomach.

***Aegle marmelos*** (L.) Corr. (Rutaceae) 'Bela', Gadachandi- 591

Leaf and bulb taken orally

***Allium cepa*** L. (Amaryllidaceae) 'Piaj', Gadachandi- 590

Bulb juice along with honey or milk is taken twice daily in empty stomach.

***Allium sativum*** L. (Amaryllidaceae) 'Rasuna', Pitanau- 620

Leaf and bulb taken orally

***Aloe vera*** (L.) Burm.f. (Liliaceae) 'Gghekuari', Raighat- 628

Leaves juice (3-4 teaspoon) is taken 1-2 times daily in empty stomach.

***Andrographis paniculata*** (Burm.f.) Wall.ex Nees (Acanthaceae) 'Bhuineemba', Raighat- 629

Fresh leaves crushed with a pinch of salt is taken with warm water as morning drink.

***Annona squamosa*** L. (Annonaceae) 'Aata', Dalki- 601

Fruits are eaten daily

***Aristolochia indica*** L. (Aristolochiaceae) 'Ishwara jata', Pitanau- 621

Ground seeds are mixed with black pepper and made into a paste and taken three times a day for 30 days.

***Borassus flabellifer*** L. (Aracaceae) 'Tala', Raighat- 627

Fruit (5-10g) is eaten raw once daily. Tuber paste (10g) is taken 2 times daily in empty stomach.

***Brassica nigra*** (L.) Koch (Brassicaceae) 'Kalasorisa', Kanlei Balipala- 630

Seeds powder (2-4g) mixed with lime juice (1 teaspoon) is taken twice daily in empty stomach.

***Centalla asiatica*** (L.) Urb. (Apiaceae) 'Thalakudi', Masaghati- 634

Leaves extract 2-3 teaspoon in empty stomach one daily.

***Coccinia grandis*** (L.) Voigt (Cucurbitaceae) 'Kainchikakudi', Gadachandi- 595

A ripe fruit is eaten daily.

***Cynodon dactylon*** (L.) Pers. (Poaceae) 'Duba', Gadachandi- 594

Leaf powder (5g) is boiled in water (100 ml) and the decoction is taken 2 times daily.

***Eclipta prostrate*** (L.) L. (Asteraceae) 'Bhrungaraj', Pitanau- 623

Leaves juice (5-10 ml) is taken once daily.

***Euphorbia hirta*** L. (Asteraceae) 'Chita-kuteisiju', Pitanau- 619

Whole plant extract is taken once daily.

***Ficus benghalensis*** L. (Moraceae) 'Bara', Dalki- 608

Bark Powder (10 g) is taken along with milk once daily in empty stomach.

***Hibiscus rosa-sinensis*** L. (Malvaceae) 'Mandara', Masaghati- 635

Flower leaf is taken daily.

***Mangifera Indica*** L. (Anacardiaceae) 'Amba', Gadachandi- 588

Dry kernel powder with cow's milk is taken once daily.

***Melia azadarach*** L. (Meliaceae) 'Mahalimba', Dalki- 600

Leaves paste (5g) is taken with water once daily.

***Mimosa pudica*** L. (Fabaceae) 'Lajakuli-lata', Pitanau- 625

Root extract (1 teaspoon) taken daily.

*Momordica charantia* L. (Cucurbitaceae) 'Kalara', Dalki- 610

Ripe fruit is taken daily.

*Moringa oleifera* Lam. (Moringaceae) 'Sajana', Gadachandi- 589

Leaf juice (3-5 g) is taken once daily in empty stomach early morning.

*Murraya Koenigii* (L.) Spreng. (Rutaceae)

'Bhrusanga', Gadachandi- 592

Leaf extract (2-3 teaspoon) is taken in empty stomach early in the morning.

*Ocimum tenuiflorum* L. (Lamiaceae) 'Kala Tulasi', Masaghati- 633

Leaf powder is taken with honey 2 times daily.

*Phyllanthus emblica* L. (Euphorbiaceae) 'Aonla', Gadachandi- 593

Fruits juice (3 teaspoon) mixed with honey is taken early in the morning every day.

*Psidium guajava* L. (Myrtaceae) 'Pijuli', Dalki- 609

A fruit is taken along with one black pepper once daily.

*Scoparia dulcis* L. (Scrophulariaceae) 'Bana-ganjei', Pitanau- 622

Fresh leaves are eaten for 2 times daily before each meal.

*Senna tora* (L.)Roxb. Fabaceae) 'Dhala chakhunda', Kanlei Balipala- 630

Root powder (10g) is boiled in a glass of water and the decoction is taken once daily in empty stomach.

*Tinospora cordifolia* (Willd.) Miers ex.

(Menispermaceae) 'Gulatilata', Raighat- 626

Bark decoction (40-60 ml) is taken with turmeric powder two times daily.

Each and every ethnomedicinal plants used by the inhabitants deserve attention for the sustainable use of biodiversity. It is noteworthy that the traditional use of plants is an integral part of the local people. Out of 29 ethnomedicinal plants gathered from the study area 21 are wild or semi-wild while 8 are cultivated species mainly included herbs in maximum number (13 species) followed by trees (9 species), climbers (5 species) and shrubs (2 species).

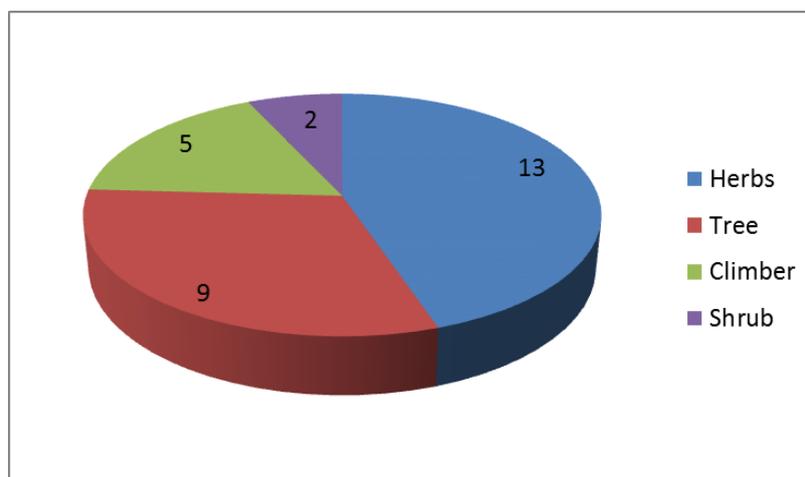


Fig. 1: List of category of plants.

Thirty numbers of plant parts are utilized from 29 species against diabetes; of which leaves are used maximum (13 numbers), followed by fruits (6 numbers), whole plant,

roots, seeds and bulbs (2 each) and bark, flower and tuber (1 each).

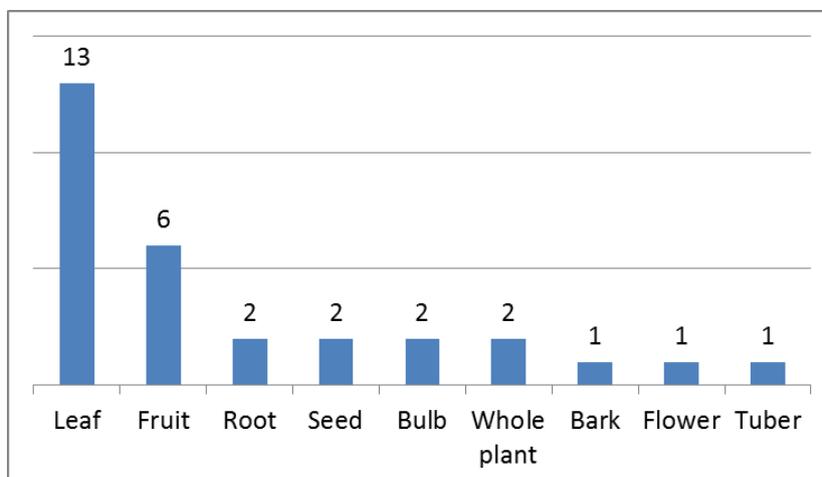


Fig. 2: List of plant parts used.

## CONCLUSION

Plant diversity has always been playing an important role in the life of human race which provides all or a significant number of the remedies required in primary health care. Hadagarh wildlife sanctuary of Keonjhar district is a rich repository of medicinal wealth. The present paper highlights on 29 ethnomedicinal plants which are utilized by local inhabitants in this region. The local people especially tribal people, elderly people, and women heavily use these traditionally available medicinal plants for their health and have a strong believe on the efficacy of the these plants that these are easily available, less expensive and have no side effects as compared to modern medicine.

The recorded medicinal plants are highly valuable for the treatment of diabetes. Over exploitation of whole plants, roots, tubers, seeds, fruits, flowers, and barks of most of the species may lead to their early extinction from the area. The extinction of medicinal plants and medicine men, however, presents a more hidden health risk. Therefore there is need to make proper policies and implement them to conserve the forests and medicinal plants. Farmers and local people should be encouraged to cultivate medicinal plants in their barren and fallow lands. Therefore, to maintain the medicinal plant wealth, assessment of population using quadrat method, standardization of propagation protocols for mass multiplication, awareness among the inhabitants and involvement of local inhabitants, Forest Departments in the *ex situ* and *in situ* conservation.

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