

## Cocculus hirsutus (L.) Diels: Diverse uses by the tribal population of Dumka

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### ABSTRACT

*Cocculus hirsutus* (L.) Diels is an evergreen straggling shrub, locally known as *Dahdahia* (Santhali) of Menispermaceae family. The plant species often remains neglected along the roadsides by the commons but is used diversely by the tribal and indigenous communities of Dumka district of the state Jharkhand. The plant species have an excellent ethno-medicinal potential to cure several ailments as premature ejaculation, taste, alleviating burning sensation in eyes, etc. in addition to some other uncommon uses. The present paper is an endeavor to highlight these diverse uses of the plant species which can be exploited further in different researches like, pharmacological, phytochemical, nutritional analysis, etc. for improving human health and ultimately the society.

**Key words :** Diverse, indigenous, exploited, experimentations, etc.

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### INTRODUCTION

Present scenario reveals a worldwide appraisal of precious traditional knowledge being sporadically dispersed throughout the globe. Dumka district, situated in the Jharkhand state, is the homeland of the tribal communities. These communities mainly include the Santhals, Paharias, Bhumijis, Mahalis, Koras, Oraons, etc. They have quiet rich culture (Bondya et al., 2015). Most of them reside close to the forests and are dependent on the surrounding phyto-diversity for their basic needs of food, cloth and shelter. Along with their God or Marang Buru, Chandu Baba or Bongas, they even respect nature as their mother and use to worship the natural powers like the Sun, the moon, the Earth etc. For these tribal communities, the land is considered as more precious than their own life as these land not only provides economic security to them but are also powerful mean of link to their ancestors (spiritual life). Their dependency on these resources, have created a sort of relation between them, which are deeply rooted than mere, their materialistic use.

Dumka, is the Ratnagarbha (reserve) of innumerable medicinal plants species, which is the outcome of its prevailing diverse topography. Ethno-medicines or folk medical claims are considered to be the precious knowledge which is gifted, to the prevailing tribes by a handful of knowledgeable herbal practitioners, commonly known as Kabirajs, Vidyas, Horopaths, Pahans etc., to their next generations through ages, verbally and without any proper documentations. And the medicinal uses of different plants species present in this region, is an important component of their traditional knowledge gained basically on their necessities, instinct, observation, trial and error method and long experiences. And the knowledge of identifying them in the field and formulating those plant species accurately, into specific drugs, is restricted mainly to these tribal and indigenous herbal healers. These ethno-medicines or folk medical claims are considered to be the crude knowledge, which along with the help of the integrated scientific approaches can meet the emergent future requirement of different drugs and

medicines (Das and Bondya, 2015).

But, unfortunately and gradually along with many invaluable bio-resources, these knowledgeable communities are also in the verge of extinction. Many ethno-botanical studies (Pei Shang-Ji, 2001; Rao, 1996; Borthakur and Gogoi, 1994; Jain, 1991, etc.) have showed that inventory preparations of indigenous knowledge through ethno-botanical studies are important for the conservation as well as sustainable utilization of the bio-resources. The paper is an endeavor towards this prospect along with exploring diverse uses of *Cocculus hirsutus* (L.) Diels.

#### **MATERIALS AND METHODS :**

Thorough and intensive field work was conducted in the villages and randomly selected blocks (Kathikund, Shikaripara, Gopikandar, Rangamission, Ranewar, Dumka, Maharo and Jama) of the Dumka district, in the Jharkhand state. For this very purpose semi-structured questionnaires were prepared. Ethnic and knowledgeable, herbal medicinal practitioners were interviewed several times. At the same time, field visit were also undertaken along with the villagers in the local markets called Haats or Hatias. Following the first hand data given by these people, diverse uses of *Cocculus hirsutus* (L.) Diels, are documented. The plant species is processed and herbarium specimens were prepared following standard herbarium techniques (Jain and Rao, 1977) and identified consulting available literatures (Haines, 1921-1925; Kirtikar & Basu, 1935; Anonymous, 1948-1976; Chopra et al., 1956, 1969; Maheshwari & Singh, 1965; Jain, 1968 and Nayar et al., 1989). The fields are visited frequently in different seasons to get the species in its accurate flowering and fruiting condition. The specimens have been deposited in the herbarium of P.G. Department of Botany, S.K.M. University, Dumka.

#### **RESULTS AND DISCUSSIONS :**

These species are quite common along roadsides, growing wild, straggling over shrubs and are even neglected by the commons of this region (Fig.1).

#### **Taxonomic Classification :**

- Kingdom: Plantae
- Division: Magnoliophyta
- Class: Magnoliopsida
- Order: Ranunculales
- Family: Menispermaceae
- Genus: *Cocculus*
- Species: *hirsutus*

#### **Floristic Description :**

*Cocculus hirsutus* (L.) Diels, commonly known as Dahdahia in Santhali, Jamtikibel, Tildhara in Hindi, Patalgarudi & Jaljamini, Mahabala in Sanskrit, Daikhai & Huyer in Bengali. The roots of the plants are hairy and darkbrown in colour. Leaves are simple, alternate, ovate, sub-deltoid or three lobed, obtuse and mucronate. The shape of the base of leaf is subcordate or truncate. Petioles are very short, dark green, usually sub-auriculate at the base. The flowers are very small, unisexual and green in colour (Fig.2). The male flowers occur in axillary cymose panicles, stamens are six, free, embraced by the petals, anthers are sub-globose in shape. Female flowers are in axillary clusters of 1-3 and staminoides are six and styles usually cylindrical. The fruits are drupes which are similar to small peas with dark purple endocarp (Fig.3). Seeds are curved and fleshy with annular embryo.

Parts used for different purposes : Roots, Leaves and Fruits.

Flowering and Fruiting Time: The plants are climbers with green flowers which usually bloom in February-March and fruits in May-June.

Diverse uses of the species are as follows :

#### **A. Ethno-medicinal uses :**

About 20 ml of the juice of the roots is directed along with half a teaspoon of sugar to treat excessive body heat and sunstroke. The decoction of the roots, dried ginger and Pippali (*Piper longum* L.) is given along with milk to treat rheumatic pains. The paste of its roots and seeds of *Latakaranja* (*Caesalpinia cristata* L.), matted in water is given orally, to relieve colic among children. The roots are also useful as an antidote of snake bites. The juice of the stems and leaves is

applied to treat eye diseases. Juice of the leaves along with the powder of Cumin (*Cuminum cyminum* L.) seeds and sugar for taste, works well to cure gonorrhoea. The plant has extremely good results in delaying the ejaculation during mating. The mucilaginous juice of leaves, being diuretic and refrigerant, is helpful in curing burning micturition (difficulty during flow of urine) and skin diseases like eczema. The extract of the mucilaginous leaves is taken along with water continuously for about 2-3 days to cure dysentery. It is also effective in curing tongue sores. The antioxidants of the fruits also have good potential in curing various skin diseases like, itching, wounds etc.

#### Major chemical constituents present :

Many scientists have investigated this plant species chemically. The plant of *C. hirsutus* (L.) Diels. has been reported to contain essential oil,  $\beta$ -sitosterol, ginnol, glycosides, sterols and alkaloids (Das et al., 1964). Preliminary phytochemical analysis of the leaves showed the presence of alkaloids, phenolic compounds, flavonoids, glycosides, and carbohydrates (Merchant et al., 1962). The phytochemical studies (Bhavna & Bothara, 2011) showed the presence of following chemical constituents:

Roots - D- Trilobine, DL- Coclaurine, Sterols and resins.

Leaves - D- Trilobine & DL- Coclaurine, Isotrilobine, etc.

Stems & Roots – bis- benzyl isoquinoline alkaloids viz.

Cohirsine, Cohirsitine, Jamtinine, Shaheenine, Cohirsinine, Haiderine, etc. (Jagannadha et al., 1961)

#### B. Edible (nutritional) purposes :

The tender leaves of the plant species are eaten as wild leafy vegetables. These leafy vegetables are washed properly and then cut to pieces. These are then cooked with garlic, which adds additional flavor to it.

#### C. Dye yielding purposes :

The juice of the ripe fruits have anthocyanin which turns the green, unripe fruits to bluish purple. The latter in turn yield a kind of bluish purple ink which is a natural food colourant used to colour various food items.

The roots, leaves and fruits of the plant species have immense medicinal properties to cure numerous diseases in efficient manner. The tender leaves are edible and are consumed by these tribal communities during scarcity of other available leafy vegetables as wild edibles. The nutritional values of these should be evaluated. The dye obtained from the fruits of the plant species is an effective natural food colourant. There is an urgent need of substitution of different artificial dyes industry with the natural dyes because of the general toxicity present in the artificial dyes, making them not desirable for the human consumption (Rakkimuthu, et al., 2016). The natural dye obtained from the *Cocculus hirsutus* (L.) Diels and other plants are also inexpensive in comparison to the costly artificial dyes. So, this in



Fig. 1.  
Cocculus hirsutus Plant



Fig. 2.  
Flowers



Fig. 3.  
Raw & ripened fruits.

**CONCLUSION :**

Though this plant species has immense medicinal potential in addition to its edible and other miscellaneous values yet it is neglected by the commons, in terms of their utility. Ethno-medicines utilized by these tribal communities including the herbal healers can no doubt prove the best medicines to discover new drugs or escort molecules for the development of new drugs, provided the formulations and data should have integrated scientific approaches. Intensive pharmacological, phytochemical, nutritional analysis of different plants species utilized by these tribal communities, is the need of the hour. Applying numerous scientific approaches different prospective of these under-utilized plants species should be evaluated without disturbing their natural availability in the region.

The traditional knowledge of these tribal communities is valuable. Article 8(j) of Convention on Biological Diversity (CBD) signed at Rio de Janeiro, Brazil in 1992, provides for respecting, protecting and rewarding the Knowledge, Innovations and Practices (KIP) of local communities. So, efforts should be made to recognize IPR (Intellectual Property Rights) of these ethnic herbal healers, to sustainably utilize their precious knowledge and conserve this for our future generation (Borathakur & Gogoi, 1994).

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