Chapter 7

Atundi (*Combretum roxburghii* Spreng.): a medicinal climber with ecological & pharmacological significance

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Abstract: Climbers are generally considered as fodder plants. There is an ongoing notion in our mind that they do not have any other uses for humans. Mostly they need the host plant for their support to grow. They are beneficial to humans & other animals in many aspects. Some have medicinal values to treat various ailments of humans. Atundi is one of them, it has anti-cancer properties. It has a high concentration of secondary metabolites. It is found in hilly regions, coastal areas & red soil. It is also a fodder plant of many animals and nectar plant of some butterflies. Keeping the importance of Atundi, an attempt has been made to documents its uses from field and literature to bring attention towards its importance.

Keywords: Fodder plant, Bioactive compounds, Ecological significance

Introduction: The landscapes of India enjoy the diversity of plant species. They are unique to their habit & habitat. Human beings use them for different purposes in day-to-day life. In plants, people mostly use & give more importance to trees & herbs but less to shrubs & climbers. In pre-history, people first learned to use climbers like the species of Cucurbitaceae, Dioscoreaceae, Liliaceae, etc. Evidence is recorded that Cucurbitaceae species are used in diverse ways from pre-historic to the modern age. In our forest, there is a good diversity of climbers but they are mostly unexplored. They are consumed by various wildlife as food. Most big climbers provide shelter for many birds, mammals & other faunal species. They also provide nectar for pollinators. Many climbers give stem bark as raw material to make rope & other domestic utensils, therefore, they play an important role in providing for the livelihood of the local people. Small climbers are also found on the forest floor. They are mainly used as medicine for humans & shelter for many insects, reptiles, arthropods, etc. They are mainly found in every vegetation in our country. In high competition with other plants, some climbers grow large, some climbers develop various biotic compounds under defense mechanisms which are useful for humans too. Keeping the importance of climbers & gaps in documentation, an attempt has been made to gather the information on medicinal, ecological & pharmacological significances of *Combretum roxburghii* (Atundi; Figure 1).

Methodology: The study was done in the year 2021-22 in the selected districts of Odisha. The data was collected through field (Figure 2) & literature surveys. The information was collected from tribal people using questionnaires through interviews and discussions.

Plant description: It is a large scandent or rusty-pubescent climbing shrub. Leaves are oblong or ovate-oblong, acuminate, coriaceous and sometimes hairs in the axills of the strong secondary nerves beneath. Spikes rusty villous and terminal panicles with conspicuous large white bracts. Flowers are 5-merous. Petals are ovate, acuminate and hairy. Fruits are oblong or elliptic.



Figure 1: Atundi in habitat of Asian Elephants



Figure 2: Field survey for knowing Atundi is food of Elephants

Ethnomedicinal values

1. Bark paste is applied externally to reduce inflammation (Sabar community, Khurda).
2. Fruit paste is applied to reduce inflammation caused by accident (Santhal community, Mayurbhanj).
3. The mature leaf paste is used against skin infection (Bathudi community, Mayurbhanj).
4. The bark paste is mixed with turmeric & applied to reduce muscle inflammation (Ho community, Mayurbhanj).
5. The young white leaves are crushed & made juice. The juice is taken to reduce the problems of diarrhea (Khadia community, Sundargarh).

Pharmacological values: The plant parts of Atundi are reported having pharmacological values. The details are listed in the Table 1.

Table 1: Pharmacological values of Atundi

Plant parts	Uses	Source
Leaves	Cytotoxicity & Antioxidant activities	Bhatnagar et al. (2012)
Bark	Cytotoxicity & Antioxidant activities	Bhatnagar et al. (2012)
Leaves	Anti-bacterial activity	Burman et al. (2018)
Leaves	Anti-cancer activity	Das et al. (2020)
Bark	Anti-cancer activity	Das et al. (2020)
Leaves	Antioxidant, Anti-estrogenic & Anti-proliferative activity	Panda A. (2020)
Bark	Antioxidant, Anti-estrogenic & Anti-proliferative activity	Panda A. (2020)
Flowers	Antioxidant, Anti-estrogenic & Anti-proliferative activity	Panda A. (2020)
Leaves	Hypoglycemic and Antioxidant activity	Roy et al. (2014)
Entire plant	Toxicity on mammals	Roy et al. (2014)
Entire plant	Treatment of malarial fever, eczema helminthic disorder & wound healing	Roy et al. (2014)

Ecological values

1. It is the food of Asian elephants.
2. It is pollinated by small birds & insects.
3. It provides shelter for small mammals like Indian giant squirrels, Civets, etc.
4. It attracts different types of butterflies.
5. Birds make nests using the branches of *Combretum roxburghii*.

Recommendations: *C. roxburghii* has an anti-cancer compound that can lead to drug discovery, and clinical trials, and in the future, it can lead to the treatment of cancer. The major concern of today is antibiotic resistance to various chemical drugs, this can be overcome by developing natural anti-bacterial therapeutic agents in the future from phytochemicals of *C. roxburghii* to fight against various infectious diseases. The knowledge about the pharmacological and medicinal values of Atundi can boost by chemists, biologists, and pharmacologists to undertake further systematic research works on this important species and to isolate useful phytochemicals which

will be useful in healthcare. Atundi is food of many faunal species, so its conservation and restoration can be done.

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