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Study of Some Medicinally Useful Climbers and Creepers at Abheda Biological Park, Kota, Rajasthan

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ABSTRACT

The research paper represents the results of first study on diversity of medicinally useful lianas at abheda biological park situated at district Kota –Rajasthan. The study was conducted with the aim to explore lianas (climber, creepers, and vine) species which are directly used for medicinal purposes to prepare a checklist of our medicinally important wild plant resources found at the study area. In this paper total fourteen species belonging from Cucurbitaceae, Vitaceae, Fabaceae, Convolvulaceae, Sapindaceae Manispermaceae, Passifloraceae and Apocynaceae families are mentioned and investigated for their direct uses and a list is prepared. The study was carried out to add on knowledge to wild plant resources and local medicinally useful plants which are generally avoided due to lack of knowledge about their use or most often lack of knowledge about their presence. Labelled images with most of distinctive features are also attached to facilitate the identification of species. Diverse composition of plant species is also showing about the potential of wild resources of study area.

Keywords- wild resource, medicinal use, diversity.

I. INTRODUCTION

Climbers and creepers defined as a plant whose structural support does not come entirely from its own tissues, whose original rooting position is in the soil or a surface close to the soil, and whose climbing efforts may take its foliage and reproductive organs into the tree canopies (Burnham, 2009). Lianas are slightly lesser-known Angiosperms, grows typically in the form of climbing vines mostly in tropical and subtropical forests (Bharti et al. 2021). The word "vine" includes diverse habits of plants like annual and perennial creepers and climber species. According to estimations, within Angiosperms between 5000 -10000 species of climbers exist. Researchers concluded that lianas unlike other plant species play an important role in not only the ecology of the forest as they are an indicator for healthy forest as they help in regeneration of forest, carbon sequestration, in understanding environmental and climatic changes (Mukherjee et al. 2022) but also valuable due to their ethno botanical uses and medicinal properties as different kind of medicinally important compounds has been isolated from different species of climbers and creepers. Medicinal plants are source of novel chemical entities that possess beneficial pharmacological and therapeutics properties. These can be used directly or their extracts have been used as starting material in synthesis of pharmaceutical drugs (Khan et. al. 2017). Many useful species around are being avoided by people either because of lack of knowledge about their use or most often lack of knowledge about their presence. So keeping this in mind study is carried out to report the presence of such species at Abheda Biological Park and also investigated their medicinal uses.

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II. MATERIALS AND METHODS

Surveys were conducted during mid-august to mid-october 2022 at Abheda Biological Park, Kota as monsoon and post monsoon is the best time to study short living flowering plant diversity. Hand lens, smartphone camera, binocular, notepad and other field essentials were also used when needed. Plants were reported and images were captured carefully for identification purposes. For good quality images most preferred time is around 11 A.M. as most of flowers are fully open at this time. Standard literatures, resource persons, communication with local people and open sources were utilised for efficient study of plants.

III. STUDY AREA

Range Abheda was established in the year 2012 by adding 309 hectares of forest block Saktapura of Forest Division Kota. In this, Abheda Biological Park has been proposed in an area of 143 hectares. The work of the first phase has been completed at present. Abheda Biological Park is divided into three blocks namely Administrative Block, Main Block and Green belt.

The park has tremendous natural biodiversity including plants as well as animals (insects, butterflies etc.) along with planted and introduced species. Various plant species are contributing in ABP's biodiversity including herbs, shrubs, trees lianas etc. There are a number of tree species which are native while others are planted. About 30 thousand saplings have been planted in the park and about 70 thousand plants are naturally present. “Abheda mahal” and “Abheda talab”, are historical heritage places is situated near the park ,more than 40 migratory bird species can be seen here. The area is unexplored and expected to have magnificent species composition.

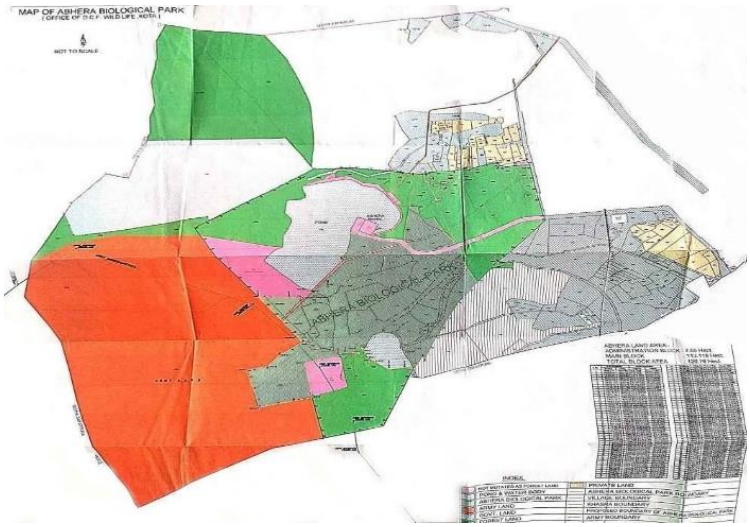

Figure 1: Map of Abheda Biological Park (Source: ABP Office)

Fig 2: Drone view of ABP

Source: **https://www.patrika.com/kota-news/abheda-biological-park-in-kota-7255702/**

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IV. RESULTS AND DISCUSSION

Investigation justified the presence of fourteen medicinally useful liana species of different habits like annual or perennial climber and creeper. Members from Cucurbitaceae (5), Vitaceae (1), Fabaceae (1), Sapindaceae (1), Manispermaceae (2), Apocynaceae (1), Convolvulaceae (2), Passifloraceae (1) are reported.

Reported species along with their Hindi\Sanskrit name, Family, habit and direct medicinal uses are listed in table 1.

Table 1: Medicinally useful liana species reported at Abheda Biological Park.

S. N.	Name of the Species	Hindi/Sanskrit Name	Family	Habit	Direct Uses
1	*Tricosanthes cucumerina* L.	Amritaphala	Cucurbitaceae	Annual climber	To treat Constipation, skin disease, remittent fever and burning sensation
2	*Ctenolepis cerosiformis*(Stocks) Naudin	Ankh Phutani\ Akshipidaka	Cucurbitaceae	Perennial climber with annual stem	Fruits are used in eye problems and diabetes
3	*Mukia maderaspatana* (L.) M. Roem.	Ahilekha/ vatsakshi	Cucurbitaceae	Annual climber	Leaves extract used in inflammation and swelling
4	*Cayratia trifolia*(L.) Domin	Amarchotya/atyam laparni	Vitaceae	Perennial climber	Root is used as an astringent,
5	*Rhynchosia minima* (L.) DC.	Kulta\Kulthi	Fabaceae	Climber	Used to relieve itch and swelling.
6	*Cardiospermum halicacabum* L.	kapalphodi	Sapindaceae	Perennial climber vine	Used in Skin diseases and joint pain
7	*Cocculus hirsutus*(L.) Diels	patalgarudi	Manispermaceae	Perennial creeper	Roots and leaves are used in native medicine and as a tonic.
8	*Cucumis melo var.agrestis* Naudin	kachari	Cucurbitaceae	Annual climber	Seed extract can be used to treat diseases caused by free radicals.
9	*Pergularia daemia* (Forssk.) Chiov.	kakajhangha	Apocynaceae	Perennial climber	Juice of leaves is used in asthma and rheumatic swellings
10	*Tinospora cordifolia* (Wild.) Miers	Swarnjivanti/ sadamastani	Manispermaceae	Perennial climber	Most commonly Used in Fever and as tonic
11	*Argyreia nervosa* (Burm. fil.) Bojer	Samudrasokh/ghav bel	Convolvulaceae	Perennial climber	Hallucinogenic plant also used for skin diseases roots are diuretic
12	*Merremia emerginata(*Burm. Fil.) Hall. fil.	Musakani	Convolvulaceae	Creeping herb	Leaves are diuretic
13	*Momordica balsamina* L.	Jangli -Karela	Cucurbitaceae	Annual climber	Used as ointment for chapped hands and fruit is used as poultice.
14	*Passiflora foetida* L.	Jhumka lata	Passifloraceae	Creeper	Used to treat digestive problems and skin diseases, leaf juice is used in headache

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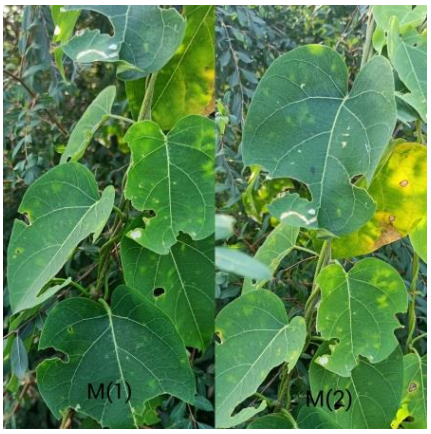

A(1),(2): *Argyreia nervosa* leaves, **B**: *Cardiospermum halicacabum* (1): leaves, (2): flower, **C:** *Cayratia trifolia* (1), (3): leaves, (2): fruits, (4): inflorescence and flower, **D**: *Ctenolepis cerosiformis* (1): stipule and unripe fruit, (2): leaf and ripped fruit, **E**: *Cucumis melo var. agrestis* (1): flower, (2): leaf, **F**: *Mukia maderaspatana* (1): leaf, (2): flower, (3): fruits, **G**:(1): *Passiflora foetida* flower, **H**: *Pergularia daemia*, (1): flower, (2): leaf, (3): fruits**, I:** (1): *Cocculus hirsutus* leaves, **J**: *Tricosanthes cucumerina*, (1): mature fruit, (2): immature fruit, (3): flower, **K**: *Rhynchosia minima*, (1), (3): leaves and fruit, (2): flower, **L** (1): *Merremia emerginata* leaves, **M**: *Tinospora cordifolia* (1), (2): leaves, **N**(1): *Momordica balsamina* leaf and fruit.

V. CONCLUSION

Presence of such important species indicates about diversity of wild resources of study area. Although all the reported species are deeply explored by researches for their medicinal potentials but only some direct uses are mentioned in this paper so that the knowledge about the local resources can be utilised by people.

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