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Biodiversity of Medicinal Plants: Exploration, Collection and Conservation from Chottanagpur Plateau, Jharkhand

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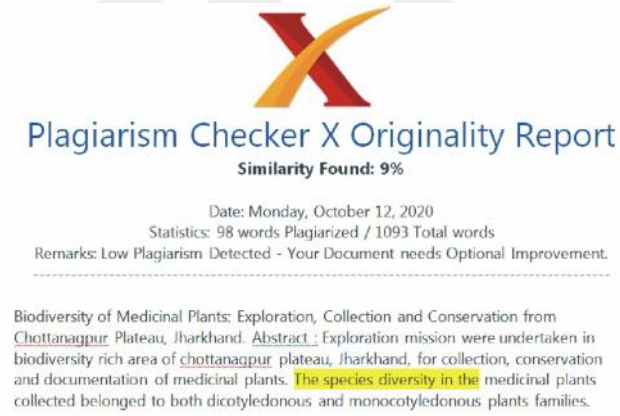
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Biodiversity of Medicinal Plants: Exploration, Collection and Conservation from Chottanagpur Plateau, Jharkhand. Abstract : Exploration mission were undertaken in biodiversity rich area of chottanagpur plateau, Jharkhand, for collection, conservation and documentation of medicinal plants. The species diversity in the medicinal plants collected belonged to both dicotyledonous and monocotyledonous plants families.

Abstract
Exploration mission were undertaken in biodiversity rich area of chottanagpur plateau, Jharkhand, for collection, conservation and documentation of medicinal plants. The species diversity in the medicinal plants collected belonged to both dicotyledonous and monocotyledonous plants families.

Keywords
Biodiversity, medicinal plants, exploration, conservation.

Introduction
The varied climate and edaphic conditions and habitats in India have immensely contributed in the evolution of great biological diversity. The Indian gene centre is immensly rich in the diversity of medicinal plants. Out of 15,000 sps. of flowering plants about 17% are considered to be of medicinal value. (Jain, 1968). The Chottanagpur plateau is very rich in terms of natural wealth, which is important in its great biological diversity.

The need for immediate collection and conservation of the medicinal plants wealth is necessary due to several developments at the global level especially after the conservation on Biological Diversity (CBD). Medicinal plants are recognized throughout the world as an important component of natural resources of the respective countries. On one hand, large areas of the country remain unexplored or under-explored, several selected habitats and niches need to be re-visited for intensive surveying and collection since the changes in the vegetation and cropping pattern

and biotic and abiotic pressures on the ecosystem have increased tremendously.

On other hand, as medicinal plants are collected from nature indiscriminately for commercial exploitation, it has resulted in depletion of natural populations. The other factors contributing to the erosion of the diversity are bringing more land under cultivation due to biotic pressure, commercialization of agriculture for increased production and productivity.

Considering all these factors, collection and conservation of endemic germplasm of medicinal plants, which have evolved and adopted over a long period, assumes great significance (Dalal et al. 1958; Kumar et al. 1997; Pushphangadan 1998).The global haste in patenting & commercialization of intellectual property rights has further necessitated hastening the systematic efforts for surveying, documentation and conservation of medicinal plants before they are removed from nature due to rapid habitat degradation, changing levels use patterns, which eventually lead to extinction of species.

Material and Methods

In the surveyed region, the average rainfall varies from 1200mm-1400mm, and the annual ^{0}C-23.8^{0}C. The altitude ranges between 1000 metres- 1350 metres. The Latitude has between 23^{0}N-85^{0}L.

The general strategy adapted for collection of medicinal plants germplasm was based in the theories suggested by Bothimen and Seberg (1995) and Huaman et al. (1995). The sampling, sampling site and intervals depend on the variation in the environmental and edaphic factors and the frequency of occurrence and importance of the species as most of the collection are vegetatively propagated and wild.

During collection, 10 exploration were undertaken, and medicinal plant germplasm was collected from Chottanagpur plateau which comprises the parts of Ranchi, Khunti, Hazaribag, Koderma, Barhi, Ramgarh.

Most of the species diversity in medicinal plants collected belongs to dicotyledons, monocotyledons, two gymnosperm and two pteridophyte plant families.

Result and Discussion

The occurrence and collection of different plant species from various parts of Chottanagpur Plateau, Jharkhand, was documented by many workers (Hemadari et al 1987). The medicinal and useful plant species under various threat categories from this region were documented.

Table 1: List of important plants used in traditional system of medicine collected during exploration undertaken in Chottanagpur Plateau.

Species	Family
Acorus calamus	Araceae
Aegle marmelos	Rutaceae
Aloe vera (L) Burn.F.	Liliaceae
Andrographis indica (Linn.)	Aristolochiaceae
Azadirachta indica A.Juss.	Meliaceae
Bacopa monnieri (Linn.)	Scrophulariaceae
Cassia fistula (Linn.)	Caesalpinaceae
Catharanthus roseus (Linn.)	Apocynaceae
Centella asiatica (Linn.)	Apiaceae
Chlorophytum arundinaceum	Liliaceae
Clitoria ternatea	Fabaceae

Species	Family
Coleus amboinicus	Lamiaceae
Gymnema sylvester R.Br.ex Roem.& Schult	Asclepiadaceae
Hemidesmus indicus (Linn.) R.Br.	Asclepiadaceae
Adathoda vasica (Linn.)	Acanthaceae
Mucuna pruriens(L) DC	Fabaceae
Ocimum tenniflorum (Linn.)	Lamiaceae
Phyllanthus amarus	Euphorbiaceae
Piper longum (Linn.)	Piperaceae
Plumbago zeylanica (Linn.)	Plumbagiinaceae
Rauvolfia serpentina (L) Benth.Ex Kurz.	Apocynaceae
Tinospora cordifolia (Wild)	Menispermaceae
Urginia indica (Roxb.) Kunth	Liliaceae
Vitex negundo L.	Verbenaceae
Withania somnifera (L) Dunal.	Solanaceae

(Source : Primary Data)

The plant species collected are useful in traditional and ethno botanical remedies for number of health disorders. The important ethnic group met during exploration and from whom some ethno/ botanical information were recorded are Munda, Santhali, Ho, Birhor, Oraon, Baiga and kermali. The Vernacular name and uses of a species vary from one tribal group to other and also from place to place. Some medicinal plants are reported to be useful in many ways other than traditional use that these plants are well- known for. The list of important medicinal plants used in traditional systems of medicine collected from Chottanagpur Plateau during the course of exploration undertaken is presented in Table 2.

Table 2 : Some important medicinal plants species collected from Chottanagpur Plateau.

Species	Estimated proportion of global presence in the region	IUCN status	Collection source
Acorus calomus Linn	<1%	EN	Collection were madefrom Ranchi, Khunti
Aegle marmeles Linn.	2-5%	VU	Collected in Hazaribag, Ranchi, Koderma
Baswellia ovalifoliolata	82-90%		Collected in Koderma, Barhi, Ramgarh Dist.
Chlorophytumarundinaceum	<1%	LC	Collected in Ranchi, Khunti, Gumla, Simdega
Costus speciosus	2-5%	NT	Collection made from Gumla, Ramgarh, Simdega, Ramgarh
Decalepis hamiltoniiWt. & Arn.	40-50%	EN	Collected from Ranchi, Khunti, Gumla, Simdega district
Cycas beddomei Dyer	70-78%	CR	Endemic collected from Ranchi district
Gymnema sylvestre R. Br.ex Roem. & Schult	2-5%	VU	Collected from Ranchi, Loherdaga, Gumla district

Species	Estimated proportion of global presence in the region	IUCN status	Collection source
Piper nigrum L.	<1%	EN	Collected from Hazaribag, Ranchi, Simdega, Khunti district
Plumbigo indica L.	<1%	EN	Sample collected fromthe districts of Koderma, Hazaribag, Ramgarh, Khunti
Rauvolfia serpentina (L)Benth. Ex Kurz	2-5%	CR	Collected from Hazaribag, Ranchi, Koderma, Barhi
Rubia cordifolia L.	<2%	VU	Made from Ranchi, Loherdaga, Gumla districts
Saraca asoca (Roxb)wild	<2%	EN	Collection made from Ranchi, Khunti, Hazaribag, Koderma,

(Source : Primary Data)

(EN: Endangered; CR : Critically endangered; NT : Near Threatened; LC: Least Concerned; VU: Vulnerable)

Conclusion

The past few decade witnessed the reemergence of herbal medicine in the treatment of several common diseases. The study plant used in traditional medicine in various cultures has yielded important drugs that are critical to modern medicine. Plants thus hold the key that will unlock the secrets of many other important potent drugs. We must use our wisdom to preserve and protect these precious plants resources for the present and future generations. Study on medicinal plant is an on/ going human endeavor. Research on natural, bioactive compounds and their isolation will continue to play pivotal role for centuries to come not only for their commercial exploitation but for better health of human beings.

Concerted efforts are also needed to ensure the in-situ conservation and sustained availability of medicinal plants in their natural habitats in the face of threats of increasing demand for a vastly increasing human population and extensive destruction of plant rich habitats. Many of them which have served the human populations for generations are in endangered states and needs our urgent attention.

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