ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 11 | November - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

BIODIVERSITY OF MEDICINAL PLANTS IN THE INDO-GANGETIC REGION OF BEGUSARAI WITH SPECIAL REFERENCE TO MEDICINAL VALUES

Botany

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ABSTRACT

Background: Biodiversity of medicinal plants refers to 'different' or 'unlike' taxa of plants of particular areas at a given time, and the number of biological types of a particular species constitutes the degree of diversity. Physiographically the Indian mainland may be divided into three distinct regions, the Himalaya, the Indo-Gangetic Plains and the Penninsular India or the Deccan region. India has a rich herbal heritage which has been described in Ayurveda. It has 16 different agro climatic zones. A large number of plants are available in different bio-geographical zones of India. In India, the rural population uses about 8000 herbal plants for medicine. India having a rich traditional knowledge of herbs in the Vedas and ancient days remains marginalized in the fields of research on plants and its medicinal use. **Aim:** To study the Biodiversity of Medicinal plants used to treat diseases in Begusarai District. **Methodology:** Medicinal plants were collected from all the eighteen block areas of Begusarai duringJune to August 2024 and identified using standard keys. The collected specimens were dried and mounted on herbarium sheet. The medicinal importance of collected plants was recorded through semi-structured interview from the local population of Begusarai district. **Results:** About twenty medicinal plants were surveyed and their medicinal values were recorded on the basis of semi-structured interviewed. **Conclusions:** People of Begusarai uses these indigenous medicinal plants to treat various diseases.

KEYWORDS

Biodiversity, Begusarai, Medicinal plants

INTRODUCTION

Biodiversity of medicinal plants refers to 'different' or 'unlike' taxa of plants of particular areas at a given time. The number of biological types of a particular species, therefore, constitutes the degree of diversity. However, biodiversity of plants cannot be appreciated merely on the basis of the number and types. For example, the genus Syzygium (Myrtaceae) has maximum number of species in Malaysia (more than 200 species) and only 45 species in India. Australian species show greater difference in morphology and hence represents greater diversity (Hyland, 1983).

The Indian region ($6^0$45' to 37^0 6'N and 69^0 7' to 97^0 25'E) has a land frontier of ca 15,200km and a coastline by Tibet, Nepal and Bhutan; in the northeast by Myanmar (formerly Burma); and in the east by Bangladesh. The southern Peninsula extends into the Indian Ocean with the Bay of Bengal lying to the southeast and the Arabian Sea to the southwest.

Physiographically the Indian mainland may be divided into three distinct regions, the Himalaya, the Indo-Gangetic Plains and the Penninsular India or the Deccan region. The Himalaya, occupying the extreme northern margins of India has a profound influence on the climate of the entire region. The climate of India is extremely varied; from the cold perpetually snow- clad mountain peaks in the north to some of the hottest places on earth in the Thar desert; from the near zero rainfall areas to the world's wettest areas in the northeast India. The climate of India is dominated by the Asiatic monsoon, a great wind system that seasonally reverses or changes the direction, resulting in three well marked seasons, particularly in northern India. From June to October the rains comes from southwest whereas between December and February the monsoon blows in the northeasterly direction.

Variations in temperature in different regions and distinct seasons are also considerable. The summer temperature rises well above 38^0C. The minimum winter season temperature in southern India rarely goes below 20^0C and northwards and mean winter temperature drops gradually to about 4^0C in the foothills pf the Himalayan mountains. The Indo-Gangetic plain stretches from eastern Rajasthan through Uttar Pradesh to Bihar and Bengal. The natural vegetation has been much replaced by cultivated plants. In the Tarai area (foothills), the natural vegetation comprises tall grasses of Themeda, Saccharum and Phargmites amidst which a few scattered trees exist.

India has a rich herbal heritage which has been described in Ayurveda. It has 16 different agro climatic zones. A large number of plants are available in different bio-geographical zones of India (Gharpure , 2011; Ravi kumar, 2011). According to WHO, 20,000 plant species are used for medicine out of 2, 50,000 all over the world. Of these eight hundred species are being used commercially. In India, the rural population uses about 8000 herbal plants for medicine. India having a rich traditional knowledge of herbs in the Vedas and ancient days remains marginalized in the fields of research on plants and its medicinal use. The country has a rich herbal heritage and about1, 22,600 hectares of land is under cultivation for medicinal plants.

Modern medicines use many ingredients which have side effect on human organs. This has opened up new vistas of research in herbal medicines. Herbal medicines have no side effect in comparison to the synthetic drugs (Cragg, et al., 1996: Haslam, 2003). Important drugs have been analyzed from plants of Indian origin.

Begusarai is the administrative headquarters of District Begusarai which is one of thirty eight Districts of Bihar. Its total area is 1918 sq kilometers, and its total population is 2970541 with literacy rate of 59.13 %. The District lies on the northern bank of River Ganga. The District lies in the North Bihar between the latitudes $25^0$15' and $25^0$45' North and longitudes $85^0$45' and $86^0$36' East. Jai Mangla Temple, Nau Lakha Temple and Kabar Lake are the historical places of District Begusarai. The District Begusarai has eighteen blocks viz. Begusarai, Barauni, Teghra, Matihani, Bachhwara, Mansurchak, Naokothi, Cheriabariyarpur, Sahebpur Kamal, Bakhari, Birpur, Dandari, Garhpura, Balia, Chhorahi, Khodawandpur, Bhagwanpur, and Samho Akha Kurha.

Several reputed medicinal plants constitute the natural component of Indian flora. These are: Dioscorea deltoidea, D. prazeri, Atropa acuminata, Acomintum heterophyllum, A.ferox, A. chasmanthum, Ephedra gerardiana, Nardostachys grandiflora, Rauvolfia serpentina, Saussurca sacra, S.lappa, Coptis teeta, Chlorophytum arundinaceum, Gentiana kurroo, Mesua ferrea, Swertia chirayita, Orchis latifolia, Urgenia indica, Colchicum luticum, Podophyllum hexandrum, Thymus serphyllum, Curculigo orchioides, Angelca glauca, Prangos pabularia, Artemesia martitima, Onosma bracteatum, Carum bulbocastannum, Valeriana jatamansi, Hydnocarpus kurzii, Holarrhcna antidysenterica, Ferula jaeschkeana, Salvia moorcroftiana, Phyllanthus fraternum, Withania somnifera, Andrographis paniculata, Crataeva nurvala, Berberis spp. However, there is successive losses in population numbers and also changes in pattern of distribution. Some of these medicinal plants are highly endangered.

MATERIALS AND METHODS

Medicinal plants were collected from all the eighteen block areas of Begusarai duringJune to August 2024 and identified using standard

keys viz. Hawthorne (1990); Arbon- nier (2004); Poorter et al., (2004), Hawthorne and Jongkind (2006). The collected specimens were dried and mounted on herbarium sheet of appropriate size (28 × 42 cm). The medicinal importance of collected plants was recorded through semi-structured interview from the local population of Begusarai district.

RESULTS AND DISCUSSION

The medicinal plants of Begusarai, families to which they belong and habit have been illustrated in Table-1. The major plants used in indigenous system of medicines have been presented in Table-2.

Table-1: Some common Medicinal Plants of Begusarai District

Medicinal Plants	Family	Habit
Acacia kamerunensis Gand.	Fabaceae	Liana
Acacia pentagona (Schum. & Thonn.) Hooker f.	Fabaceae	Liana
Afzelia bella Harms	Fabaceae	Tree
Albizia zygia (DC.) J.F. Macbr.	Fabaceae	Tree
Alstonia boonei De Wild.	Apocyanaceae	Tree
Blighia welwitschii (Hiern) Radlk	Sapindaceae	Tree
Capsicum sp.	Solanaceae	Herb
Ceiba pentandra (L.) Gaertn.	Bombacaceae	Tree
Chrysophyllum perpulchrum Mildbr. ex Hutch. & Dalziel	Sapotaceae	Tree
Combretum bipindense Engl. & Diels	Combretaceae	Tree
Ficus exasperata Vahl	Moraceae	shrub
Morinda lucida Benth.	Rubiaceae	Tree
Morus mesozygia Stapf	Moraceae	Tree
Panicum maximum Jacq.	Poaceae	Grass
Atropa belladonna L.	Solanaceae	Herb
Rauwolfia serpentine Benth. Ex Kurtz.	Apocyanaceae	Undershrub
Catheranthus roseus	Apocyanaceae	Herb
Smilax kraussiana Meisn.	Smilaceae	Liana
Terminalia superba Engl. & Diels	Combretaceae	Tree
Trichilia prieureana A.Juss.	Meliaceae	Tree

Table-2: Major plants used as indigenous medicines in Rural areas of Begusarai District

Species	Family	Used in Diseases
Calotropis gigantica	Asclipiadaceae	Liver, intestine spleen, piles
Adhotoda vasica	Acanthaceae	T.B., Cough, Hyperplasia
Clitoria ternatia (Aprajita)	Fabaceae	Swelling, Mental headache, Jaundice
Achyranthus Aspera	Amarantaceae	Appetite, Eyesight
Nelumbian speciosum	Nymphaeaceae	Skin diseases, piles
Cucumis utilissimus	Cucurbitaceae	Urinary disorder, Gall bladder, cholesterol
Nerium odorum	Apocyanaceae	Skin diseases, joint pain
Strychros Nuxvomica	Loganiaceae	Nervous system, Joint pain, Dysentery
Cucumis melo	Cucurbitaceae	Urinary disorder, kidney pain
Daucus Carota	Umbelliferae	Bile, nervous system, Asthma
Leucas cephalotus	Lemiaceae	Rheumatism, Cough, Anorexia
Calendula officinalis	Asteraceae	Asthma, Cough, tooth, Skin disease
Aloe vera	Liliaceae	Liver, spleen, Skin disease
Ricinus Communis	Euphorbiaceae	Heart pain, joint pain, piles
Mentha spp.	Lemiaceae	Urinary disorder, Worm killer
Eclipta alba	Asteraceae	Cough, Skin diseases, Liver, spleen
Moringa pterygosperma	Moringaceae	Anticancer, painkiller, ulcer, cough, liver, spleen, fever
Aconitum napellus	Ranunculaceae	Neuralgia and Rheumatism
Cassia anguistifolia	Caesalpinaceae	Laxative used in habitual constipation
Withania somnifera	Solanaceae	Diuretic, Rheumatism, applied to ulcer carbuncle

Studies on biodiversity of eighteen blocks of Begusarai are instrumental in the sustainability of forests since they play a major role in the conservation of medicinal plant species (Tilman, 1988; Ssegawa and Nkuutu, 2006). About twenty medicinal plants were surveyed and their medicinal values were recorded on the basis of semi-structured interviewed. Unfortunately, only a few studies (Sugandha et al., 2024) have been carried out in this regard. For this reason, the results of this study cannot be compared with a wide range of other similar studies in different blocks of Begusarai.

IV. CONCLUSIONS:

In the present study, twenty medicinal plants have been identified, and the medicinal importance of twenty local floras was recorded through semi-structured interview of particularly rural respondent of Begusarai.

Acknowledgement:

Authors are thankful to Dr. Baidyanath Kumar, Academic Director, life Science Research center, Patna for providing necessary suggestions.

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