ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

BIODIVERSITY AND IMPORTANCE OF SELECTED MEDICINAL HERB PLANTS IN NATIONAL PARK SATPURA

Mohan P. Tiwari[1], Dr. V.K Pandey[2], Dr. C.B.S. Dangi[3]
[1]*Research Scholar, Faculty of Science, RKDF University Bhopal*
[2]*Professor, Faculty of Science, RKDF University Bhopal*
[3]*Professor, Faculty of Science, RKDF University Bhopal*

ABSTRACT

Satpura National Park is quite rich in biodiversity. Satpura National Park has over 1300 species of plants which are trees, herbs and grasses. Satpura National Park environment stands out by its exquisite natural beauty and showcases the importance of tourism of this place. Satpura, basically meaning "Seven Folds", form Satpura national park is the first reserve forest of India. The finest teak, rock shelters, and paintings are found in Satpura national park. Rock shelters provide prehistoric evidence of human life in the jungles.Herbs Wild turmeric (Curcuma aromatica), Spiderwort (Tradescantia zebrina), Bitter apple (Citrullus colocynthis)

Wild turmeric has medicinal properties and is used in traditional medicine. Madhya Pradesh, located in central India, is known for its rich biodiversity and diverse ecosystems. This study explores the remarkable biodiversity of M.P., with a special focus on the Satpura region, highlighting its unique ecosystems, iconic species and the conservation efforts aimed at preserving this natural heritage.M.P. Geographical location and varied topography contribute to its extraordinary biodiversity.

The forest of M.P. and the Satpura region harbor a rich variety of plant species. The M.P. as the "Tiger state of the country" Satpura has a mixed & extremely rich biodiversity. In the current work, an effort has been made to offer a comprehensive account of the wild medicinal flora of M.P.s Satpura region, focusing on both medicinal and commercially significant plants. The current work was designed with specific aims and objectives. The compilation of traditional knowledge regarding medicinal plants used in healthcare by tribal communities is also a significant aspect of this study.

KEYWORDS: *Medicinal Herb Plants, Biodiversity, Satpura National Park, Wild medicinal flora, Importance of Herb Plants.*

INTRODUCTION

The phrase biodiversity refers to the diversity of biological life in a given location. Here, the ecosystem as a whole is taken into consideration, including both plants and animals. The phrase "biodiversity" refers to conservation biological variety. This phrase first appeared in the book"Limits to Growth" in the early 1980s. This phrase was used in relation to the emphasis on species diversity and richness. The importance of ecological and genetic diversity will be heavily emphasized. W.G. Rosen coined the term "biodiversity" in 1985 while organizing the "National Forum on Biodiversity." This phrase has since become commonly used.

Now a day, the idea of biodiversity is crucial when considering ecosystems and environmental research. Indeed, each organism has a close relationship with ecosystems, which are built on diversity. As a result of the interactions and dynamics of biodiversity, the system of earth's diversity grows more intricate and vibrant. The foundation of the environmental services that improve human well-being is biodiversity.

Both the natural and human-managed ecosystems of our planet require diversity. In recent times, numerous human choices influencing biodiversityhave consequences for the welfare of both individuals and communities. Both the natural and human-managed ecosystems of our planet requirediversity. In recent times, numerous human choices influencing biodiversityhave consequences for the welfare of both individuals and communities.

The term "biodiversity" encompasses the wide array of living organisms present in marine, terrestrial, and hydrologically-based ecosystems, as well as the intricate ecological systems they form a part of currently, this encompasses both intra-species and inter-species diversity across various ecosystems. It acknowledges that any biotic factor exhibits measurable biological, taxonomic, and genetic diversity, and that the fluctuations in these diversities over time and space are the fundamental characteristics of biodiversity. By understanding and exploring the relationship between ecological advancements and environmental functioning, it facilitates the provision of services to well-established ecosystems.

Biodiversity is naturally everywhere, ubiquitous and in every drop of the water bodies. Biodiversity comprises type of all ecosystems such as managed,unmanaged or ecosystem. Often only unmanaged habitats, including trees, natural preserves and national parks, are believed to have a major function of biodiversity. Owned environments – from plantations, croplands, farms, aquaculture areas, and urban parks and urban habitats. Now more than 24 percent of the Earth's terrestrial surface was grown only.The used more frequently today throughout the entire world. Due to a rise in global human population, industrialization, urbanization, and deforestation, the loss of biodiversity on a global scale that has been happening overtime in response to human activity has not ceased. There is evidence that the extinction of species could harm human society. There are many today that have detrimental economic effects.Intergovernmental Forum for Science Policy on Biodiversity and Ecosystem Services, a global network, recently devised a new IPBES process. All UN

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

Parties have access to this plate configuration. It is an independent intergovernmental organization that focuses on providing logical information and specialist assistance on the state of biodiversity in order to understand global concerns about biodiversity and environment protection and utilization. The health of the earth is in doubt without the inventive power of biodiversity. Each species must carry out a duty and work with us in the present to protect the environment.

"Biodiversity is the appearance in an ecosystem of several different plant and animal species". According to Gastor (1996) "The diversity of all types of life, from genes to organisms to a wide ranging ecosystem is also known as biodiversity. Due to the fact that global biodiversity is disappearing at an alarmingly fast rate in an ecological context, the term biodiversity is being Satpura Tiger Reserve (STR) also known as Satpura National Park is located in Narmadapuram District of M.P. in India. The National Park's closed town is Pachmarhi, and the closest train station is Pipariya, which is located 55 kilometers away. Satpura National Park is rich in biodiversity. Satpura National Park is a natural wildlife habitat situated in the heart of the Satpura range in the Hoshangabad district of M.P. The area represents the central Indian Highlands and the forests are economically amongst deciduous types.

The National Park and portions of the Wildlife sanctuaries represent ecological benchmarks, as they deciduous mixed forests represented are among the finest and diverse within this type. There are at least 14 regionally important rivers in the Satpura drain into the Narmada and the southern into the Tapi. These with their tributaries sustain life- human, SCA and local economy depends on these in context of catchment's capabilities and soil conservation. Denwa and Tawa rivers is the arbiter of regional economy in the Hoshangabad district within the command and Soyabean crops are raised here that have changed the face of economy in this tract outside the Satpura.

Since the protected areas are among the least disturbed tract, they are a repository of sp ecological processes and functions; diverse social systems, traditional lifestyles and wisdom. Opportunity abounds here. Conservation education and nature interpretation opportunities in Satpura are wide-ranging equally diverse target groups. The significant aspect is the likely emerging support for conservation of biological diversity.

The rich and diverse tribal societies, their traditions and customs are a repository of nature religious beliefs revolve around wild plants, animals, wilderness and living in harmony with nature. More than 10000 years old hold the secrets of ancient civilizations. There are old forts and other religious pilgrimage that attract pilgrims from various parts of the country. The landscape of Satpura National Park and Pachmarhi is unique in terms of biological diversity, thus of ranging from dry thorn forests to tropical dry deciduous.

The Satpuras and Vindhyas are the two prominent mountain ranges of peninsular India. They gradually before merging with western India. The two major rivers of Central India, Narmada and Tapti, flow along in the Satpura and Vindhyan tract.

By nature, the Vindhyas have a gentle gradient towards north whereas towards south they form a steep scar Narmada valley. The Satpuras have steep slopes that drop into the Narmada valley to the south and the part.The Vindhyan Mountains form the watershed of the river systems draining into the Indo-Ganga plains and west, the tributary river Son being an exception.

The compilation of traditional knowledge regarding medicinal plants used in healthcare by tribal communities is also a significant aspect of this study. The gathered data will be beneficial to taxonomist, educators and students in fields such as botany, pharmacy and anthropology, facilitating further exploration for the development of novel allopathic and Ayurvedic drugs. The practical nature of this work renders it valuable to academic, industry professionals and the general public alike. Therefore and effort has been made to decipher "The wild medicinal flora of M.P." throughout the current inquiry in India, the Rigveda written between 4500 and 1600 B.C., provides early accounts of medicinal plant usage. Ancient herbalism books like the Susruta Samhita & Charak Samhita offer extensive insights into Indian materia medica. Medicinal plants are the "Backbone" of western medicine, implying that in less industrialized nations more than 3.3 billion people routinely use medicinal plants.

STUDY SITE AND METHODOLOGY

Satpura National Park is located in the central Indian state of Madhya Pradesh. It is known for its rich biodiversity and serves as an important study site for researchers studying biodiversity conservation. The park is situated in the Satpura Range of hills, which gives it its name.

The park is home to a wide variety of flora and fauna, making it an excellent site for biodiversity studies. Researchers and conservationists studying biodiversity in Satpura National Park focus on various aspects, such as monitoring animal populations, studying ecological relationships, assessing habitat health, and understanding the impacts of human activities on the park's biodiversity. These studies help in formulating conservation strategies and management plans to ensure the long-term survival of the diverse flora and fauna found in the park.

Satpura National Park offers an ideal setting for field research and exploration due to its pristine wilderness and relatively undisturbed ecosystems. Scientists, wildlife enthusiasts, and students visit the park to conduct studies, surveys, and observations. The data collected from such studies contribute to the understanding of biodiversity patterns, ecological processes, and conservation requirements in the region.

The area studied and the positions of the survey stations were explicitly defined by the survey design. Surveys conducted to assist local flora surveys must follow approved scientific procedures. They have the ability to find regionally frequent species as well as cryptic and seasonal species. In order to effectively sample vegetation boundaries, floristic variety, and the potential presence of vulnerable species, surveys should typically combine walking transects and plot-based surveys. This yields the most information for a given input. Waypoints have been logged using DNR Garmin software (Instrument)

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

from the GPS. All species were observed, the boundaries between various plant communities, and the order of the vegetation were randomly recorded throughout the walk, and it was possible to identify all major habitat types on the property (by evaluating top-notch aerial images and/or conducting a site reconnaissance). Other than focusing on related habitat types, choose a transect that covers all recognized habitat types. For a minimum of 5 minutes, walk a transect and halt at certain intervals (minimum 100 meters; flexibility has been required for larger locations).



Figure - Study Site Map (Satpura National Park)

A survey has been conducted. Throughout various sessions, frequent fieldwork has been conducted at various locations with a variety of dense, robust plants in the isolated Satpura region of MP. The plants in a strip plot that was 100 meters long and 50 meters broad were identified at each survey waypoint, which were randomly selected along the locations.

Methods of Participatory Rural Appraisal (PRA):- Since local communities do their own analysis using these techniques, they are better able to explain their results and formulate action plans based on them. Participatory methods can be started by simply talking to the local communities and engaging in dialogue. It is crucial for an outside organization or individual to create a friendly environment and model friendly behaviour. Without appropriate participatory techniques, the ways and means of expression and analysis would be restricted in this type of engagement. These techniques also offer a variety of options for groups and people within communities to participate. **(Kumar, *et.al*. 2004).**

Traditional medicinal practitioner (TMP):-Age-old and tribal medicine men actively engaged in ethno-medicinal practices. Most of them belong to families, which still have a strong connection with traditional agriculture and medicinal practices for their livelihood. Data were also collected through interviews and queries (**Jain, *et.al*.2011**).

Collection and Herbarium (Specimen) preparation of plants sample

1. The plants are listed in alphabetical order along with information about its family, local name, habit, parts used, applications for various diseases and disorders, as well as the frequency and route of administration. Plant specimens that have been collected have been grouped into families using the Bentham and Hooker Classification system. Nomenclature has been done using Cope's method from 1982, Kumar and Subramanian's method from 1986, and Bennett's method from 1987. For further research, collected plants have been preserved (**Arthur O. Tucker, 2005: "Method - Herbarium preparation"**).
2. **Riparian Zones:** The park is intersected by several rivers and streams, creating riparian habitats. These areas are characterized by different types of aquatic vegetation, including water lilies, lotus, reeds, and grasses. Studying the plant diversity in riparian zones can provide insights into adaptations to waterlogged conditions, plant-animal interactions, and the ecological importance of these habitats
3. **Grasslands:** Satpura National Park features open grassland areas that support a unique assemblage of plant species adapted to these habitats. In this study grassland ecology study the composition, diversity, and distribution patterns of grasses and associated plant species, as well as the impact of grazing and fire on grassland dynamics

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

4. **Sacred Groves:** Satpura National Park is home to sacred groves or forest patches that are considered sacred by local communities. These groves often harbor unique plant species and are protected due to cultural beliefs. In this study the plant diversity and conservation significance of these sacred groves, including the role of traditional ecological knowledge in their management.

Identification Method

Critical inspections were conducted on each specimen. Plant specimen identification has been facilitated by the dissection of floral components. The real specimens that were previously deposited in the herbarium have also been compared to the recognized specimens in order to validate their identification. The Herbarium of Botany Department now houses all of the herbarium specimens. The simultaneous identification of plant specimens was followed by the creation of an inventory of the specimens that had been collected.

All the specimens collected and recorded were identified using various references, including

- "Flora of Madhya Pradesh –I" (Verma, Balakrishnan & Dixit, 1993),
- "Flora of Madhya Pradesh –II" (Mudgal, Khanna & Hajra, 1997),
- "Flora of Madhya Pradesh –III" (Singh, Khanna, Mudgal & Dixit, 2001),
- "Supplement to the Flora of Madhya Pradesh" (Khanna, Anand Kumar, Dixit & Singh),
- "Flora of Kanha Tiger Reserve" (Pandey & Namdeo), and
- "Flora of Dhule and Nandurbar District (Maharashtra)" (Patil, Bishen, Singh & Singh, 2003).

The herbarium of the collected plant specimens was prepared following the guidelines outlined in **Jain & Rao (1984).** The taxonomic classification followed Bentham and Hooker's system. The systematic account of each species includes the family, botanical name, local names, brief description, species enumeration, field notes (including habit, habitat, associations, distribution, locality, etc.), flowering and fruiting period, as well as ethnobotanical and ethnomedicinal detail.

BIOLOGICAL SPECTRUM OF SELECTED HERB PLANTS AND THEIR MEDICINAL IMPORTANCE

The list of plant species that can be found in the vegetation of the Satpura forest. Tropical dry deciduous mixed forest is the predominant type of vegetation in the area that has been seen.

1. *Asparagus racemosus*

Classification

Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Clade:Monocots
Order:Asparagales
Family:Asparagaceae
Subfamily:Asparagoideae
Genus:Asparagus
Species: racemosus

Local Name – Satavar, shatavari, or shatamull, shatawari
Habit – climber
Habitat -Forests, thickets, shady and moist places
Flowering class: Monocot

Characters- A small climber plant about 1- 3 m tall. It is an extensively scandent spinous, much branched under-shrub. Roots are numerous and fusiform, succulent and tuberous with a diameter of about 0.5 to 1.5 cm and it arises as a cluster from the basal end of the stem. The stem is woody, sparsely covered with recurve spines. Leaves are reduced to small scales called as cladode which are in tufts of 2-6 in a node, finely acuminate. Inflorescence is a branched raceme. Flowers are white, fragrant and solitary. Fruits are red berries globose or obscurely 3-lobed. Seeds are black in colour and hard with brittle testa.
Flowering/Fruiting- April to June.

Distribution- Common in the plains from the coast, in scrub jungle, hill slopes, forest borders, fallow lands, upto 1400m. Throughout the tropics.
Locality- Satpura region

Medicinal Properties- Considered the most important herb in Ayurvedic medicine for women. Used internally for infertility, loss of libido, threatened miscarriage, menopausal problems etc. It both nourishes and cleanses the blood and the female reproductive organs. It is also useful for hyperacidity, stomach ulcers, dysentery and bronchial infections. Shatavari is used in Indian traditional medicine. Despite its long history of use in Ayurveda, no high-quality clinical evidence exists to support using shatavari as a therapy for any disease. Studies of its effects on lactation have shown mixed results. Its safety has not been well-studied, with two small trials finding no adverse effects in mothers or their babies. Constituents of shatavari include steroidal saponins, mucilage, and alkaloids.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188



Figure :1. ***Asparagus racemosus***

2. ***Rauvolfia serpentina (L.) Benth. ex-Kurz***

Classification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Clade:Eudicots
Clade:Asterids
Order:Gentianales
Family:Apocynaceae
Genus:Rauvolfia
Species:serpentina
Local Name – Sarpgandha
Habit – Herb
Habitat- Hilly areas
Flowering class: Dicot

Characters- It is an erect, perennial herb with irregular tubular roots.Leaves 7.0-8.0cm x 4.0-6.5 cm elliptic- lanceolate or oblanceolate or obovate. Flowers in many flowered cyme, bracts minute, lanceolate, calyx lobes lanceolate, persistent. Corolla tube pinkish, swollen at mid part, lobe inflated, pinkish white. Fruits drup, obliquely ovoid, purplished-black when ripe. Seed one or two in each fruit.

Flowering/Fruiting- April-October
Distribution- Moist deciduous forests, also in the plains
Locality- Satpura region

Medicinal Properties- The roots are bitter, acrid, heating, pungent; anthelmintic. The alkaloids in the roots effective remedy against hypertension, useful in curing insomnia, psychosis, epilepsy, anorexia, diseases of nervous system, worms and snake bites. The juice of the leaves is instilled in to the eyes by the natives of India as remedy for the removal of opacities of the corona. Traditionally, the N.E. people roots used as abortifacient.



Figure: 2: ***Rauvolfia serpentina*** (L.) Benth. ex-Kurz

3.Evolvulus alsinoides (L.)

Classification
Kingdom:Plantae
Clade:Tracheophytes
Clade:Angiosperms
Order:Solanales
Family:Convolvulaceae
Genus:Evolvulus
Species:alsinoides
Local Name – Vishnu Krantha
Habit – Herb

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

Habitat- Sandy soil, dry slopes, cultivated areas, grasslands, thickets, roadsides
Flowering class - Dicot

Characters- It is an herbaceous plant, annual or perennial with numerous prostrate or ascending stems, slender, with oppressed and spreading hairs. The leaves, petiolate or subsessile, are 0.7 to 2.5 cm long and 5 to 10 mm long. The flowers are isolated or grouped in pauciflorous cymes, borne by filiform peduncles, 2.5 to 3.5 cm long. The calyx is formed by villous, lanceolate sepals 3 to 4 mm long. The rounded corolla, with pentameric symmetry, blue in color, rarely white, is 7 to 10 mm in diameter. The stamens, with filiform filaments, are united at the base of the corolla tube. The ovary, glabrous, is surmounted by two free styles. The fruit is a globular capsule, with four valves, generally containing four seeds that are black and smooth.
Flowering/Fruiting- Throughout the year

Distribution- Common along foothills, lower slopes, scrub jungles even in poor soils, on bare exposed slopes. More abundant in the hills up to1500m.
Tropical and subtropical regions of the world.
Locality- Satpura region
Medicinal properties - Ayurveda, Folk medicine, Sowa-Rigpa, Unani, Siddha, Traditional Chinese medicine, Indigenous Information: Birds take the young stem for the construction of their nests



Figure: 3: ***Evolvulus alsinoides (L.)***

4.Nymphaea nouchali Burm. f.

Classification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Order:Nymphaeales
Family:Nymphaeaceae
Genus:Nymphaea
Species:nouchali
Local Name – Neelkamal
Habit – Aquatic herb
Habitat- Lakes and ponds of Subtropical to tropical regions.
Flowering class - Dicot

Characters - Aquatic perennial herbs, laticiferous, rooted. Rhizomes erect or creeping, stoloniferous, unbranched. Leaves polymorphic, suborbicular to cordate, about 10-25 x 9-22 cm across, base deeply hastate or cordate, margin, apex obtuse to retuse, lowest pair of veins straight and divergently produced and basal lobes, basal lobes unequal, usually floating or submerged, membranous when young and coriaceous, glabrous above and glaucous beneath, prominently veined when mature beneath, long petiolate, buds obtuse at the apex. Flowers bisexual, usually solitary and floating, white, light purple, blue, purplish red, fragrant, about 4-15 cm across, with long peduncles, receptacle circular or cylindrical, sepals 4, free, ovate- oblong, apex obtuse, obscurely veined, persistant in fruit, about 3-9 x 0.7-2.5 cm across, petals about 8-16, lanceolate to oblong-lanceolate, base attenuate, apex obtusely cucullate, white, outer ones about the length of sepals or slightly longer, hypogynous to perigynous. Stamens 25-40, distributed up to summit of ovary, about 1.5-3.5 cm across, filaments of innermost stamens with distal sterile appendages, longer than anthers, anthers partially sunken, carpels completely united, ovary superior, about 8- 16 loculate, stigma flat with a hemispheric central projection, yellow and stigmatic appendages incurved, triangular-ovate, about 3-4 mm long, sulcate inside. Fruit berry about 1.5-4 cm across. Seeds ellipsoid, smooth, about 3-4 x 2 mm.
Flowering/Fruiting - Throughout the year **Distribution-** Ponds and pools in plains **Locality**- Satpura region

Medicinal properties - N. nouchali is used as an ornamental plant because of its spectacular flowers, and is most commonly used for the traditional and cultural festivals in Sri Lanka. It is also popular as an aquarium plant under the name "dwarf lily" or "dwarf red lily". Sometimes, it is grown for its flowers, while other aquarists prefer to trim the lily pads, and just have the underwater foliage.N. nouchali is considered a medicinal plant in Indian Ayurvedic medicine under the name ambal; it was mainly used to treat indigestion. hizome and peduncles are eaten as vegetable. Fried seeds are edible. Used in ayurvedic and folk medicine. Laboratory studies show, it has good antibacterial potential.It is used as an ornamental plant because

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

of its spectacular flowers. Much used in Ayurvedic preparations.



Figure: 4: ***Nymphaea nouchali Burm. f.***

5.*Vernonia cinerea*

Classification

Kingdom: Plantae
Clade: Tracheophytes
Clade:Angiosperms
Order:Asterales
Family:Asteraceae
Genus:Cyanthillium
Species:cinereum

Local Name – Sahadevi
Habit – Herb
Habitat - Deciduous forests, also in the plains
Flowering class – Dicot

Characters - Cyanthillium cinereum (also known as little ironweed and poovamkurunnal or poovamkurunnila in Malayalam, and monara kudumbiya in Sinhalese) is a species of perennial plants in the sunflower family. Cyanthillium cinereum is an annual herb up to 120 cm (4 feet) tall. It produces flat-topped arrays of numerous flower heads, each with pinkish or purplish disc florets but no ray florets. The species can be confused with Emilia sonchifolia, but the flower bracts of the latter are much longer and vase-shaped.
Flowering/Fruiting - Throughout the year **Distribution -** Deciduous forests, also in the plains **Locality-** Satpura region

Medicinal properties - Cyanthillium cinereum has been used for smoking cessation in Thailand and other countries, and as relief for the common cold. It used to be called Vernonia cinerea, but apparently there was a taxonomic update, sometime prior to early 2014.



Figure: 5: ***Vernonia cinerea***

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

6. *Abelmoschus crinitus Wall.*

Clssification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Order:Malvales
Family:Malvaceae
Genus:Abelmoschus
Species:crinitus
Local Name – Kamlya, Hairy Okra, Pahadi-Bhendis
Habit –Herb
Habitat - Deciduous forests and wastelands
Flowering class – Dicot

Characters -Herbs, about 0.5-1.5 m tall. Roots somewhat tuber-like tap root. Stems, branches with simple shiny prickly or stellate hairs when young, later becoming glabrescent. Leaves alternate, palmately lobed or palmiparted, deeply cordate, about 5-15 cm across, base cordate, 5-7 nerved, usually lobes apex acute or acuminate, about 3-7, ovate-triangular, margins crenate-serrate, rarely entire, hirsute with stiff simple hairs both above and beneath, becoming glabrescent later, coriaceous, petiole slender, hirsute with simple hairs, about 0.5-12 cm long, stipules linear-filiform, about 1-3 cm long. Inflorescence axillary or terminal, solitary. Flowers bisexual, pedicel slender, hirsute, inarticulate, epicalyx 4-5, free, base rarely connate, segments linear, hairy, about 10-16 x 2-5 mm across, calyx 5 lobed, base connate, valvate, membranous, densely tomentose or puberulous, about 3 cm long, corolla large, 5, yellow and centre with dark purple, obovate-obovoid, glabrous, about 2 x 5 cm across. Stamens indefinite, monadelphous, forming an epipetalous staminal tube united with corolla, filament short, introrse, anthers basifixed, throughout. Ovary superior, 5 locular, ovules many, style 1, stigma discoid. Fruit capsule, ovoid-globose, about 2-4 x 2-3 cm across, apex beaked or acuminate, dehiscent with longitudinal slits towards the base, densely hirsute with simple hairs. Seed many, reniform or globose, rusty tomentose, rarely glabrous, black.
Flowering/Fruiting- July-December
Distribution - Exotic, Tropical and subtropical evergreen forests.
Locality- Satpura region

Medicinal properties - system of medicines used in Folk medicine



Figure:6: *Abelmoschus crinitus* Wall.

7.*Andrographis paniculata (Burm. fil.) Nees*

Classification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Order:Lamiales
Family:Acanthaceae
Genus:Andrographis
Species:paniculata

Local Name – Kalmegh
Habit –Herb
Habitat - Wet places
Flowering class - Dicot

Characters - The plant grows as an erect herb to a height of 30–110cm (12–43 in) in moist, shady places. The slender stem is dark green, square in cross-section with longitudinal furrows and wings along the angles. The lance-shaped leaves have hairless blades measuring up to 8 cm (3.1 in) long by 2.5 cm (0.98 in). The small flowers are pink, solitary, arranged in lax spreading racemes or panicles. The fruit is a capsule around 2 cm (0.79 in) long and a few millimeters wide. It contains many yellow-brown seeds. The seeds are subquadrate, rugose and glabrous. The flowering time is September to December.

Flowering/Fruiting- March-December
Distribution- Scrub jungles, also in the plains, Found in fallows and homesteads from plains to 400m. Common.
Locality- Satpura region

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

Medicinal properties - Indigenous Information: Leaves are used as snake bite medicine. The leaf extract taken orally to cure stomach ache.The plant extract has many medicinal applications.



Figure:7:*Andrographis paniculata* (Burm. fil.) Nees

8.Chlorophytum arundinaceum Baker

Classification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Clade:Monocots
Order:Asparagales
Family:Asparagaceae
Subfamily:Agavoideae
Genus:Chlorophytum
Species:borivilianum
Local Name – Chironji
Habit –Herb
Habitat–Waste places, Moist deciduous forests
Flowering class - Monocot

Characters - It is a perennial herb with a short hard root stocks; roots often thick, fleshy and cylindrical.The leaves are 15-35 cm long and oblanceolate.The plant is considered endangered species in the country.Inflorescence is dense; flowers are arranged in raceme and shortly branched.Flowers white, anthers as long as or longer than the filaments and yellow in colour.Bracts are usually long and over topping the shortly pedicelled buds.Cells of the orbicular capsule are 3-4 seeded and black coloure

Flowering/Fruiting - September-June

Distribution - Plant is distributed sparsely over Eastern India, Rare

Locality- Satpura region

Medicinal properties - Tubers having medicinal value are used as general tonic, containing the steroid sapogenine (1-2%), protein (10-20%) and calcium.Tubers are fat free and they have high aphrodisiac property.It is also useful in diseases like renal calculus, leucorrhoea and diabetes.



Figure:8: *Chlorophytum arundinaceum Baker*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

9. *Crotalaria albida Roth*
Classification
Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade:Eudicots
Order:Fabales
Family:Fabaceae
Subfamily: Faboideae
Tribe:Crotalarieae
Genus:*Crotalaria*
Speceis: *albida Roth*
Local Name – Narrowleaf Rattlepod
Habit –Herb
Habitat – Grasslands, Open areas, cultivated
Flowering class - Dicot

Characters- Diffuse herbs; branches radiating from a perennial stout root stock. Leaves to 1.5 x 0.5 cm, oblanceolate, obtuse, hairy below. Racemes to 6 cm long, terminal; bracts and bracteoles minute. Flowers 10 mm long, yellow; calyx 9 mm long; lobes unequal; standard 8 mm across, orbicular, hairy on back; wings 8 x 3 mm, rugose; keel glabrous. Pods 9 x 3 mm, obovate, glabrous; seeds few.
Flowering/Fruiting- December-January
Distribution- Western Ghats & Eastern Ghats, Dry Deciduous to Evergreen Forests
Locality- Satpura region

Medicinal Properties - Several species of Crotalaria are currently being cultivated for suitable traits that are not directly related to human consumption. Crotalaria juncea, also known as sunn hemp, is currently grown throughout the tropics and subtropics as a source of green manure, lightened fiber, and fodder. Crotalaria juncea is also being considered as a potential source of cellulosic ethanol for biofuel.



Figure:9: Crotalaria albida Roth

10. *Curcuma amada Roxb.*
Classification
Kingdom: Plantae
Clade:Tracheophytes
Clade:Angiosperms
Clade:Monocots
Order:Zingiberales
Family:Zingiberaceae
Genus: *Curcuma*
Species:*amada*
Local Name – Am haladhi, Mango -Ginger
Habit –Herb
Habitat – Cosmopolitian
Flowering class: Monocot

Characters - A perennial herb with creeping tuberous rhizome, scented like mangoo when bruished. Leafy aerial portion dies on advent of winter during January to March, Flower occurs in a spike, showy, yellowish blue in colour. Fruit is capsule. Mostly found in the Western Assam and Central Assam, sometimes cultivated.
Flowering/Fruiting- December-January
Distribution- Western Ghats & Eastern Ghats, Dry Deciduous to Evergreen Forests
Locality- Satpura region

Medicinal properties - Rhizome is used to prepare salad or chutney or eaten raw. It is also used as medicinal for its zeodary content.Ayurveda, Folk medicine, Unani, Siddha.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188



Figure:10: Curcuma amada Roxb.

RESULTS AND DISCUSSION

The Satpura Forest is a significant ecological hotspot in India due to its reputation for having a high biodiversity. Many endemic and threatened animal and plant species, as well as a wide variety of plants, are supported by it. One of the most important protected places in the area is the Satpura National Park, which issituated in Madhya Pradesh. It provides chances for animal safaris, hiking, and Denwa River boat safaris. The Pench National Park, the Bori Wildlife Sanctuary, and the Melghat Tiger Reserve are a few further protected sitesin the Satpura Forest.

The monsoon typically arrives in mid-June and persists until September, with rainfall commencing in early June and lasting until September, occasionally extending into early October. Throughout the monsoon season, the Satpura region encounters cooler temperatures in contrast to the preceding summer months. The presence of cloudy skies and precipitation contributes to maintaining relatively pleasant temperatures. However, humidity levels tend to be elevated during this period.

About 70% of people in urban and rural regions benefit from the Unani system of medicine, despite the fact that it is practiced by allopathic physicians and is supported by very advanced facilities the government of India. In indigenous groups, home remedies have been used for millennia. The practitioners of this approach may easily locate the necessary therapeutic plants in the forests, mountains, valleys, gardens, and agricultural areas. This system is fairly priced and quite in tune with nature. In the Indian subcontinent, these traditional systems are referred to as "Unani" or "Ayurvedic" systems.

The current research offers valuable insights into the medicinal properties of 25 plant species belonging to 10 genera from 10 families. Among thetotal medicinal plants identified in this study, all 25 plant species are found to be utilized for their therapeutic purposes. These findings are based on observed information, indicating the efficacy of several plant species in treating diverse disorders.

Counting the Number of Wild Medicinal Plants (Enumeration of WildMedicinal Plants)

Herbal medicine, also referred to as herbalism or botanical medicine, is the use of plants for their therapeutic or medicinal characteristics. A traditional definition of a herb is a plant part valued for its medicinal, culinary, or aromatic qualities. There are numerous compounds that herb plants make and have that help treat diseases and problems.

Herbal medicine, being the oldest form of healthcare known to humanity, has been embraced by diverse cultures throughout history. It played a vital role in the evolution of modern civilization. Early humans recognized and valued the vast array of plants that surrounded them, as these plants provided sustenance, clothing, shelter, and remedies. Remarkably, even in the 20th century, a significant portion of the pharmaceuticals employed in scientific medicine originated from the traditional herbal wisdom of indigenous communities. Presently, numerous drugs widely used in modern medicine are derived from plants, with approximately 25 percent of prescription drugs in the United States containing active ingredients sourced from plant material. Some drugs are formulated from plant extracts, while others are synthesized to replicate natural compounds found in plants.

Fundamental botanical research revolves around floristic (listing of all plants of a given area) and monographic (study of a plant group for its entire range of distribution) works. The author takes immense pleasure in putting on record his experience and observations while he carried out taxonomical work in the Satpura Region.

A total of 25 species of Angiosperms belonging to 10 genera and 10 families have been collected and described from North forest division and south forest division of Satpura region (M.P.)

Among the 10 families recorded from the study sites **Fabaceae (10 species)**, **Malvaceae(02 species)**, **Apocynaceae (02 species), Nymphaeaceae (01 species)**, **Asparagaceae (02 species)**, **Zingiberaceae (01 species)**, **Asteraceae (04 species**), **Convolvulaceae (01 species),** and **Acanthaceae (02 species)**.

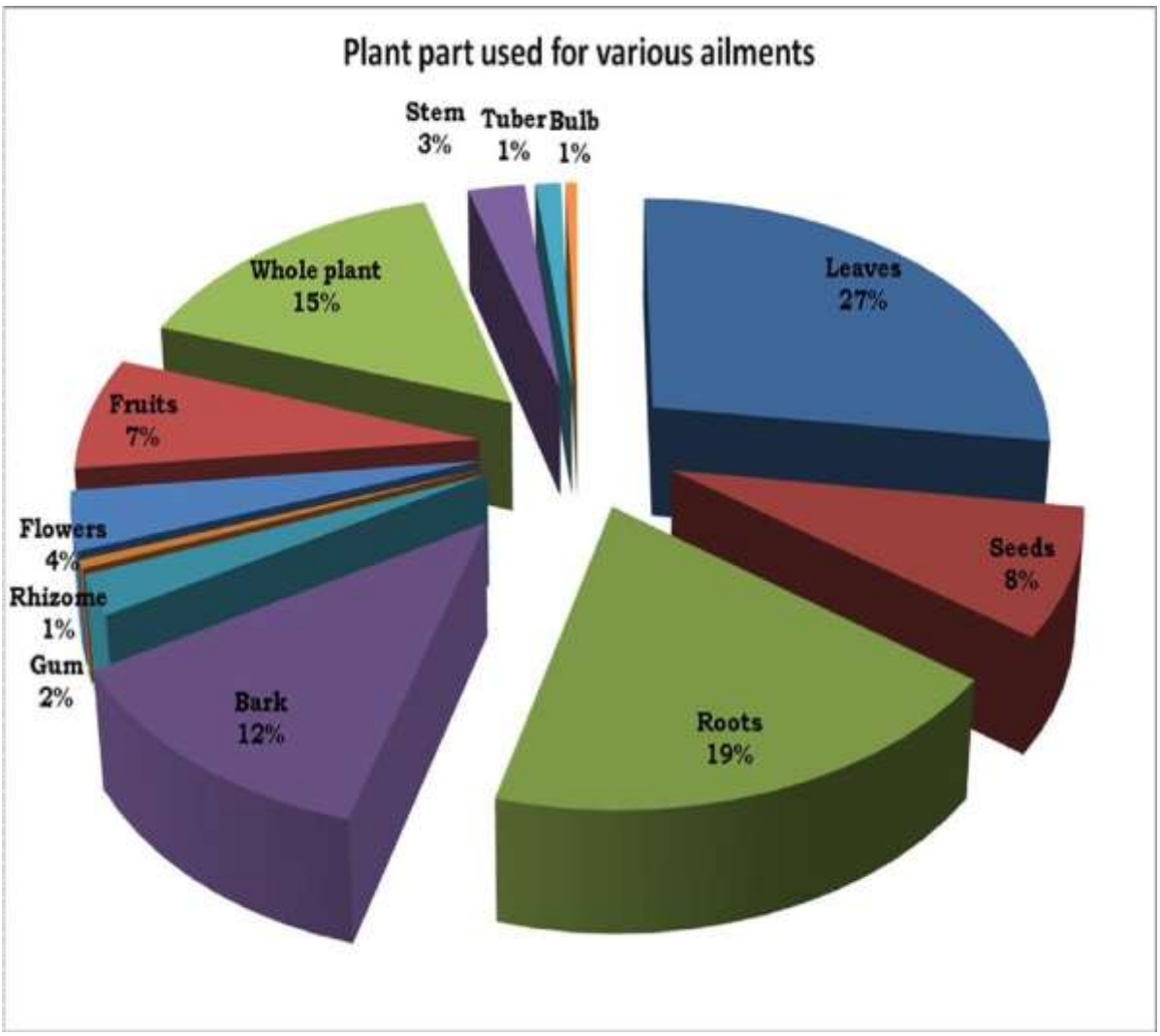
ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

The main aim of this study was to collect the detailed information about wild medicinal flora and the lore of local people and utilization of such plants in treating various ailments. The survey showed that herbs (29%) were the most used plants followed by trees (41%), shrubs (16%) and climbers (14%), each was used by the tribals . Data presented onthe basis of plant parts used by the local people, included leaves (27%), represented the most usable part, followed by roots (19%), whole plant (15%), Bark (12%), seeds (8%), fruits (7%), flowers (4%), stems (3%) gum (2%), whereas only 1% was represented by rhizome, tubers and bulb each.

SPECIES OF ANGIOSPERMS REPORTED FROM THE STUDY SITE

Asparagus racemosus, Rauvolfia serpentina (L.) Benth. ex Kurz,Evolvulus alsinoides (L.) , Nymphaea nouchali Burm. f.,Vernonia cinerea,. Abelmoschus crinitus Wall.,Andrographis paniculata (Burm. fil.) Nees, Chlorophytum arundinaceum Baker, Crotalaria albida Roth, Curcuma amada Roxb

Graph : Plant parts used in treatment of various diseases



Modern logical herbalism refers to efforts to understand natural remedies. Improvements in organic chemistry have made it possible to better understand the chemical components of plants. The majority of plants include a vast array of manmade materials, a many of which have been acknowledged as the active ingredients in natural remedies. Blends of active seasonings aid in deciphering the long-established balance of activity in a particular spice. Modern herbalists combine the ideas of energy balance with their traditional knowledge of herbs, all while taking into account the most recent scientific research on the components and therapeutic effects of plant-based medicines.

The Satpura forest is a significant ecological hotspot in India due to its reputation for having a high biodiversity. Many different types of herb medicinal plants can be found in the forest. One of the most important protected places in the area is the Satpura National Park which is situated in M.P. About 70% of people in urban and rural regions benefit from the Unani system of medicine, despite the fact that it is practiced by allopathic physicians and is supported by very advanced facilities the government of India. In indigenous groups, home remedies have been used for millennia. The practitioners of this approach may easily locate the necessary therapeutic plants in the forests, mountains, valleys gardens, and agricultural areas. This system is fairly priced and quite in tune with nature. In the Indian subcontinent, these traditional systems are referred to as

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

"Unani" or Ayurvedic" systems. Among the total medicinal plants identified in this study all 10 plants species are found to be utilized for their therapeutic purposes. These findings are based on observed information, indicating the efficacy of several plant species in treating diverse disorders. The Satpura region, encompassing various areas is recognized for its abundant reserves of beneficial medicinal plants, as depicted in description.

The main aim of this study was to collect the detailed information about wild medicinal flora and the lore of local people and utilization of such plants in treating various ailments. The survey showed that all herbs were used by the tribals.The plant biodiversity of the Satpura region plays a vital role in maintaining the ecological balance and providing habitats for numerous plant species Efforts are ongoing to protect and preserve this diverse ecosystem through conservation initiatives and sustainable practices.

REFERENCE

1. *Singh B.P., Sukhpal Brar & Richa Bhola (2002) Phyto Sociological analysis of medicinally important plants: Solanum surattense and Tribulus terrestris. J. Econ, Econ, Tax Bot. Vol 26, No. 2, 280-284.*
2. *Acharya D., Rai M.K., Sivaiah K., Andeo R.M. (1998) Ethnomedicinalplants used by Gond tribes of Bhanadehi. Nat. Seminar on Integrated management of Pl. Res. Chindwara, M.P. Achola K.J., Indalo A.A., Munenge R.W. (1998) Pharmacologic activities of Pistia stratiotes. Internat.Jour. of Pharmcog. 35 (5) : 329-333.*
3. *Al-Harbi M.M., Qureshi S., Raja M., Ahmed M.M., Afzal M., Shah. A.H. (1997) Gastric antiulcer and cytoprotective effects of Commiphora molmol in rats. J.Ethnopharmacol 55:141- 150.*
4. *Ali, M.S., Ahmad V.U., Azahar I., Usmanghani K. (1998) Chemotropism and antimicrobial activity of Tamarindus indica Fitoterapia 1:43-46.*
5. *Angermeier, P. L. and Karr, J. R., (1994), Biological integrity vs.biological diversity as policy directives: Protecting biotic resources, Bioscience, 44: 690-697.*
6. *Anonymous (1982) Ladakh Expedition-(1980) : A Report. Univ. of South Hamption. 204 Antique A., Khair S and Iqbal M. (1993) Traditional herbal contraceptives from North West Uttar Pradesh. Glimp, in Pl.Res, X : 41- 47.*
7. *Colville F.V. (1897) Notes on the plants used by the Klamath Indians on Oregon. Contrib. U.S. Nat Herba-5 Washington.*
8. *Calcutta. Crooke W. (1975 ed) The Tribes and Castes of the North Western India. Vol IV Delhi. Danabhai Mitaliya Kantilal (1999) Ethnomedicinal study of Angiosperms of Bhavnagar. Ph.D. Thesis,*
9. *Bhavnagar Univ. Bhavnagar. Das P.K. and Mishra M.K. (1987) Some medicinal plants used by the tribals of Deomali and adjacent area of Koraput District, Orissa, India. India for. 10 (4):301-303.*
10. *Das P.K. and Mishra M.K. (1988) Some ethnomedicinal plants of Koraput district, Orissa. Ancient Sci. of Life 8(1): 60-67.*
11. *Devi Krishna (1993) Geographic appraisal of social, cultural and economic changes in tribes of Kumaun region Himalaya. Ph.D. Thesis, Rohilkhand Univ. BLY.*
12. *Saxena, V. K.; Chourasia, S (2001). "A new isoflavone from the roots of Asparagus racemosus". Fitoterapia. 72 (3): 307–9.*
13. *Hechtman, Leah (2018). Clinical Naturopathic Medicine (2 ed.). Elsevier. pp. 879, 908.*
14. *Goyal, R. K.; Singh, Janardhan; Lal, Harbans (September 2003). "Asparagus racemosus – an update". Indian Journal of Medical Sciences. 57(9): 408–414.*
15. *Taur, Dnyaneshwar J; Waghmare, Maruti G; Bandal, Rajendra S; Patil,Ravindra Y (April 2011). "Antinociceptive activity of Ricinus communis L.leaves". Asian Pacific Journal of Tropical Biomedicine. 1 (2): 139–141.*
16. *Abdul, WaseemMohammed; Hajrah, NahidH; Sabir, JamalS.M.; Al- Garni, SalehM; Sabir, MeshaalJ; Kabli, SalehA; Saini, KulvinderSingh; Bora, RoopSingh (2018). "Therapeutic role of Ricinus communis L. and its bioactive compounds in disease prevention and treatment". Asian Pacific Journal of Tropical Medicine. 11 (3): 177.*
17. *D. C. Pal, S. K. Jain, "Notes on Lodha medicine in Midnapur District, West Bengal, India", Economic Botany, October–December 1989, Volume 43, Issue 4, pp 464-470.*
18. *Pareek, Archana; Kumar, Ashwani (2016). "Pharmocognostic studies on Nymphaea spp". World Journal of Pharmaceutical Research. 5 (6): 18*
19. *Anil Kumar, Jyotsna Dora, Anup Singh and Rishikant Tripathi (2012). "A review on king of bitter (Kalmegh)". Int J Res Pharm Chem. 2 (1): 116– 124.*
20. *Board, N.I.I.R. (2003). Herbs cultivation & their utilization. Delhi, India: Asia Pacific Business Press, Inc. pp. 45–46.*
21. *Quattrocchi, Umberto (2012). "Buchanania Sprengel Anacardiaceae". CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. New York: Taylor & Francis Group. ISBN 978-1482250640. Archived from the original on 12 March 2023. Retrieved 27 January 2023.*
22. *India Biodiversity Portal (2023). "Buchanania cochinchinensis (Lour.) Almeida". India Biodiversity Portal. Archived from the original on 11 May 2021. Retrieved 27 January 2023.*
23. *Singh, N.P.; Karthikeyan, S., eds. (2000). "Buchanania Spreng.". Flora of Maharashtra State Flora of India. Vol. 1 (1st ed.). Kolkata: Botanical Survey of India. Archived from the original on 26 January 2023. Retrieved 26 January 2023.*
24. *O'Neill, A.R.; Rana, S.K. (2019). "An ethnobotanical analysis of parasitic plants (Parijibi) in the Nepal Himalaya". Journal of Ethnobiology and Ethnomedicine. 12 (14): 14.*
25. *Mohy-ud-dint, A; Khan, Z; Ahmad, M; Kashmiri, MA (2010). "Chemotaxonomic value of alkaloids in Solanum nigrum complex" (PDF). Pakistan Journal of Botany. 42 (1): 653–660.*
26. *Jain, R; Sharma, A; Gupta, S; Sarethy, IP; Gabrani, R (Mar 2011). "Solanum nigrum: current perspectives on therapeutic properties". Altern Med Rev. 16 (1): 78–85. PMID 21438649.*
27. *Kuvar, Sachin D. & Bapat, U.C. (2010). "Medicinal plants used by Kokani tribals of Nasik district Maharashtra to cure cuts and wounds" (PDF). Indian Journal of Traditional Knowledge. 9 (1): 114–115.*
28. *Mudgal, V. and Hajra, P. K. (1997, 1999, 1999). Floristic Diversity and Conservation Strategies in India, Botanical Survey of India, Calcutta, vol. 1,pp. 1–472; vol. 2, pp. 473–1065; vol. 3, pp. 1067–1630.*
29. *Singh, A., & Singh, P. K. (2009). An ethnobotanical study of medicinalplants in Chandauli District of Uttar Pradesh, India. Journal of Ethnopharmacology, 121(2), 324-329.*
30. *Singh, A., Satanker, N., Kushwaha, M. Disoriya, R. & Gupta, A. K. (2013). Ethno-botany and uses of non-graminaceous forage species of Chitrakoot region of Madhya Pradesh. Indian Journal of Natural Products and Resources, 4(4), 425-431.*
31. *Nayar, M. P. and Sastry, A. R. K. (1987, 1988, 1990), Red Data Book of Indian Plants, Botanical Survey of India,*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 3| March2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

Calcutta, vol. 1, pp. 1– 371; vol.2, pp. 1–273; vol. 3, pp. 1–279.

32. *Muthu, C., Ayyanar, M., Raja, N. & Ignacimuthu, S. (2006). Medicinalplants used by traditional healers in Kancheepuram district of TamilNadu, India. Journal of Ethnobiology and Ethnomedicine, 2(43): 1-10.*
33. *World Health Organization (WHO) (2001). Legal Status of Traditional Medicine and Complementary/ Alternative Medicine: A Worldwide Review.*
34. *WHO, Geneva. Yadav, M., & Khan, K. K. (2012). Study of Ethnomedicinal Plants Used in the Treatment of Viral Hepatitis, Rewa Distict, Madhya Pradesh. Indian Journal of Life Science, 3(1), 149-151.*
35. *Jain, J. B., Kumane, S. C. & Bhattacharya, S. (2006). Medicinal flora of Madhya Pradesh and Chattisgarh – A Review, IJTK, 5(2):237- 242.*
36. *Jain, S. K. (1963a). Studies in Indian ethno-botany - Less known uses offifty common plants from the tribal areas of Madhya Pradesh, Bull. Bot. Survey India. 5(3/4): 223-226.*
37. *Jain, S. K. (1963b). Studies in Indian ethno-botany, II: plants used in medicine by the tribals of Madhya Pradesh. Bull. Reg. Res. Laboratory, Jammu. 1(2): 126-128.*
38. *Jain, S. K. (1963c). Observations on the ethnobotany of the tribals of Madhya Pradesh. Vanyajati 11: 177-183.*
39. *Choudhary, M. S., Upadhyay, S. T. & Upadhyay, R. (2012). Observation of Natural Dyes in Ficus Species from Hoshangabad District of Madhya Pradesh. Bulletin of Environment, Pharmacology and LifeSciences, 1(10), 34-37.*
40. *Chowdhury, S. K. (2000). From Ethno-botany. In: Studies in Botany Volume 2. 7th edition (Mitra, D, J. Guha, S.K. Chowdhuri, Kolkata Edt) Manasi Press: pp 855-867.*