CHAPTER - VIII
The present study entitled “Studies on the wild medicinal flora of Balaghat district of Madhya Pradesh” is an outcome of study undertake during the year 2012-2016. It included the floristic study as well as ethno-medicinal work in Balaghat District. Wild medicinal plant of Pteridophytes, and Angiosperms have been studied in this work. The present account has been divided into the nine chapters.

Chapter I: Introduction

This chapter deals with a brief introduction on flora, medicinal plants and ethno-medicine. Flora is basically the plant life that is present in a particular region or habitat at a particular time. India is a land of varied flora, fauna and biodiversity. India is one of the twelve mega diverse nations of the World. The Flora of India is one of the richest of the world due to a wide range of climate, topology and environments in the country. It is thought there are over 15000 species of flowering plants in India, which account for 6 percent of the total plant species in the world (Karki, 2002).

According to World Health Organization (WHO), it has listed 21,000 plant species which are used for medicinal purposes around the world. According to Botanical Garden, Kew earlier estimate the figure of flowering plants is between 223,000 and 422,000. Using expert analysis, scientists from Kew generated a more precise estimation of 352,000 plants in a paper published in 2008. On the other hand, a lot of flowering plant groups have up till now to be assessed and the accurate number is likely to be as of now over 400,000. New plant species
continue to be discovered as well as others are under threat of extinction. Yet have changes in the mode scientists classify flora change the estimate, therefore the actual figure is in a constant status of fluctuation. Out of total number of flowering plant species known (about 17,500) in India, there are more than 4,000 species used in medicines, about 3,000 for food, nearly 700 as traditional religious and social purposes, about 500 yield fibers, 400 as fodder, 300 yield gum and about 100 species are used to extract essential oils and scents. Indian biodiversity is a source of several life saving drugs and novel chemicals.

According to WHO medicinal plants are plants that contain properties or compounds that can be used for therapeutic purposes or those that synthesize metabolites to produce useful drugs (WHO 2008). Therapeutic plants comprise an important component of flora and are widely spread in India. The pharmacological assessment of substances from plants is a recognized method for the discovery of lead compounds which can leads to the development of new and safe healing agents. The significance of therapeutic flora and traditional health systems in solving the health care problems of the world is gaining growing awareness. Because of this resurgence of attention, the study on plants of medicinal importance is rising phenomenally at the global stage, frequently to the loss of natural habitats and mother populations in the countries of origin. The majority of the rising countries have adopted traditional medical practice as a basic part of their traditions.
About 90% of all Indian medicines are obtained from robbed by pharmaceutical companies from the third world countries, including India. India is the largest producer of medicinal herbs and called as botanical garden of the world (Seth et al. 2004) and herbal medicines for curing human illness medicinal plants form the only easily accessible health care alternative for the most of our population in rural and tribal area. About 64% of the total global population remains dependent on traditional medicines for their health care’s system, whereas about 85% of the rural population of India depends of wild varieties of plants for the treatment of various diseases they suffer from.

The present research work was planned with the following aims and objectives. Information on floristic distribution and botany of plants species is generally described in the flora. This thesis give a very valuable information on all plant recorded during exploration. Therefore the present work shows a little deviation from the normal flora as it contains information on only plant species of Balaghat.

The study site was chosen because both the dry and moist deciduous tropical forests are abundant in the district. The forests of district has a vast heritage of diverse ethnic groups and are extremely rich in terms of both floral and faunal biodiversity, which is a great treasure house of valuable medicinal plants wealth. However a number of unknown forest areas still exist in the district that has rich diversity of medicinal plants and herbs, which are still unexplored. In this district, both North and
South divisions of Balaghat places such as Lanji, Baihar, Lalbarra, Lamta, Lougur, Ukwa, Balaghat ranges have rich diversity of vegetation. These areas are native place of several tribes. These tribal communities are mostly residing in forest villages and most backward inhabitants of the area. They possess good knowledge of forest, forest growth and indigenous medicinal plants. Till date no authentic and consolidated data is available on Wild medicinal flora of Balaghat.

Chapter II: The Study Area

This chapter includes brief information on the study area. Balaghat is the south - eastern district of Madhya Pradesh State. This district is in between north latitude 21°19' and south latitude 22°24’ and 79°30' west longitude and 81°5' east longitude in the eastern part of Satpura Plateau. The total geographical area of the district is 9229 sq. kms. Out of which 4051.8 sq. km. area comes under forest cover, amounting to 46% of the total area. Thus this district occupies the first position in the forest area ranking, out of the 51 districts of Madhya Pradesh. The reserve forest and protected forest occupy 2740.8 and 1310.9 sq. km. area respectively (Annual forest report, 2002). The Wainganga River flows from the north to the south direction in the western part of the district.

Roughly, one-third of the district lies in the lowlands and about two-thirds on the plateau and the hills. High quality forests of Saja, Teak, Bija, Sal and Bamboo are found along the valleys and hills. Thus, excluding part of Baihar plateau and the level strips at the foot of the
hills, approximately 60% of the area covered by forest is very hilly and rugged, which harbor rich diversity.

Soil is the most precious asset upon which the entire floral and faunal diversity of an area depends. It is formed by weathering of parent rocks, which are metamorphic, associated with dominant minerals like manganese, copper, coal and bauxite etc. Soils of undulated uplands are shallow, gravelly, coarse textured, well drained having low water holding capacity. The distinct of alluvial soil in the lowland, black to brown clay loam soil in the plateau and tablelands. The most fertile soil is found in the plain areas of Waraseoni and Balaghat ranges. Climate of any area has far reaching effects on floral and faunal development as well as on the abiotic component of the ecosystem. Balaghat district is situated within the semi-arid region of the state. The district is situated within the agro-climatic region of Eastern satpura plateau and east of Kymore Hills. The district has a sub-tropical climate and is characterized by high evaporation and low precipitation. The climate of the district is tropical monsoonal with four district seasons. The temperature of the district shows mild variation owing to differences in elevation. The lowland plains have hot climate, which is oppressive throughout the months of April, May and June. The Biahar plateau on the other hand is cooler than the lowlands. Overall the climate of the district is moderate with a minimum temperature of 40°C in January and a maximum temperature of 45°C in May. Rainfall is the source of maximum annual precipitation in the area other than mist, fog, and dew. As the rainfall pattern is of
monsoonal type, rains in this district start from mid June and last up to the earlier part of October. The month of July and August experience the highest rainfall. The average rainfall as recorded is 1444.16 mm/year.

Balaghat District has mainly agriculture based economy, as there is no any major industrial unit existing in the District. Total forest coverage in this district including social forestry is 5.06 lakh hectare which is 51.70% of the total land of the district.

According to the revised survey of the Forest Type of India by Champion and Seth (1968), the district forest can be classified as of under Teak Forest- Southern Tropical Dry Deciduous Forest, Southern Tropical slightly Moist Deciduous Forest; Sal Forest- Moist Peninsular High Level Sal Forest, Moist Peninsular Lo Level Sal Forest; Mixed Forest- North Indian Moist Mixed Deciduous Forest, Southern Dry Mixed Deciduous Forest.

Chapter III: Review of Literature

A short review of literature on various aspects of flora, medicinal plants, ethno medicinal work and indigenous knowledge of medicinal plants used by tribals in abroad, India, Madhya Pradesh including Balaghat district are given in details in main part of the thesis, however few references related to the subjects study area are Observation the traditional phytotherapy of Balaghat district, M.P. (Jain, et.al., 2011), Tiwari, (2014) published paper on assessment of traditional medicinal
plants in Balaghat District (M.P.); Bramhe, (2015) documented the floristic studies in Govt. J. S. T. P. G. College Balaghat Campus, M.P.

**Chapter IV: Material and Methods**

This chapter deals with the material and methods.

Following steps were adopted during the research work:-

1. Area identification and selection of site for collect information about medicinal plants

2. Field station/study sites were selected forest range wise

3. The equipment used for collecting the material were carried out while visiting the sites

4. The specimens were collected and preserved as per standard method of collection and preservation

5. Collection of data from the both tribal/rural area of the different communities of the area as well as forest department

6. Frequent field survey has been done during different sessions to the different sites situated in the dense, healthy of diversity of plants, remote areas of Balaghat of MP.

7. Survey waypoints were randomly chosen along the sites and the plants in a strip plot 100m long and 50m wide were identified at each waypoint.
8. Questionnaire: The folklore medico-medicinally information have been collected through personal interviews with vaidyas, hakims, sadhus, bhagats, tribals and experienced old men. Participatory Rural Appraisal (PRA) and Traditional medicinal practitioner (TMP) method applied for this.

9. Collection and Herbarium (Specimen) preparation of plants sample, mounting and plants are enumerated in alphabetical order along with their family, local name, habit, parts used, uses in diseases/ailments and mode and frequency of administration etc.

**Chapter V: Plant description**

For the taxonomic account Bentham and Hooker’s system of classification has been followed. The systematic account of each species is given in following sequence: Family, botanical name of the species followed by local names, brief description and the enumeration of species, field notes (regarding habit, habitat, associated, distribution, locality etc etc.), flowering and fruiting period, ethnobotanical and ethnomedicinal details.

In this chapter included the description of plant species found in Balaghat forest vegetation. Main vegetation of the area is tropical dry deciduous mixed forest, the recorded species are:
Tree:


Shrub:

Leea asiatica (L.) Ridsdale, Leea Leea macrophylla Roxb. ex Horn.,
Morinda tinctoria Roxb., Nerium indicum Mill., Nyctanthes arbor-tristis L.,
Ochna obtusata DC., Ocimum basilicum L., Ocimum gratissimum L.,
Ocimum sanctum L., Opuntia dillenii (Ker Gawl.) Haw., Phoenix acaulis
Roxb. ex Buch.-Ham., Plumbago capensis Thumb., Plumbago zeylanica
L., Rauwolfia serpentina (L.) Benth. ex Kurz, Rauwolfia tetraphylla L., Sida
acuta Burm.f., Sida cordifolia L., Sida rhombifolia L., Tabernaemontana
divaricata (L.) R.Br. ex Roem. & Schult., Thespesia lampas (Cav.) Dalzell,
Uraria picta (Jacq.) Desv., Urena lobata L., Vernonia amygdalina Delile,
Viscum nepalense Spreng., Woodfordia fruticosa (L.) Kurz., Wrightia
tinctoria R.Br., Ziziphus maritiana Lam., Ziziphus nummularia (Burm.f)
Wight & Arn., Ziziphus oenoplia (L.) Mill., Ziziphus rugosa Lam., Ziziphus
xylopyrus (Retz.) Willd.

Herb:

Aerides multiflorum Roxb., Vanda tesselate (Roxb.) Hook. Ex G. Don,
Xanthium strumarium L., Indigofera tinctoria L., Nelumbo nucifera
Gaertn., Nymphaea nouchali Burm.f., Acalypha ciliata Forsk., Acalypha
indica L., Acanthospermum hispidum DC., Achyranthes aspera L., Acorus
calamus L., Aerva lanata (L.) Juss., Ageratum conyzoides (L.) L., Aloe
barbadensis Mill., Aloe vera (L.) Burm.f., Alternanthera sessilis (L.) R.Br.
ex DC., Alysicarpus bupleurifolius (L.) DC., Alysicarpus monilifer (L.) DC.,
Amaranthus spinosus L., Ammannia multiflora Roxb., Amorphophallus
bulbifer (Roxb.) Blume, Amorphophallus campanulatus Decne.,
Amorphophallus paoniiifolius (Dennst.) Nicolson, Andrographis
paniculata (Burm. f.) Nees, Angallis pumila Sw., Anisomeles indica (L.)

Climbers:


Chapter VI: Results and Discussion

In this chapter describe with observation date which obtain from field area and analytical portion of medicinal plant species. A total of 423 species of Angiosperms belong to 296 genera and 88 families respectively have been collected and described from North forest division and south forest division of Balaghat district (M.P.).