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PRELIMINARY SURVEY OF ANGIOSPERMIC FLORA OF KANGRA DISTRICT (H.P), INDIA

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ABSTRACT

Study was carried out in the different parts of Kangra district and 76 plants belonging to Angiosperms were identified and collected during the flowering, fruiting and seed developing stages. These plants were classified and listed as per the classification given by Bentham and Hooker (1872 -1897) and described in relation to their botanical name, family, genus, and species. Out of the 76 plant species belonging to 35 families, 29 families were from Dicotyledons and 6 families were from Monocotyledons. Further, these 76 plants were from 67 genera, out of which 59 genera were from Dicotyledons and 8 genera from Monocotyledons. This study shows great variation in the Angiospermic flora of Kangra District (H.P)

Key Words: Family, Dicotyledons, Monocotyledons

INTRODUCTION

Present days living beings are the “Islands in the sea of death.” Throughout history, mankind has been benefited from plants in many ways, fundamentally for food and shelter, yet also for other purposes including clothing, medicines and cosmetics to name the few. All around the globe, different cultures have made use of plants that grew around them. The traditional knowledge of the uses and dangers of plants that could be found in hedgerows, forests and fields was helpful and sometimes invaluable. Foraging for plants particularly herbs in the wild is something that humans have done for centuries. Today, however, a number of plants that once were abundant are now sadly endangered because of extensive human activities like urbanization, industrialization, deforestation and due to changes in the climate (Jain, 1981)

India is among the richest floristic biodiversity zone on the earth, where plants have made a good contribution to the development since ancient times. Our ancient literature also has remarkable information right from Atharveda, which provides rich references on native plants and their properties to alleviate human suffering and for enhancement of long and healthy life. Our ancient Materia medica is also based mainly on diverse plants found all over the Indian subcontinent (Gupta, 1985).

The biodiversity found on earth today consists of many millions of distinct biological species, which is the product of nearly 3.5 billion years of evolution. During this past 3.5 billion years, a wide variety of plants came into existence, flourished and then perished due to various reasons. It is therefore very necessary to have proper knowledge regarding the various species of plants inhabiting in any particular area at that particular time period (Joshi *et al.*, 2004).

So the present study was undertaken to carry out the preliminary survey of the Angiospermic flora in Kangra district of H.P state. Lies in between latitude 30^o 15' to 42^o and longitude 76^o and 22^o 46' with altitude varying between 1300-2100 mtrs. Kangra region has hot wet summer and cold winter. The winter extends from December to February while the summer season extends from March to end of June. The rainy season in this region is long (July – September). The maximum temperature at Kangra remains up to 40^oC. There are three principal ranges which run in a South-easterly direction. Kangra district is situated at lower elevation and comparatively warmer but has some hilly ranges covered with pine forests. The proposed study was undertaken in the Kangra district with the following objectives:-

1. To identify and collect the floristic elements of the area and making permanent record for the preservation of specimens

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2. Study of Plant species is helpful in knowing the status of individual plant species in the study area.

MATERIALS AND METHODS

Methodology and Itinerary of Data Collection

The plant specimens were collected from different regions of Kangra district from time to time (June 2009 to September 2010). The collection of specimens carried out during flowering and fruiting period to facilitate the process of identification and was done according to Bentham and Hooker's system of classification (1872 -1897). Only Angiospermic plants such as seasonal, annual and perennial plant species were collected. The herbarium was prepared by treating the specimens with 2% mercuric chloride solution to provide protection against insects and fungal attack. It was done immediately after collecting the specimens before they get wilted. They were then rapped in the alternating layers of newspapers and blotting papers. The papers were changed after 24, 48 or 72 hours as per the need of specimen. After drying, plant specimens were mounted on herbarium sheets with fevicol and given accession number of the entire Specimen collected (*i.e.* 1/76 to 76/76).

RESULTS AND DISCUSSION

In the present study, only plants belonging to Angiosperms were studied and a preliminary survey was carried out in the Kangra district. The plants were identified and collected during flowering, fruiting and seed developing stages and described accordingly in a detailed manner with respect to their botanical names, family to which they belonged.

The plants were classified and listed as per the classification of Bentham and Hooker (1872-1897) who had classified all the plants on the basis of their flowering, fruiting and developing stages and external features into different families. Similar studies were done by Vavilov (1920), Joshi (1995), Sing and Sing (1992), Uniyal *et al.*, (2002), Choudhary and Wadhwa (1984) Rau (1973) Semwal (1984), who also surveyed the different Himalayan regions and identified the valuable plants.

During the course of study, 76 plant species belonging to 35 families were studied and collected from the different part of the Kangra district. Out of these 35 families, 29 families belong to Dicotyledons and 6 families belong to Monocotyledons. These 76 plant species belong to 67 genera, out of which 59 genera belong to Dicotyledons and 8 genera belong to Monocotyledons.

Table 1: Following are the families along with their corresponding genera and species studied in the present survey.

S. No.	Family	Genus	Species	Accession number of the collected
1	Menispermaceae	<i>Tinospora</i>	<i>T. cordifolia</i>	37/76
2	Berberidaceae	<i>Berberis</i>	<i>B. aristata</i>	13/76
3	Malvaceae	<i>Abelmoschus</i>	<i>A. esculantus</i>	38/76
		<i>Bombax</i>	<i>B. ceiba</i>	39/76
4	Rutaceae	<i>Aegle</i>	<i>A. marcelos</i>	56/76
		<i>Citrus</i>	<i>C. pseudolimon</i>	57/76
5	Rhamnaceae	<i>Ziziphus</i>	<i>Z. nummularia</i>	60/76
6	Anacardiaceae	<i>Mangifera</i>	<i>M. indica</i>	1/76
7	Fabaceae	<i>Bauhinia</i>	<i>B. variegata</i>	25/76
		<i>Cassia</i>	<i>C. fistula</i>	26/76
8	Mimosaceae	<i>Acacia</i>	<i>A. catechu</i>	40/76
9	Rosaceae	<i>Eriobotrya</i>	<i>E. japonica</i>	61/76
		<i>Potentilla</i>	<i>P. indica</i>	62/76

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10	Combretaceae	<i>Terminalia</i>	<i>T. belerica</i>	14/76
			<i>T. chebula</i>	15/76
11	Myrtaceae	<i>Eucalyptus</i>	<i>E. globulus</i>	41/76
		<i>Psidium</i>	<i>P. guajava</i>	42/76
12	Lythraceae	<i>Lawsonia</i>	<i>L. inermis</i>	30/76
		<i>Punica</i>	<i>P. granatum</i>	31/76
13	Cucurbitaceae	<i>Cucurbita</i>	<i>C. maxima</i>	16/76
		<i>Momordica</i>	<i>M. charantia</i>	17/76
14	Asteraceae	<i>Ageratum</i>	<i>A. conyzoides</i>	2/76
		<i>Parthenium</i>	<i>P. hysterophorus</i>	3/76
15	Mackinlayaceae	<i>Centella</i>	<i>C. asiatica</i>	44/76
16	Oleaceae	<i>Jasminum</i>	<i>J. officinalis</i>	53/76
17	Apocynaceae	<i>Catharanthus</i>	<i>C. roseus</i>	5/76
18	Solanaceae	<i>Capsicum</i>	<i>C. annuum</i>	65/76
			<i>C. frutescens</i>	66/76
19	Acanthaceae	<i>Adhatoda</i>	<i>A. vasica</i>	6/76
20	Labiatae	<i>Mentha</i>	<i>M. arvensis</i>	32/76
		<i>Ocimum</i>	<i>O. basilicum</i>	33/76
21	Laminaceae	<i>Ajuga</i>	<i>A. bracteosa</i>	35/76
		<i>Salvia</i>	<i>S. officinale</i>	36/76
22	Verbenaceae	<i>Duranta</i>	<i>D. erecta</i>	72/76
		<i>Lantana</i>	<i>L. camara</i>	73/76
23	Nyctaginaceae	<i>Bougainvillia</i>	<i>B. glabra</i>	52/76
24	Amaranthaceae	<i>Achyrathes</i>	<i>A. aspera</i>	7/76
		<i>Celosia</i>	<i>C. spicata</i>	8/76
25	Moraceae	<i>Astocarpus</i>	<i>A. heterophyllus</i>	45/76
		<i>Broussonetia</i>	<i>B. papyrifera</i>	46/76
26	Cannabiaceae	<i>Cannabis</i>	<i>C. sativa</i>	18/76
27	Euphorbiaceae	<i>Euphorbia</i>	<i>E. hirta</i>	21/76
		<i>Jatropha</i>	<i>J. curcas</i>	22/76
28	Crassulaceae	<i>Brvophyllum</i>	<i>B. calycinum</i>	19/76
29	Cariaceae	<i>Carica</i>	<i>C. papaya</i>	20/76
30	Musaceae	<i>Musa</i>	<i>M. naradisiaca</i>	51/76
31	Zingiberaceae	<i>Curcuma</i>	<i>C. longa</i>	75/76
		<i>Zingiber</i>	<i>Z. officinale</i>	76/76
32	Asparagaceae	<i>Asparagus</i>	<i>A. racemosus</i>	10/76
33	Asphodelaceae	<i>Aloe</i>	<i>A. vera</i>	11/76
34	Araceae	<i>Amorphophallus</i>	<i>A. campanulatus</i>	12/76
35	Poaceae	<i>Bambusa</i>	<i>B. arundiaceae</i>	54/76
		<i>Zea</i>	<i>Z. mays</i>	55/76

Present investigation showing that dicotyledons vegetation is dominating the area. The predominating woody dicotyledons includes *Terminalia belerica*, *Acacia catechu*, *Leucaena leucocephala*, *Dalbergia sisso*, *Terminalia chebula* and dominated herbaceous plant are *Cinnamomum camphora*, *Adhotada vasica*. Among the monocots dominate herbaceous plants are *Curcuma longo*, *Zizgiber officinate*, *Aloe vira* and *Asparpgus racemosum*.

Among the dicotyledons the dominating family were Fabaceae, Asteraceae, Myrtaceae, Rutaceae, Solanaceae and Euphorbiaceae occurring in 1st, 2nd, 3rd, 4th, 5th, 6th place in survey area respectively.

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Among monocotyledons the main dominate family was Araceae, Zingiberaceae, Asphodelaceae and Asparagaceae occurring in 1st, 2nd, 3rd, 4th place in survey area respectively.

The least representation of dicotyledons families were Lauraceae, Berberidaceae and least representative of monocot family was poaceae in the survey area.

Kangra district showed great floral variation as evident from the present survey. This survey of Kangra district is an attempt to initiate the further intensive and exhaustive exploratory studies so as to have better utilization of our floral wealth for the betterment of humanity. In the race for urbanization, we are somewhere losing our natural flora. These investigations and further documentation of plant species are helpful in knowing the status of individual plant species in the study area and thus playing an important role in their preservation and making us aware about their usefulness.

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