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RESEARCH ARTICLE

DIVERSITY OF MEDICINAL FLORA OF MORADABAD DISTRICT, UTTAR PRADESH, INDIA

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ABSTRACT

This paper aimed to document the diversity of medicinal flora of Moradabad district along with their vernacular name, local name, habit and status. In the present study, a total of 153 plant species belonging to 60 families have been recorded from this area. These plant species include 88 herbs, 37 trees, 18 shrubs and 9 twiners. The most widely distributed plants were found in the family Fabaceae (14 plants) followed by Amaranthaceae (10 plants), Asteraceae (9 plants), Malvaceae (7 plants), Apocynaceae, Convolvulaceae & Euphorbiaceae (6 plants), Acanthaceae, Lamiaceae, Polygonaceae & Solanaceae (5 plants).The present information is important as it allows us to prevent or avoid the potential chance of biodiversity loss and to plan future policy for the protection of our environment.

INTRODUCTION

India is known for its botanical wealth and a large number of diverse types of plants grown in different agro-climatic conditions of our country (Mahalingam *et al*., 2011). In India, there are two mega centers of plant bio-diversity viz. Northeastern Himalayan regions and Western Ghats. As a result India ranks amongst one of the 12 mega biodiversity countries of the world and consists of 17,000 flowering plant species. It accounts for 8% of the global biodiversity with only 2.4% of the total land area in the world (Hajra and Mudgal, 1997 and Reddy, 2008). Indian forests are rich in medicinal plant species with a wide spectrum of properties. Plants and plant based products have been used traditionally by inhabitants of India from the time immemorial. Several references of healing properties of plants are stated Rig-Veda, Atharvaveda, Upanishad, Mahabharat, Ramayana and Purana. Charaka samhita and Susruta samhita are other two monumental works. The invasions of Greek and Muslim rulers influenced the use of plant based medicines a lot. The rise of Buddhism also boosted the study of herbal medicines in old days. India has thus developed Ayurveda and Unani the two important systems of medicines. Many medicinal plants are advised in these systems, which are naturally distributed in India (Patil and Patil, 2010). In India, Uttar Pradesh is the most populated and largest state in the country. Moradabad is one of the districts of western Uttar Pradesh, which is known as Brass city. It is situated at a distance of 167 km from the national capital, New Delhi, on the bank of River Ram Ganga (a tributary to the Gangas). District Moradabad lies between 28°21´ to 28°16´ north latitude and 78°4´ to 79° east longitude. It occupies an area of 3493 km^2 and has a population of 4,773,138. Its population growth rate over the decade 2001-2011 was 25.25% (Cencus2011). It is bounded by Bijnor and Nainital in north, by Rampur district in east, by Badaun district in south and in west by Amroha district (Figure-1).

Plants diversity of this region is adversely affected by the fastest increase in urbanization, industrialization and road construction. The propagating material such as root, stem, seed etc is destroyed by local healers like Hakims, Vaidyas for preparation of herbal medicines. Using the current global rate of extinction about 10-20% of the medicinal plants of India (about 800-1000 species) is likely to be threatened. About 95% of medicinal plants in trade in India are obtained as wild species (Patil and Patil, 2010). The demands for natural products such as herbal cosmetics, medicines, food supplements and health products etc in national and international markets caused smuggling of plant species from natural habitats. High consumption of wild flora and their destructive collection methods made some of species vulnerable to the survival. It is estimated that over 70% of the plant collection involves destructive methods. Plants represent one of the important elements of biodiversity, thus the knowledge of plant species found in the different areas of the world is a pre- requisite to conserve the ecological biodiversity and it helps us to understand the overall structure and function of an ecosystem (Sumeet *et al*., 2010). For this reason accurate

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and precise information of the known plants species from a given area is essential. The aim of present study is to highlight the plant diversity of Moradabad district with special reference to their taxonomic status and medicinal value.

families. Out of these species, 88 Herbs, 18 shrubs, 37 trees and 9 twiners have been included (Table-1). The most widely distributed plants are found in the family Fabaceae (14 plants)

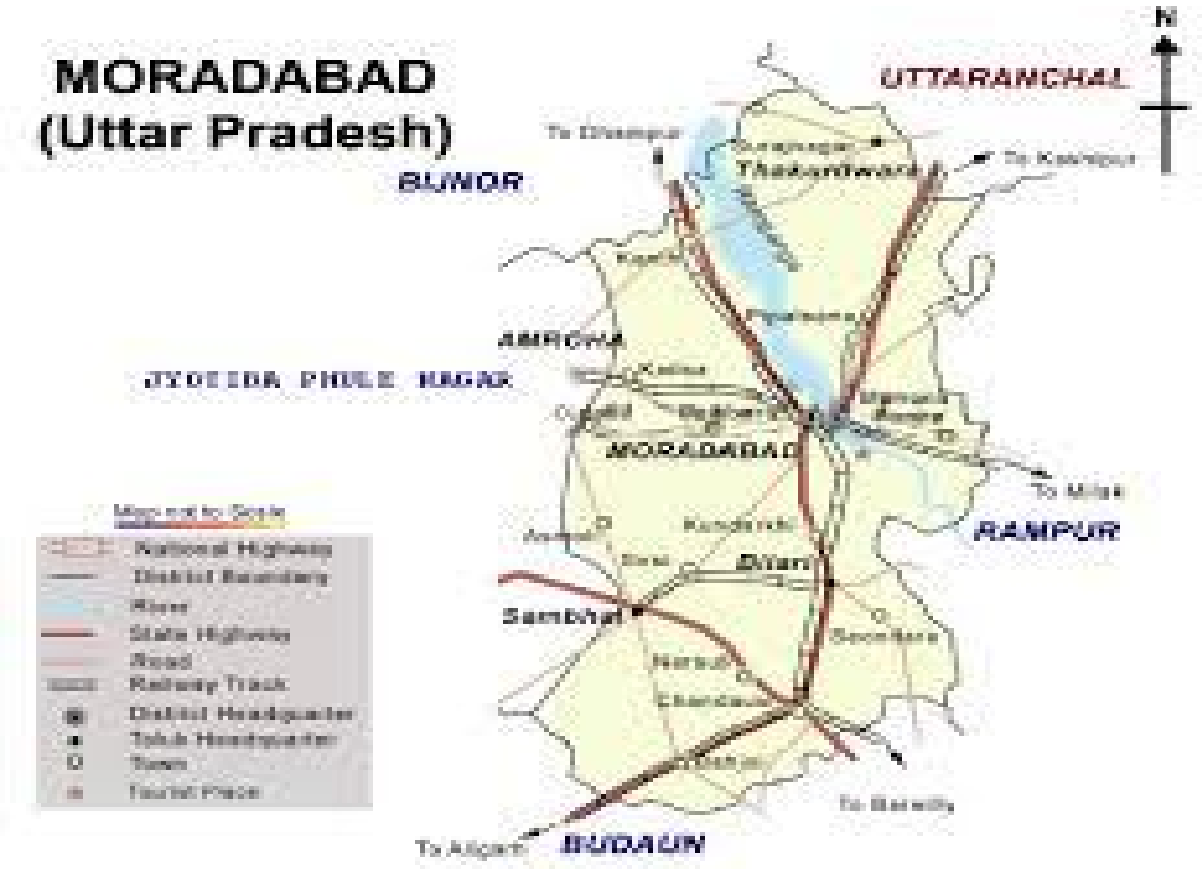


Figure 2.

MATERIALS AND METHODS

To carry out the proposed work on diversity of medicinal flora in Moradabad, first of all, the study area was selected and divided into different regions for the convenience and systematic study. A general survey of the medicinal flora was made and different plants observed as herbs, shrubs and trees. The medicinal importance was confirmed from old people of villages, local healers, Hakims and Vaidyas. Extensive field surveys were conducted in the district during different seasons through regular field visits in order to get maximum representation of different plant species. During our field visits plants samples were collected and photographs of particular species were captured from agriculture land, natural habitats, wasteland, road side, railways tracks, parks, lawns, river banks and other relevant localities to cover almost all the district in a systematic manner. Identification was done with the help of various floras (Duthie, 1893; Maheshwari, 1963 and Kumar, 2001) and through consultation of with floral herbarium of FRI Dehradun.

RESULTS AND DISCUSSION

In the present study, a total of 153 plants species of medicinal flora were recorded from study area. These plants belong to 60 followed by Amaranthaceae (10 plants), Asteraceae (9 plants), Malvaceae (7 plants), Apocynaceae, Convolvulaceae & Euphorbiaceae (6 plants), Acanthaceae, Lamiaceae, Polygonaceae & Solanaceae (5 plants), Liliaceae, Moraceae & Verbenaceae (4 plants) and rest of the families include 1 or 2 plant species. Some of most common plant species which occurred in study area are *Peristrophe bicalyculata, Trianthema portulacastrum, Achyranthes aspera, Alstonia scholaris, Catharanthus roseus, Thevetia peruviana, Calotropis procera, Ageratum conyzoides, Eclipta prostrata, Cannabis sativa, Stellaria media, Chenopodium album, Cleome gynandra, Cleome viscose, Cuscuta reflexa, Momordica charantia, Euphorbia hirta, Ricinus communis, Abutylon indicum, Sida acta, Sida cordifolia, Azadirachta indica, Ficus benghalensis, Eucalyptus obliqua, Psidium guajava, Boerhaavia diffusa, Cyanodon dactylon, Polygonum plabejum, Rumex dentatus, Portulaca oleracea, Lantana indica* etc. Number of plant species is often most widely used measures of diversity depletion. The loss of plant diversity is not only an ethical tragedy but also a great social, economical and cultural loss. AICRPE (1992-1998) also reported 8000 wild plant species used by tribals for their health care, of which 2000 are with new claims and hence demand a scientific scrutiny.

Table 1. List of medicinal plants recorded in Moradabad district

S. No.	Botanical name	Family name	Local name	Habit	Status
1	*Adhatoda vasica*	Acanthaceae	*Bisontha*	*S*	*O*
2	*Peristrophe bicalyculata*	Acanthaceae	-	*H*	*F*
3	*Rungia repens*	Acanthaceae	-	*H*	*R*
4	*Justicia gendarussa*	Acanthaceae	-	*S*	*R*
5	*Nepeta cataria*	Acanthaceae	-	*S*	*F*
6	*Trianthema portulacastrum*	Aizoaceae	*Vishkhapra ghas*	*H*	*F*
7	*Achyranthes aspera*	Amaranthaceae	*Chirchita*	*H*	*F*
8	*Aerva lanata*	Amaranthaceae	-	*H*	*R*
9	*Alternanthera philoxeroides*	Amaranthaceae	-	*H*	*F*
10	*Alternanthera pungens*	Amaranthaceae	-	*H*	*F*
11	*Alternanthera sessilis*	Amaranthaceae	-	*H*	*F*
12	*Amaranthus spinosus*	Amaranthaceae	*Gojhua*	*H*	*R*
13	*Amaranthus viridis*	Amaranthaceae	*Jangli cholai*	*H*	*F*
14	*Celosia argentea*	Amaranthaceae	*Silbari*	*H*	*O*
15	*Digera arvensis*	Amaranthaceae	-	*H*	*F*
16	*Gomphrena celosiodes*	Amaranthaceae	-	*H*	*F*
17	*Polyalthea longifolia*	Annonaceae	*Ashoka tree*	*T*	*F*
18	*Trachyspermum ammi*	Apiaceae	*Ajwain*	*H*	*R*
19	*Alstonia scholaris*	Apocynaceae	-	*T*	*F*
20	*Catharanthus roseus*	Apocynaceae	*Sadabahar*	*H*	*F*
21	*Nerium indicum*	Apocynaceae	*Pili kaner*	*S*	*F*
22	*Pergularia tomentosa*	Apocynaceae	-	*TW*	*F*
23	*Carissa carandas*	Apocynaceae	*Kakronda*	*S*	*O*
24	*Thevetia peruviana*	Apocynaceae	*Pili kaner*	*S*	*F*
25	*Alocasia indica*	Araceae	-	*H*	*O*
26	*Phoenix sylvestris*	Arecaceae	*Khajur*	*T*	*F*
27	*Calotropis gigantia*	Asclepiadaceae	*bada Madar*	*T*	*O*
28	*Calotropis procera*	Asclepiadaceae	*Akaua, Madar*	*S*	*F*
29	*Agave americana*	Asparagaceae	-	*H*	*R*
30	*Ageratum conyzoides*	Asteraceae	-	*H*	*F*
31	***Blumea balsamifera***	**Asteraceae**	-	***H***	***O***
32	*Eclipta prostrata*	Asteraceae	*Bhangra ghas*	*H*	*F*
33	*Launaea nudicauli*	Asteraceae	-	*H*	*F*
34	*Sonchus arvensis*	Asteraceae	-	*H*	*F*
35	*Tridax procumbens*	Asteraceae	-	*H*	*F*
36	*Vernonia cinerea*	Asteraceae	-	*H*	*F*
37	*Xanthium strumarium*	Asteraceae	-	*S*	*O*
38	*Silybum marianum*	Asteraceae	-	*H*	*O*
39	*Bombax ceiba*	Bombacaceae	*Semal*	*T*	*R*
40	*Cordia dichotoma*	Boraginaceae	*Rehta, Lehsoda*	*T*	*R*
41	*Opuntia ficus-indica*	Cactaceae	*Nagphani*	*H*	*R*
42	*Cassia fistula*	Caesalpiniaceae	*Amaltas*	*T*	*F*
43	*Cassia occidentalis*	Caesalpiniaceae	*Pamad*	*S*	*F*
44	*Delonix regia*	Caesalpiniaceae	*Gulmohar*	*T*	*O*
45	*Cannabis sativa*	Cannabaceae	*Bhang*	*H*	*F*
46	*Spergula arvensis*	Caryophyllaceae	-	*H*	
47	*Stellaria media*	Caryophyllaceae	-	*H*	*F*
48	*Chenopodium album*	Chenopodiaceae	-	*H*	*F*
49	*Cleome gynandra*	Cleomaceae	-	*H*	*F*
50	*Cleome viscosa*	Cleomaceae	-	*H*	*F*
51	*Terminalia arjuna*	Combretaceae	*Arjun tree*	*T*	*F*
52	*Convolvulus arvensis*	Convolvulaceae	-	*H*	*O*
53	*Cuscuta reflexa*	Convolvulaceae	*Amarbel*	*H*	*O*
54	*Evolvulus nummularius*	Convolvulaceae	-	*H*	*F*
55	*Ipomea fistulosa*	Convolvulaceae	*Sadasuhagan*	*H*	*O*
56	*Ipomea palmata*	Convolvulaceae	-	*TW*	*O*
57	*Ipomoea aquatica*	Convolvulaceae	*Nali ka sag*	*TW*	*F*
58	*Bryophyllum pinnatum*	Crassulaceae	*Ajuba*	*H*	*R*
59	*Momordica charantia*	Cucurbitaceae	*Karela*	*TW*	*F*
60	*Cyperus rotundus*	Cyperaceae	*Motha ghas*	*H*	*F*
61	*Acalypha indica*	Euphorbiaceae	-	*H*	*O*
62	*Croton bonplandianum*	Euphorbiaceae	-	*H*	*F*
63	*Euphorbia hirta*	Euphorbiaceae	*Dudhi ghas*	*H*	*F*
64	*Phyllanthus emblica*	Euphorbiaceae	*Ambla*	*T*	*R*
65	*Phyllanthus niruri*	Euphorbiaceae	*Hajar dana*	*H*	*F*
67	*Ricinus communis*	Euphorbiaceae	*Arandi*	*S*	*F*
68	*Acacia arabica*	Fabaceae	-	*T*	*O*
69	*Acacia nilotica*	Fabaceae	*Kikar*	*T*	*F*
70	*Acacia auriculiformis*	Fabaceae	-	*T*	*F*
71	*Bauhinia purpurea*	Fabaceae	*Kachnar*	*T*	*O*
72	*Butea monosperma*	Fabaceae	*Teshu*	*T*	*O*
73	*Clitoria ternatea*	Fabaceae	*Aprajita*	*TW*	*R*
74	*Dolichos lablab*	Fabaceae	*Sem*	*TW*	*F*
75	*Melilotus indica*	Fabaceae	*Senji*	*H*	*F*

76	*Pithecellobium dulce*	Fabaceae	*Jangal jalebi*	*T*	*O*
77	*Tamarindus indica*	Fabaceae	*Imli*	*T*	*R*
78	*Trigonella foenum-graecum*	Fabaceae	*Methi*	*H*	*F*
79	*Vicia hirsuta*	Fabaceae	-	*H*	*F*
80	*Vicia sativa*	Fabaceae	-	*H*	*F*
81	*Albizia lebbeck*	Fabaceae	*Shiris*	*T*	*F*
82	*Fumaria officinalis*	Fumariaceae	-	*H*	*F*
83	*Mentha arvensis*	Lamiaceae	*Pudina*	*H*	*F*
84	*Leucas aspera*	Lamiaceae	-	*H*	*O*
85	*Mentha piperita*	Lamiaceae	*Guma ghas*	*H*	*F*
86	*Ocimum basilicum*	Lamiaceae	-	*H*	*O*
87	*Ocimum sanctum*	Lamiaceae	*Tulsi*	*H*	*O*
88	*Allium cepa*	Liliaceae	*Pyaj*	*H*	*F*
89	*Allium sativaum*	Liliaceae	*Lehsun*	*H*	*F*
90	*Aloe barbadensis*	Liliaceae	*Gheekuar*	*H*	*O*
91	*Asparagus racemosus*	Liliaceae	*Satabar*	*TW*	*F*
92	*Linum usitatissimum*	Linaceae	*Alsi*	*H*	*O*
93	*Lagerstroemia speciosa*	Lythraceae	-	*T*	*O*
94	*Lawsonia inermis*	Lythraceae	*Mehdi*	*S*	*R*
95	*Michellia champaca*	Magnoliaceae	*Champa*	*T*	*R*
96	*Abutylon indicum*	Malvaceae	*Kangi ghas*	*H*	*F*
97	*Althea officinalis*	Malvaceae	-	*H*	*F*
98	*Hibiscus rosa-sinensis*	Malvaceae	*Gudhal*	*S*	*F*
99	*Malva sylvestris*	Malvaceae	-	*H*	*F*
100	*Sida acta*	Malvaceae	-	*H*	*F*
101	*Sida cordifolia*	Malvaceae	-	*H*	*F*
102	*Triumfetta rhomboidea*	Malvaceae	-	*H*	*O*
103	*Azadirachta indica*	Meliaceae	*Neem*	*T*	*F*
104	*Cedrela toona*	Meliaceae	*Toon*	*T*	*F*
105	*Tinospora cordifolia*	Menispermaceae	*Giloi*	*TW*	*O*
106	***Ficus benghalensis***	**Moraceae**	***Bargad***	***T***	***R***
107	*Ficus carica*	Moraceae	*Anjeer*	*T*	*R*
108	*Ficus glomerata*	Moraceae	*Gular*	*T*	*O*
109	*Ficus racemosa*	Moraceae	-	*T*	*O*
110	*Moringa oleifera*	Moringaceae	-	*T*	*R*
111	*Syzygium cumini*	Myrtaceae	*Jamun*	*T*	*O*
112	*Eucalyptus obliqua*	Myrtaceae	*Safeda*	*T*	*F*
113	*Psidium guajava*	Myrtaceae	*Amrud*	*T*	*F*
114	*Boerhaavia diffusa*	Nyctaginaceae	-	*H*	*F*
115	*Nyctanthes arbor-tris*	Oleaceae	*Harsingar*	*S*	*O*
116	*Oxalis corniculata*	Oxalidaceae	*Khattibuti*	*H*	*F*
117	*Averrhoa carambola*	Oxalidaceae	*Amrak*	*T*	*R*
118	*Argimone maxicana*	Papaveraceae	*Pili kateli*	*H*	*F*
119	*Sesamum indicum*	Pedaliaceae	*Til*	*H*	*O*
120	*Plumbago zeylanica*	Plumbaginaceae	*Chitrak*	*H*	*O*
121	*Cyanodon dactylon*	Poaceae	*Doob ghas*	*H*	*F*
122	*Antigonon leptopus*	Polygonaceae	-	*TW*	*F*
123	*Polygonum glabrum*	Polygonaceae	-	*H*	*F*
124	*Polygonum hispidum*	Polygonaceae	-	*H*	*F*
125	*Polygonum plabejum*	Polygonaceae	-	*H*	*F*
126	*Rumex dentatus*	Polygonaceae	*Jangli palak*	*H*	*F*
127	*Portulaca oleracea*	Portulacaceae	-	*H*	*F*
128	*Punica granatum*	Punicaceae	*Anar*	*S*	*O*
129	*Ranunculus sceleratus*	Ranunculaceae	-	*H*	*F*
130	*Ziziphus mauritiana*	Rhamnaceae	*Ber*	*S*	*F*
131	*Ziziphus oenoplia*	Rhamnaceae	*Jhar ber*	*S*	*R*
132	*Prunus persica*	Rosaceae	*Aadu*	*T*	*O*
133	*Rosa indica*	Rosaceae	*Gulab*	*S*	*F*
134	*Oldenlandia corymbosa*	Rubiaceae	-	*H*	*F*
135	*Murraya koenigii*	Rutaceae	*Curry patta*	*T*	*O*
136	*Aegle marmelos*	Rutaceae	*Bel*	*T*	*O*
137	*Citrus medica*	Rutaceae	*Nimbu*	*S*	*F*
138	*Madhuca longifolia*	Sapotaceae	*Mahua*	*T*	*R*
139	*Lindenbergia indica*	Scrophulariaceae	-	*H*	*F*
140	*Mazus japonicus*	Scrophulariaceae	-	*H*	*F*
141	*Scoparia dulcis*	Scrophulariaceae	-	*H*	*F*
142	*Datura strmonium*	Solanaceae	*Dhatura*	*H*	*R*
143	*Physalis peruviana*	Solanaceae	*Choa*	*H*	*F*
144	*Solanum nigrum*	Solanaceae	*Makoi*	*H*	*F*
145	*Solanum xanthocarpum*	Solanaceae	*Nili kateli*	*H*	*R*
146	*Withania somnifera*	Solanaceae	*Aswagandha*	*H*	*R*
147	*Pterospermum acerifolium*	Sterculiaceae	*Kanak champa*	*H*	*O*
148	*Lantana indica*	Verbenaceae	-	*T*	*F*
149	*Lippia nodiflora*	Verbenaceae	-	*H*	*F*
150	*Clerodendrum viscosum*	Verbenaceae	*Bhat*	*H*	*F*
151	*Phyla nudiflora*	Verbenaceae	-	*H*	*O*
152	*Asphodelus tenuifolius*	Xanthorrhoeaceae	*Pyaji*	*H*	*F*
153	*Tribulus terrestris*	Zygophyllaceae	*Gokhru*	*H*	*O*

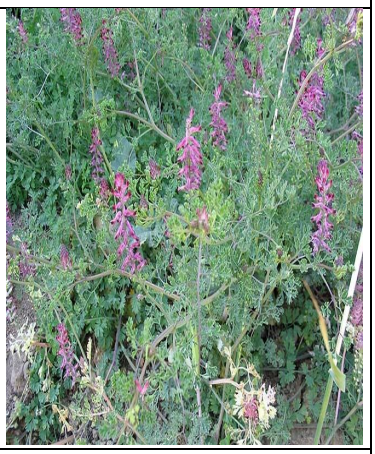
Photo plate no.-1

		
Polygonum glabrum	**Polygonum plabejum**	**Rumex dentatus**
		
Portulaca oleracea	**Ziziphus oenoplia**	**Aegle marmelos**
		
Solanum nigrum	**Solanum xanthocarpum**	**Datura strmonium**

Photo plate no.-2

		
Adhatoda vasica	**Peristrophe bicalyculata**	**Alternanthra philoxeroides**
		
Gomphrena celosiodes	**Pergularia tomentosa**	**Calotopis procera**
		
Eclipta prostrata	**Terminalia arjuna**	**Acalypha indica**

Photo plate no.-3

		
Cuscuta reflexa	**Tribulus terrestris**	**Phyla nudiflora**
		
Cordia dichotoma	**Butea monosperma**	**Pithecellobium dulce**
		
Tinospora cordifolia	**Leucas aspera**	**Fumaria officinalis**

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REFERENCES

AICRPE (All India Co-ordinated Project on Ethnobiology) Final technical report 1992-1998, Mnistry of Environment & Forest, Government of india.

Duthie, J.F. 1893. Flora of the Upper Gangetic Plain and of the Adjacent Siwalik and Sub- Himalayan Tracts, Calcutta, 3 vols.

Hajra, P.K., Mudgal, V. 1997. An Overview, BSI India.

http://www.census2011.co.in

Kumar, M., Singh, M. 2013. Study of plant diversity of Karnal District, Haryana, India. *Int J Pharm Life Sci* 4(4): 2573-2582.

Kumar, S. 2001. Flora of Haryana, BSMPS, Dehradun.

Mahalingam, R., Bharathidasan, R., Ambikapathy,V., Panneerselvam, A. 2011. Studies on antibacterial activity of some medicinal plant against Human pathogenic Micro Organism. *Asian J Plant Sci Res* 1(3): 86-90.

Maheshwari, J.K. 1963. The flora of Dehli, Council of Scientific & Industrial Research, 447 pages

Patil,D.A., Patil, M.V. 2010. Diversity and Concerns of Indian Medicinal Plants: A Scenario. *Journal of Ecobiotechnology* 2(8): 14-20,

Reddy, C.S. (2008) Catalogue of invasive alien flora of India, *Life Sci. J.* 5(2): 84- 89.

Sumeet, G., Sharma,C.M., Rana,C.S, Ghildiyal,S.K., Suyal,S. 2010. Phytodiversity (Angiosperms and Gymnosperms) in Mandal-Chopta Forest of Garhwal Himalaya, Uttarakhand, India. *Nature and Science* 8: 1-17.

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