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Phytodiversity of Wild Flora from Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala, Haryana, India

Raj Singh[1], Sushil Kumar Upadhyay[2,*], Sunita[3]

Author's Affiliation:
[1,2,3]Department of Biotechnology, Maharishi Markandeshwar (Deemed to be University) Mullana-Ambala, Haryana 133207, India

***Corresponding Author:**
Dr. Sushil Kumar Upadhyay
Department of Biotechnology, Maharishi Markandeshwar (Deemed to be University) Mullana-Ambala, Haryana133207, India.

E-mail:
sushil.upadhyay@mmumullana.org

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Abstract

The presents study revealed the diversity of wild flora (weeds) along with their vernacular names, habit, occurrence and economic significance in campus of Maharishi Markandeshwer (Deemed to be University), Mullana-Ambala district of Haryana, India. This is the unique and foremost study conducted at the Institution or University level showing current status of the plant diversity so far. Sum of 60 plant genera belonging to different taxonomic categories (29 families) have been recorded from this area during the investigation (July to September, 2018). Among all 29 families, 6 (*Asteraceae, Poaceae, Amaranthaceae, Euphorbiaceae, Convolvulaceae and Malvaceae*) were found to be most dominant in the selected area. The comparative analysis reflected that the phytodensity and abundance of *Linderniaceae* and *Mazaceae* were more common. Out of noticed genera, most of the plant species are used by the peoples for medicinal significance and in the treatment of different disease like bronchitis, cough heart diseases, anaemia, oedema gastric irritability, nervous depression, liver complaints, fever and so many other diseases in Ayurvedic and Unanipathy. Therefore, the proper knowledge of plant diversity could play important role in planning for conservation and sustainable use of available resources.

Keywords: Maharishi Markandeshwer (Deemed to be University), Phytodiversity, Medicinal significance, Treatment of diseases, Ayurvedic and Unanipathy.

INTRODUCTION

India is a land of physical, cultural, social and linguistic diversity endowed by nature with enormous biological diversity. 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; Reddy, 2008). In India,

Haryana is a prosperous state and has great place in the history and contributing as one of the key state in economy of country. The Maharishi Markandeshwer (Deemed to be University), Mullana-Ambala, Hryana, India has recently celebrated silver jubilee in year 2018 after completion of outstanding 25 years' of academia and authors wish to emphasized upon the phytodiversity of its campus as a key stone credential towards the pollution free and environmental friendly green campus (Fig. 1).Here is an attempt taken by the authors to explore the plant biodiversity from this point of view so as to provide information about the flora according to their current taxonomic. The Taxonomy is defined as the science of the description and classification of biota, essential in theoretical and applied biology (Guerra–Gracia et al., 2008).Plants represent one of the important element 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. It helps us to understand the overall structure and function of an ecosystem (Sumeet et al., 2010).

MATERIAL AND METHODS

To carry out work on plant diversity in Maharishi Markandeshwar Deemed University (MMDU), Mullana-Ambala, (Haryana), India, at first, area divided into different regions for the sake of convenience and systematic study. An extensive survey of the vegetation was made during July to September, 2018 to find out all available wild flora within University campus. All-embracing surveys were conducted regularly through site visits in order to get maximum representation of the different plant species. The recovered and identified flora was morphologically segregated into herbs, shrubs, and climbers. The plant samples were collected and took photograph of individual species from natural habitats, lands, around faculty/ departments/ residential blocks and hostels to allocate all the existing wild species of flora in a systematic manner during investigation. Identification was done with the help of keys to the empathy of floras with live specimens in the site itself but when it was not found possible then plant samples were identified in the lab (Mishra and Verma, 1992; Kumar, 2001).

Figure 1: Bird eye view of Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala, Haryana, India (site of investigation) is showing environmental friendly evergreen campus.

RESULTS

A Sum of 60 plant genera belonging to 29 taxonomic families was recorded from MMDU campus area during 4 months consecutive investigation. All the recovered phytodiversity and their ethanobotanical use along with family, vernacular names, and their morphological habit were documented in Table 1. The family wise abundance and density of the noticed flora during study was depicted through bar diagram (Fig. 2). The total 60 identified wild floral species was species belonging to 29 families. Out of that 60 plant members, 47 were identified as herbs, 9 as shrubs, and 4 as climbers' species.

Table 1: Phytodiversity and ethnobotanical uses of wild flora collected from Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala, Haryana, India.

Sr. No.	Name of the plant	Vernacular name	Family	Habit	Uses
1	*Acmella ciliata*	Akarkara	Asteraceae	Herb	Food and medicine.
2	*Adiantum*	Walking fern	Pteridaceae	Herb	Used for bronchitis, cough, and heavy menstruation with cramps. It is also used to loosen chest congestion.
3	*Ageratum houstoniaum*	Floss flower	Asteraceae	Herb	The juice of the plant is used to treat cuts and wounds.
4	*Amaranthus spinosus*	Spiny amaranth	Amaranthaceae	Herb	Medicine, dye and food.
5	*Amaranthus viridis*	Slender amaranth	Amaranthaceae	Herb	In Ayurvedic medicine and biscuits.
6	*Asparagus racemosus*	Shatavari	Asparagaceae	Herb	In medicine.
7	*Antigonon leptopus*	Coral vine	Polygonaceae	Herb	Food and medicine.
8	*Bidens biternata*	Spanish needles	Asteraceae	Herb	Leaf juice is used to treat eye and ear affections.
9	*Boerhavia diffusa*	Punarnava	Nyctaginaceae	Herb	Used for curing heart diseases, anaemia and oedema.
10	*Calyptocarpus vialis*	Straggler Daisy	Asteraceae	Herb	As medicinal drug and for spiritual purposes.
11	*Cardamine hirsuta*	Hairy bittercress	Brassicaceae	Herb	Used as garnish or flavouring in salads.
12	*Cannabis sativa*	Ganja	Cannabaceae	Herb	Uses in disease nausea and vomiting.
13	*Cayratia trifolia*	Bush grape	Vitaceae	Shrub	Food and medicine.
14	*Cassia occidentalis*	Coffeeweed	Caesalpiniaceae	Shrub	Food and medicine.
15	*Coccinia grandis*	Scarlet gourd	Cucurbitaceae	Herb	Used as a vegetables, to treat osteoarthritis and joint pain.
16	*Coronopus didymus*	Pitpapra	Brassicaceae	Herb	Used in Hawaiian medicine internally for respiratory problems such as asthma, bronchitis and emphysema.
17	*Croton bonplandinum*	Tulsi	Euphorbiaceae	Herb	As fuel and detergent. Applied on skin diseases.
18	*Cucumis callosus*	Kharbooza	Cucurbitaceae	Climber	Root paste is applied on skin eruption and in the treatment of fever.
19	*Cyanthillium cinereum*	Little ironweed	Asteraceae	Herb	Used for smoking cessation in Thailand and other countries.
20	*Dactyloctenium aegyptium*	Finger comb grass	Poaceae	Herb	In fever and small pox.
21	*Desmodium triflorum*	Kudaliya	Fabaceae	Herb	Used to treat diarrhoea and dysentery. Crush plant is applied externally on wounds, ulcers and for skin problems.
22	*Dicliptera paniculata*	Atrilal	Acanthaceae	Herb	As medicinal.
23	*Digitaria ciliaris*	Crabgrass	Poaceae	Herb	Decoction of plant is used in the treatment of

					gonorrhoea.
24	*Dysphania ambrosioides*	Warm seed	Amaranthaceae	Herb	Used to treat cough, fever and internal haemorrhages.
25	*Eclipta alba*	False daisy	Asteraceae	Herb	Used as an antiseptic and the fresh juice of the leaves is given in the treatment of edema and fever.
26	*Eleusine indica*	Crowfoot grass	Poaceae	Herb	Used as famine food. Decoction of fresh plant used as diuretic and for dysentery as fodder.
27	*Eragrostis amablis*	Feathery eragrostis	Poaceae	Herb	As food.
28	*Erigeron canadensis*	Horseweed	Asteraceae	Herb	Used in the hand drill method for making fraction fire.
29	*Euphorbia heterophylla*	Milkweed	Euphorbiaceae	Herb	As medicine and as famine food.
30	*Euphorbia hirta*	Asthma plant	Euphorbiaceae	Herb	As herbal medicine.
31	*Euphorbia microphylla*		Euphorbiaceae	Herb	It is used for breathing disorder including asthma, bronchitis and chest congestion.
32	*Calotropis procera*	Aakha (Madaar)	Asclepiadaceae	Shrub	Used in traditional medicine, tanning industry.
33	*Gokshura tribulus terrestris*	Bindi	Zygophyllaceae	Herb	Gokshura is very beneficial in curing of urinary diseases and kidney stones.
34	*Gomphrena serrata*	Arrasa con todo	Amaranthaceae	Herb	As medicinal.
35	*Hedyotis corymbosa*	Parpat	Rubiaceae	Herb	Useful in gastric irritability, nervous depression, liver complaints and fever.
36	*Hyptis suaveolens*	Pignut	Lamiaceae	Shrub	As food and medicine.
37	*Indigofera linnaei*	Leel	Fabaceae	Herb	The juice of the plant is uses as antiscorbutic and diuretic for burns and epilepsy.
38	*Ipomea obscura*	Pan bel	Convolvulaceae	Herb	The dried and powdered leaves are used to treat aphthae.
39	*Ipomea nil*	Picotee morning glory	Convolvulaceae	Climber	Used in the treatment of oedema, oliguria, ascariasis and constipation.
40	*Ipomea pes tigridis*	Tiger's paw	Convolvulaceae	Climber	The mashes leaves are applied as poultice on sores, boils, pimples and tumours.
41	*Ipomea triloba*	Little bell	Convolvulaceae	Climber	The plant is used as a poultice in the treatment against headaches. The decoction of leaves is used as treatment against stomach ache.
42	*Lantana camara*	Red sage	Verbenaceae	Shrub	In medicine and in

					construction of furniture. Also used as an ornamental.
43	*Leucas cephhalotes*	Guma	Lamiaceae	Herb	Used as an edible vegetables and herbal remedy.
44	*Lindernia ciliata*	Hairy slitwort	Linderniaceae	Herb	The sap from the crushed leaves is given after childbirth. In Taiwan the plant is considered an effective cure for menorrhagia.
45	*Ludwigia perennis*	Paddy clove	Onagraceae	Herb	Leaves- cooked and eaten as a vegetable. Plant is boiled in oil which is applied to body to bring down fever.
46	*Mazus Japaonicus*	Japaesemazus	Mazaceae	Herb	The plant is asperient, emmenagogue, febrifuge and tonic. The juice of the plant is used in the treatment of typhoid.
47	*Meliotus indicus*	Sweet clower	Fabaceae	Herb	Used as a source of nectar of for bees. The seed are made into a soup and used in the treatment of bowel complaints and infantile diarrhoea.
48	*Oxalis corniculata*	Sleeping beauty	Oxalidaceae	Herb	It is used in the treatment of influenza, diarrhoea, traumatic injuries, sprains and poisonous snake bite.
49	*Parthenium*	Feverfew	Asteraceae	Shrub	Root extracts are useful in dysentery (Singh et al. 1996). It is applied externally on skin disorder.
50	*Perotis indica*	Kuras	Poaceae	Herb	Used as fodder.
51	*Phyllanthus urinaria*	Stone breaker	Phyllanthaceae	Herb	Used as a diuretic and purgative to treat diarrhoea and diabetes.
52	*Sesamum indicum*	Sesame	Pedaliaceae	Herb	The stems are burnt as a fuel. The oil of the seed is used in barriers creams to protect skin from harmful UV light radiation.
53	*Sida cordifolia*	Bala	Malvaceae	Shrub	It is used as a primary ingredient in massage oil which is applied externally on arthritis, joint pain, paralysis and other VataRoga.
54	*Sida acuta*	Kharenti	Malvaceae	Shrub	It treats spermatorrhea, rheumatism and dropsy.The juice of the root treats fever.
55	*Solanum nigrum*	Nightshade	Solanaceae	Herb	Used as food and medicine for skin disease, rheumatism and gout. It can cure ear and eye disease.

56	*Sonchus oleraceus*	Sowthistle	Asteraceae	Herb	Juice of the plant is used for cleaning and healing ulcers. It has many medicinal properties like Antidepressant, Antioxidant, Antimicrobial, Antitumor, Antimalarial, blood purifier tonic and Anticancer.
57	*Sphagneticola trilobata*	Singapore daisy	Asteraceae	Herb	A strong decoction of the whole plant is used to treat severe chest cold.
58	*Synedrella nodifera*	Nodeweed	Asteraceae	Herb	Young shoot can be eaten as vegetables. Crushes leaves have been used as a treatment for rheumatism and when mixed with other plants relieve stomach pain.
59	*Urena lobata*	Congojute	Malvaceae	Shrub	A decoction of the root is used to treat colds, dysentery, enteritis, goiter, indigestion and malaria.
60	*Datura stramonium*	Mad apple	Solanaceae	Herb	Used as a herbal medicine. The juice of the fruit is applied to the scalp to cure dandruff and falling hair.

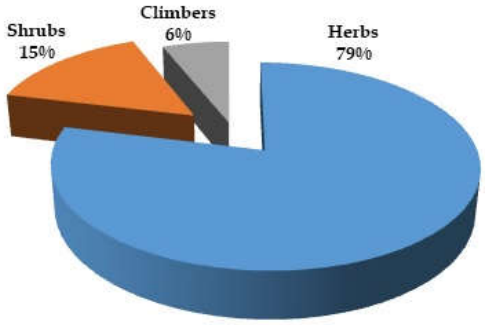

Figure 2: Pie chart depicting percent wise distribution of plants with different habit in MMDU campus.

DISCUSSION

The wild floral families with highest plant density (Fig. 3) in the current study at MMDU campus was Asteraceae (11 species), Poaceae (5 species), Amaranthaceae (4 species), Euphorbiaceae (4 species), Convolvulaceae (4 species) and Malvaceae (3 species). Some of most common plant species which occurred in study area were *Acmella paniculata* (Asteraceae), *Amaranthus viridis* (Amaranthaceae), *Croton callosus* (Euphorbiaceae), *Digitaria ciliaris* (Poaceae), *Ipomea nil* (Convolvulaceae) and *Sida acuta* (Malvaceae). By this study authors wish to propose for detailed and exhaustive consecutive investigation in near future for the ecological balance that is being upset by rapid rise of human population with their increased demand for more utilization of natural resources because the existing natural forests are protecting our living environment.

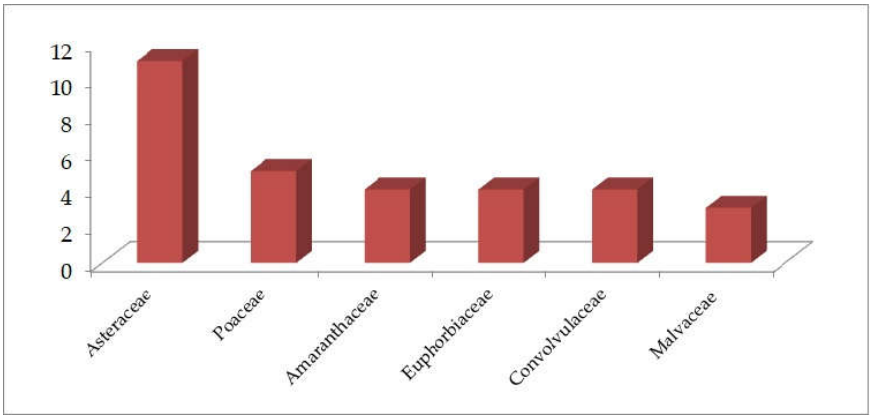

Figure 3: Bar diagram depicting the number of species of wild flora families with highest plant density in MMDU campus.

CONCLUSIONS

The Knowledge of Taxonomy is a great tool for identification of the different plant species and biodiversity conservation. It is very significant for the understanding biodiversity and functioning of ecosystem. The present study provides the basic information about the different wild plant species, which are currently found in the Maharishi Markandeshwar (deemed to be University), Mullana-Ambala, Haryana, India campus. Such documentation could play an important role for the local and regional authorities interested in the conservation of the precious wild phytodiversity for better future and human welfare of forcoming generations and sustainable development of the area. This study also representing the documentation of traditional knowledge about ethanobotanical and medicinal uses provide raw material for pharmacological investigation and leading to discovery of various drugs.

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