

**Medicinal uses of some Wild Plants from A Dry Tropical Peri-Urban Region in India**

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**ABSTRACT**

The present study aimed to document the medicinal uses of some wild plants in the anthropic peri-urban region of Bulandshahr by collecting information on interactive basis from local inhabitants of 24 villages here. Between September 2008 and March 2011, of the 62 angiospermic plant species recorded (across 24 families and 47 genera), 23 commonly used plant species were investigated for their ethnomedicinal uses. The study revealed that the plants generally considered unwanted and undesired, the weeds and ruderals including the exotic invasives here, were effectively used locally to cure ailments like fever, dysentery, wound healing, skin diseases, piles etc. The more commonly used plant species included *Abutilon indicum*, *Cynodon dactylon*, *Achyranthes aspera*, *Argemone mexicana* and *Oxalis corniculata*. Leaf and whole plant extracts, followed by root component formed the major plant components maximally used by the locals. This study revealed that the traditional knowledge of medicinal values of common weeds in Indian dry tropics has immense potential for serious pharmacological investigations for active principles involved.

**Keywords:** Traditional knowledge, Medicinal uses, Weeds, Invasive, Dry tropics.

**INTRODUCTION**

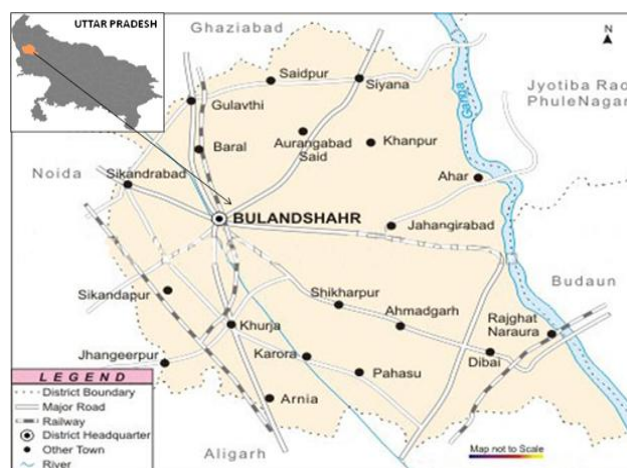
Information transcending from early civilization has presently begun to revive the global interest for the medicinal plants and their uses [1]. Presently, it is well recognized that drugs for various ailments in the international and national market ultimately depend upon plants for their extraction. As per the current scientific documentation, 80% of the world's population still believes in traditional medicine along with folklore system which is based on phytotherapy [2]. Being safe, effective and inexpensive, the indigenous remedies have become increasingly popular among people in both rural and urban areas [3]. However, the methodology of drug preparation, dosage and amount may vary according to the regions of their use [4]. India has been a reservoir of well-documented and traditionally well-practised knowledge of herbal medicines. Availability of suitable climatic conditions and diverse soil-systems favour the growth of almost every plant species [5] here. Numerous herbs and their components used in different diseases have been reported in India [6]. Such medicinal plants are commonly defined by the presence of the active chemical constituents in any/one of its components (root, stem, leaves, flowers, bark, fruit and seed) which has a particular curing ability for various ailments [7]. In Uttar Pradesh, a study related to ethno medicine in different adjoining districts has been carried out [8-21]. Undoubtedly, the relatively unexplored traditional & ethnobotanical information assume enormous significance in scientific research which requires active participation of both local people as well as scientific community to extract the maximum utilization of underutilised wild plants. Pharmaceutical companies, in addition, need medicinal plants and herbs to process them into medicine.

The ethno medicinal investigation in anthropogenic areas, particularly in and around urbanizing landscapes has been completely lacking in India. The peri-urban region of Bulandshahr, which is one of the major agriculturally important regions of

Western Uttar Pradesh that has witnessed rapid landuse changes in the last 4-5 decades. In the light of rapid ecological transformations discernible in the dry tropical peri-urban region of Bulandshahr [22, 23], the present study was undertaken to record and document the medicinal uses of commonweeds of the region.

**METHODOLOGY**

The study area, Bulandshahr (28°24' N lat. and 77°51' E long.), western part of Uttar Pradesh, located in the upper doab of the Ganges and Yamuna rivers at 237.4 m above msl (mean sea level), is basically a major agricultural district of western U.P. where sugarcane, wheat, maize and paddy are cultivated in abundance. It is at a distance of 72 km from Delhi in the north-west and 69 km from Aligarh in south. Khurja and Sikandrabad are located at a distance of 17 and 18 km respectively which are main industrial areas around Bulandshahr (Fig. 1).



**Fig. 1: Location of the study site, Bulandshahr, Uttar Pradesh**

The study included collection of the plant specimens occurring in the vegetation of selected 24 villages. Intensive

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interactive discussions and interviews were conducted with the local native people especially old-aged villagers including women and farmers for assessing the medicinal use of these plants. This information was collected for two and a half years from the local inhabitants in 24 randomly selected villages of the district. These included Valipura, Sunhara, Gangerua, Chandpur, Nayagaon, Behlimpura, Kahera, Dariyapur, Chanderu, Bilsuri, Veerkheda, Rampura, Mirzapur, Mausamgarh, Kaloli, Hazratpur, Tatarpur, Dhamera, Jasnawali, Akbarpur, Kamalpur, Kudwal, Tajpur and Baral to document the medicinal uses of the common wild plants. The wild plants were collected and preserved in the Department of Botany, I. P. (PG) College, Bulandshahr. The plants were identified according to available floras [24,25].

### RESULTS AND DISCUSSION

In the present study, 62 plant species belonging to 24 families (23 dicot and 1 monocot) and 47 genera were recorded (not

shown in Table). Poaceae represented the largest family with more than a half dozen flora. This family, along with three other larger ones of Malvaceae, Euphorbiaceae and Asteraceae accounted for more than one-fifth of the total flora recorded in this study. The species composition of the studied area depicted a relatively species-rich vegetation in Indian dry tropical region here, albeit, it contained wild exotics in abundance that included invasive ones too of prominence here e.g. *Parthenium hysterophorus*, *Ageratum conyzoides*, *Lantana camara*, *Chenopodium murale*. The other commonly found dominant ones were *Cannabis sativa*, *Ricinus communis*, *Cyperus rotundus*, *Datura Stramonium*, *Euphorbia hirta*, *Amaranthus viridis*, *Oxalis corniculata*, *Abutilon indicum*, *Achyranthes aspera*, *Argemone mexicana*, *Calotropis procera*, *Cynodon dactylon*, *Xanthium strumarium* (Plate 1). The weedy and ruderal floristic elements occurring here appear to have intruded in this region due to anthropogenic activities, facilitated by rapidly heavy transportations here, which possibly formed the major source of dispersal of propagules of such plants, followed by the surrounding water-bodies and other dispersal agents.



Plate. 1: Some of the medicinal wild plants recorded in Bulandshahr district, Uttar Pradesh



These botanical invaders recorded in this study may be thought to be an ecological omen due to their innate ability to rapidly colonize and out-compete the native species/cultivated crop plants. However, over the time, as evinced in the present study, the local people have experienced advantageous medicinal properties in them that need to be recognized and investigated further, thus, opening the avenues for their exploitation medicinally on sound basis.

Based on the information collected from the local people regarding the traditional medicinal-use of the species recorded in this study, they were found to be much familiar with 23 species which were commonly utilized for ethnomedicinal purposes in their routine life. Of these, the herbaceous annual life forms made greater contribution (58%) in the treatment of ailments compared to shrubs.

Considering the plant components or the whole plant, which found maximum use in the traditional applications medicinally, the leaves and whole plant extracts were reported to be in maximum use by the local community (28 % each), followed by roots, seeds and fruits, stem and flowers (Fig. 2). This indicated that people here, are much aware of the uses of whole plant, leaves and roots in the method of treatment while other components like stem, flowers, fruits and seeds have lesser known applications. This may not reflect the reality of importance of these lesser used plant components, as the seeds, flowers and fruits of several plants have often been reported to be rich in bio-chemical (allelochemicals) characteristics with a range of beneficial abilities.

In terms of the use of these species in various ailments recorded and documented, maximum number of them was found to be utilized for the purpose of curing wounds, ulcer, dysentery followed by toothache, cough, diarrhoea, piles, fever, skin diseases and stomachache (Fig. 3). While this is reflective of the attempts by the local people to explore the remedies of their various ailments in the plant species occurring in their vicinity, yet their long term successful experience of curability of these plant species people calls for sound scientific investigations to establish the veracity of their experience.

From the point of view of different medicinal uses of the plant species in various ailments exploited by the native people here (Table 1), *Abutilon indicum* and *Cynodon dactylon* may be ranked as most popular weed flora followed by *Achyranthes aspera*, *Argemone mexicana*, *Oxalis corniculata*, *Cyperus rotundus*, *Datura stramonium*,

*Euphorbia thymifolia*, *Alternanthera sessilis*, *Calotropis procera*, *Solanum nigrum* and *Tridax procumbens* that grew abundantly here (Fig. 4).

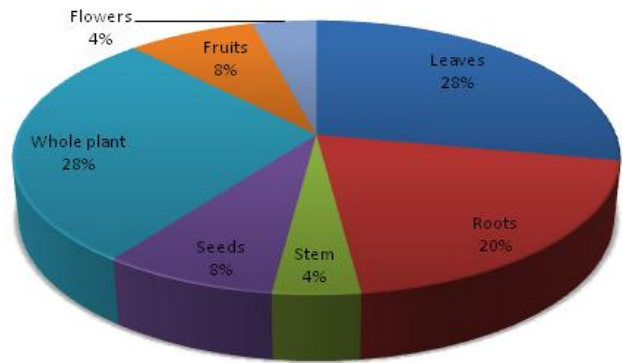


Fig. 2: Contribution of various plant components towards the treatment of various ailments recorded in a dry tropical region

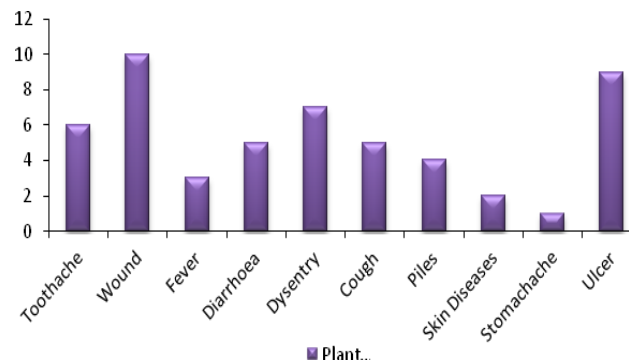


Fig. 3. Graphical representation showing number of plant species used in each ailment

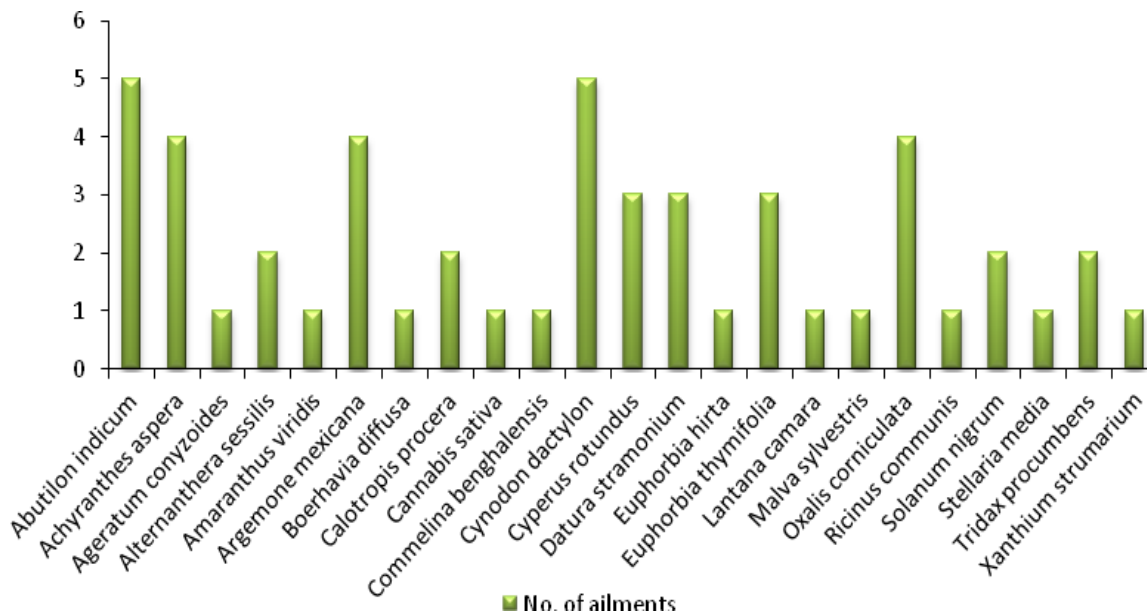


Fig. 4: Graphical presentation showing plant species contributing to cure number of ailments

**Table No. 1: Local remedies of common plant species (their family, botanical name and local names in parentheses) recorded and documented for the treatment of various ailments in the Buland shahr district of Uttar Pradesh**

S. No.	Plant species/Family/Local Name	Uses
1.	<i>Achyranthus aspera</i> L. (Amaranthaceae) <i>Latjira</i>	Root powder rubbed on gums twice a day up to one week for pain relief, crushed roots made into paste with water applied on wounds ( <i>ghav</i> ) to check bleeding, young stem used as toothbrush, crushed seeds orally given in a minute quantity to cure cough ( <i>khansi</i> ) for 2-3 days and with rice water taken once a day for one week to cure piles ( <i>bawasir</i> ).
2.	<i>Abutilon indicum</i> (L.) Sweet (Malvaceae) <i>Kanghi</i>	Leaves decoction used as mouthwash to reduce pain in gums, applied on wound, taken 2-3 ml once a day for 4-5 days in diarrhoea, applied on skin ulcer ( <i>phoda</i> ), and 4-5 crushed leaves along with honey taken once a day for 3-4 days in dysentery ( <i>pechish</i> ).
3.	<i>Ageratum conyzoides</i> L. (Asteraceae) <i>Bhakumar</i>	Fresh crushed leaves extract applied on cuts and wound to stop immediate bleeding.
4.	<i>Alternanthera sessilis</i> (L.) DC. (Amaranthaceae) <i>Chirchita</i>	Whole plant decoction of 5 ml taken once a day for 7-8 days in dysentery.
5.	<i>Amaranthus viridis</i> L. (Amaranthaceae) <i>Jangli Chaulai</i>	About 250 gm fresh cooked leaves taken for 10-15 days to cure piles.
6.	<i>Argemone mexicana</i> L. (Papaveraceae) <i>Satyanaishi</i>	Seed-oil massage on forehead helps to cure fever ( <i>bukhar</i> ), approx. 10 gm dried roots boiled with 500 ml water strained, used as mouthwash in tooth decay, half tablespoon fresh leaf juice given twice a day in cough, crushed fresh leaves used to cover and cure skin ulcer.
7.	<i>Boerhavia diffusa</i> L. (Nyctaginaceae) <i>Patharchata</i>	2-3 fresh leaves chewed once a day for 8-10 days to cure piles.
8.	<i>Calotropis procera</i> (Aiton) Dryander (Asclepiadaceae) <i>Aak</i>	Fresh roots used as toothbrush that relieves tooth pain ( <i>daant dard</i> ), dried leaves powder made into paste with water, applied for 5-6 days on skin ulcer.
9.	<i>Cannabis sativa</i> L. (Cannabinaceae) <i>Bhang</i>	2-3 ml plant decoction taken with lukewarm water twice a day for 3-4 days to cure ulcer.
10.	<i>Commelina benghalensis</i> L. (Commelineaceae) <i>Kankaua/Bakna</i>	Spoonful of fresh crushed whole plant taken along with water once a day for 4-5 days in dysentery.
11.	<i>Cynodon dactylon</i> (L.) Persoon (Poaceae) <i>Doob ghas</i>	Fresh leaf juice applied on wound, about one tablespoon juice extracted from the whole plant taken with water for 4-5 days in dysentery, also gives relief in piles and cough, whole plant crushed and applied to cure itching ( <i>khujli</i> ) on the affected area.
12.	<i>Cyperus rotundus</i> L. (Cyperaceae) <i>Mutha</i>	Dried rhizome is boiled with water and given in fever, also helpful in curing dysentery, taken in stomach ache ( <i>pet dard</i> ).
13.	<i>Datura stramonium</i> L. (Solanaceae) <i>Dhatura</i>	Root powder applied on gums to relieve pain, leaf paste applied on wound and dried leaves paste with water applied on skin ulcer.
14.	<i>Euphorbia hirta</i> L. (Euphorbiaceae) <i>Badi dudhi</i>	Fresh crushed plant applied on cuts & wounds, whole plant decoction of 3-4ml given once a day for 4-5 days in dysentery and cough.
15.	<i>Euphorbia thymifolia</i> L. (Euphorbiaceae) <i>Choti dudhi</i>	Whole crushed plant used as dressing for 2-3 days to heal wound, approx. 2gm dried leaves powder along with lukewarm water given in diarrhoea ( <i>dust</i> ).
16.	<i>Lantana camara</i> L. (Verbenaceae) <i>Raimunia</i>	Crushed fresh leaves applied on wounds as dressing.
17.	<i>Malva sylvestris</i> L. (Malvaceae) <i>Gulkair</i>	Approx. 3 tablespoon dried plant powder boiled with 100ml water, strained & taken once a day in cough.
18.	<i>Oxalis corniculata</i> L. (Oxalidaceae) <i>Khattibutti</i>	Leaves decoction used to clean teeth, fresh plant when chewed gives relief from diarrhoea, crushed plant mixed with spoonful curd taken twice a day for 2-3 days in dysentery, whole plant crushed and applied to cure itching.
19.	<i>Ricinus communis</i> L. (Euphorbiaceae) <i>Arand</i>	4-5 crushed fresh leaves applied on wound for 3-4 days, seed oil massage relieves skin itching.
20.	<i>Solanum nigrum</i> L. (Solanaceae) <i>Makoi</i>	Fresh berries chewed to cure diarrhoea and the whole plant decoction of approx. 3-4ml taken in cough.
21.	<i>Stellaria media</i> (L.) Villars (Caryophyllaceae) <i>Buch-bucha</i>	Crushed fresh stem applied on skin to get relief in itching.
22.	<i>Tridax procumbens</i> L. (Asteraceae) <i>Baramasi</i>	10-15 fresh leaves crushed and applied on wound and cuts.
23.	<i>Xanthium strumarium</i> L. (Asteraceae) <i>Chota dhatura/Kuthua</i>	Whole plant boiled in 500ml water, decoction taken about 5ml once a day for 4-5 days to cure long standing fever.

### CONCLUSION

The present study revealed that the studied area rich in invasive weeds and ruderals has been variously utilized ethno-medicinally by the local people for their health-related problems, particularly for wounds, ulcers, dysentery etc. *Abutilon indicum* and *Cynodon dactylon* were most popularly utilized wild plants. Despite limitations in approach of the study, the research findings here have potential management and conservation implications. To authenticate their scientific utilization, detailed study by researchers and pharmacologists is required in the respective fields to derive optimum benefits. Further, the active involvement of local

people in evaluation, monitoring and implementation processes is needed to conserve the natural wealth.

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