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Ethnomedicinal Importance of Some Invasive Plants of Chhattisgarh, India

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Abstract

Present study deals with the exploration of ethnomedicinally important invasive plants growing in Chhattisgarh state, India. The aim of the study is to identify and records the ethnobotanical important invasive plant, which get induced into new ecosystem and grow quite aggressively. These plants are usually harmful to our natural habitat in various ways, but many of them are highly useful to the mankind.Present paper discusses the traditional uses of invasive plants growing road side area, track lines and crop fields. Total 30 invasive plants belonging to 14 families *i.e.* Asteraceae (9), Malvaceae (4), Lamiaceae (3), Euphorbiaceae (3) and Fabaceae (2) were found abundantly in Chhattisgarh state. It is advisable that phytochemical investigations of these plants are essential to discover the possible beneficiary drugs and their authentication for the ethnomedicinal claims.

Keywords: Invasive plant, traditional use, Tribes, ecological impact.

INTRODUCTION

Invasive species are the plants that come from outside, spread rapidly and cause harm to other species communities or entire ecosystems and human being. A large part of invasive plants introduced intentionally or unintentionally throughout the world. These invasive plants cause long-lasting change on environment. Many of them are economically useful (Das and Duarah, 2013) and some are notorious for its severe negative impacts on environment and humans (Kull *et al*., 2007; Roder *et al.,* 2007).

In India, a small portion of tribal community lives in forest. These tribal communities use 2500 plant species as regular sources of medicine in India (Pei, 2001). Tribal people depend on the forest resources for various purposes like for wood, timber, non-timber forest products, medicines, food etc. (Pushpangadan, 1995). Chhattisgarh state located in the center of India covered with 44 % of forest cover, renowned for its tribes and cultures. Native tribe of Chhattisgarh state include Gonda, Konwar, Oraon, Baiga, and Pahadikorwa, which inhabit form the ancient time in Chhattisgarh, now they established as an integral part of their surrounding ecosystems.

In India, lists of distribution of invasive species are given by Nayar, (1977), Raghubanshi, (2005) and Reddy, (2008). Sheikh and Dixit, (2017) reported 82 invasive plants belongs to 26 families in Bilaspur District of Chhattisgarh. Sandhya *et al.,* 2006 studied the ethnomedicinal importance of plants used by the valaiyan community of Piranmalai hills (reserved forest), Tamilnadu, India. Das and Duarah, (2013) reported the harmful and beneficial effect of invasive plant in Jorhat of Assam. Similarly, In Chhattisgarh ethnomedicinal investigation has been formerly studied by various workers such as Agarwal *et al.,* 2010; Tirkey 2006; Kala 2009; Shukla *et al.,* 2008. Similarly ethno-medinal uses of plant were studied in different part of Chhattisgarh state such as Bastar (Hemadari *et al.,* 1989), Sarguja (Kumar and Jain, 1998), Achanakmar-Amarkantak Biosphere Reserve, Central India (Tiwari and Bharat, 1998), Raigarah (Jain and Singh, 2009). Dixit and Bhaskar, (2015) also give an account of ethnomedicinal use of weed plant in Bilaspur region of Chhattisgarh. Present work was carried out to determine ethnomedicinal uses of invasive species in Chhatttisgarh State.

Study Sites

Chhattisgarh is located in center east of India. It is the 10 largest states in India, and lies between 21.2787° north and 81.8661° east latitudes with geographical area of 135,194 km². A large portion of Chhattisgarh covers by the forest; total 59772 km²areas are recorded as forest cover, which are 44.21 % of its total geographical region. Climate of the state is tropical and divisible into three distinct seasons viz. rainy (July to October) winter (November to February), and summer (March to June). Temperature of the state varies 30 and 48° C in summer and between 0 and 25°C during winter. Present study is mainly done in four district of Chhattisgarh state *i.e.* Bilaspur, Dhamtari, Ambikapur and Dantewada (Figure1).

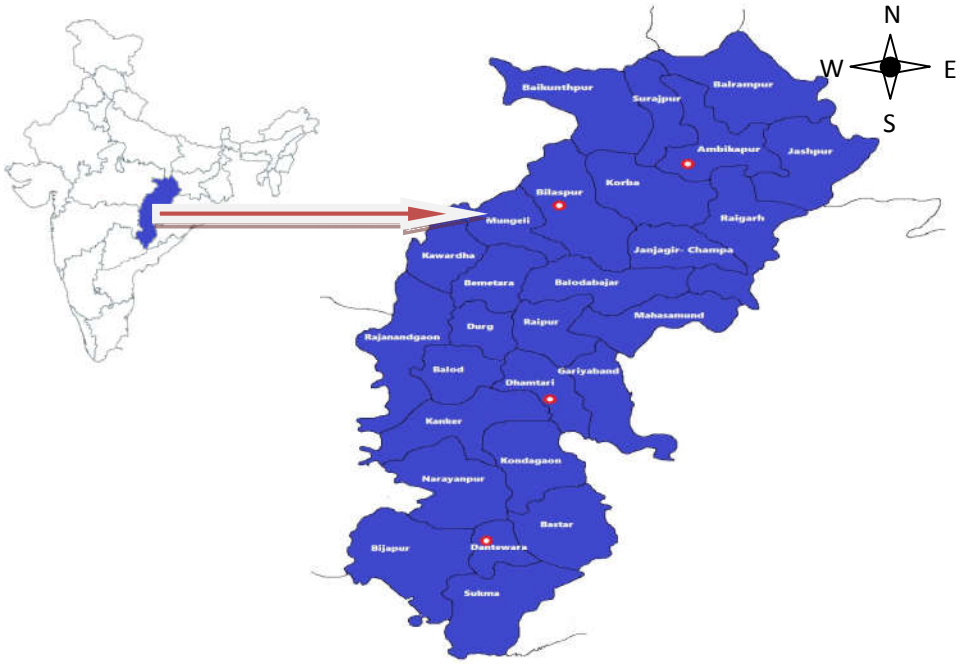

Figure 1: Map of Chhattisgarh, India.

MATERIALS AND METHODS

An assessment of invasive plants of Chhattisgarh state was made to find out the invasive flora of state and an attempt was made to explore the therapeutic values of common invaders by consulting tribe of Chhattisgarh state, which is also known as the tribal state of India. Periodic field trips for ethnobotanical exploration of invasive species were conducted in tribal inhabited areas of Chhattisgarh State along the margin of forests and road side area of city during 2015-2016. During the course of investigation, personal interviewed were performed with the village dwellers, the herbal medicine practitioners and other traditional healers. First-hand information on the medicinal uses of the plants were gathered from the major tribes residing in and around the study are Oraon, Gonad, Konwar, Baiga, Bharia, and Pahadikorwa. Specific knowledge of the local flora and their medicinal uses was gathered by empirical reasoning, trial or error through screening with rural folks (Satapathy*et al.,* 2012).

Folk-lore claims were collected and compressed for herbarium preparation (Jain *et al.,* 2006). Plants were collected in flowering and fruiting conditions and identified with the help of flora of Bilaspur District, M.P. Murtiand Panigrahi,(1999), Verma *et al.,* (1993); Mudgal *et al*. (1997), Khanna *et. al,* (2001). Uses of plant are mainly confined to the information recorded from the tribes or local inhabitants. All the prepared herbarium specimens are maintained in the Herbarium of Department of Botany, Guru Ghasidas Central University, Bilaspur (CG) India. All the invasive species were arranged in their Botanical name, family (as per APG IV 2016-17), local/vernacular name, ethnomedicinal uses and ecological impact summarized in table no. 1.

RESULTS

In the following list, 30 invasive plant species are arranged alphabetically. Specific description is followed by botanical name, family, local name, medicinal uses and ecological impact.

Table 1: Ethno–medicinal importance of invasive plant of Chhattisgarh, India

S. No.	Botanical Name	Family	Local Name	Medicinal Use	Ecological Impact
1.	*Acalypha indica* L.	Euphorbiaceae	Kuppi	Leaves decoction used in respiratory problems, constipation, skin disease and in snake bites.	Common weed on waste land.
2.	*Acmella oleracea* (L.) R.K. Jansen	Asteraceae	Akarkar	Flower is used in toothache.	Common weed in waste land.
3.	*Ageratum conyzoides* L.	Asteraceae	Gondhowa -bon	Leaves are used to cure skin disease, snake bite and malaria fever.	Common weed of crop field and reduce the crop productions.
4.	*Argemone mexicana* L.	Papaveraceae	Peeli-katili	Yellow juice of plant applied externally on body for 6-7 days in malaria fever.	Reduce crop production and causeallelopathic effect on seedlings.

5.	*Blumea lacera* (Burm. f.) DC.	Asteraceae	AmaiSak	Roots of plant mixed with pepper are given in cholera and along with rhizomes of *Cyperusrotundus*given in dysentery.	Reduce crop production and native vegetation.
6.	*Calotropis gigantean* (L.) W.T. Aiton	Apocynaceae	Aak	Decoction of flowers is taken for the treatment of cough and asthma.	Common weed on waste land.
7.	*Commelina benghalensis* L.	Commelinaceae	Kankaua	Whole plant used in skin infection.	Common weed on waste land, crop field and gardens.
8.	*Cleome viscosa* L.	Cleomaceae	Hurhur	Paste of seeds taken orally with hot water in anthelmintic and liver complaints.	Aggressively grow on road side area.
9.	*Croton bonplandianus* Baill.	Euphorbiaceae	Kala-bhangre	Leaves are used for controlling B.P and for the treatment of skin diseases, cuts and wounds.	Reduce crop production and native vegetation.
10.	*Eclipta prostrata* L.	Asteraceae	Bhingra	Paste of leaf used for hair growth and skin disease.	Commonly grow on road side area.
11.	*Eichhornia crassipes* (Mart.) Solms	Pontederiaceae	Jalkumbhi	Juice of plant is used to treat fresh wounds injury and also used to relieve in swelling burning.	Block drainage system, reduce crop productions and cause death of aquatic animals.
12.	*Euphorbia hirta* L.	Euphorbiaceae	Dhoodhli	Crushed leaves mixed with goat's milk used in dysentery, diarrhea and asthma.	Reduce crop production.
13.	*Grangea maderaspatana* (L.) Poir.	Asteraceae	Panijhari	Plant paste with cow milk is given to cure menstrual disorders. Leaf paste with honey is given to cure stomach disorders.	Grow in shallow areas of river.
14.	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	Vilayatitulsi	Dry seed soaked overnight in a glass of water to treat urinary problems.	Common weed along the road side and railway track.

15.	*Impatiens balsamina* L.	Balsaminaceae	Chiraiya	Leave of the plant use in snake bites, stem and flower use in burns.	Common weed and reduce crop production.
16.	*Ipomoea carnea*Jace.	Convolvulaceae	Besharam	Decoction of leaf used in asthma, urinary problems and jaundice. Plant was also used for the treatment of leucoderma.	Block drainage system.
17.	*Lagascea mollis* Cav.	Asteraceae	-	Leaf paste is used to cure microbial infection.	Common weed along road side and agricultural land.
18.	*Lantana camara* L.	Verbenaceae	Putrus	Juice of leaves mixed with cow's milk is used in snake bite and insect bites.	Reduce crop production and cause allelopathic effect on native vegetation. Plant is also used in paper industry and live fencing.
19.	*Leonotis nepetifolia* (L.) R.Br.	Lamiaceae	LalGuma	Infusion of whole plant is used against fever, cold, coughs and malaria.	Reduce crop production.
20.	*Malachra capitata* L.	Malvaceae	Van bhindi	Plant used to treat pain, hepatic cirrhosis, inflammation, diarrhea, dementia, pyrexia, ulcer and healing of wounds.	Common weed along the road side area.
21.	*Martynia annua* L.	Martyniaceae	Bagnakha-kanta	Seed used in snake bite.	Commonly grow along the road side area.
22.	*Parthenium hysterophorus* L.	Asteraceae	Gajar-grass	Decoction of root is useful in dysentery. Leaf juice is applied externally on skin disorder.	Reduce crop productivity and itching in humans.
23.	*Plectranthus mollis* (Aiton) Spreng.	Lamiaceae	-	Plant use for skin treatment and respiratory disorders.	Common weed along road side.
24.	*Senna occidentalis* L.	Fabaceae	Kasunda	Flower infusion used in bronchitis disease. Leaves used for the treatment of	Common weed along the road side area.

				fevers, urinary tract disorders and edema.	
25.	*Senna tora* (L.) Roxb.	Fabaceae	Charota	Leaf paste use in fungal infection, and also used in treating body pain.	Reduce crop production, common along road side and agriculture land.
26.	*Sida acuta* Burm. f.	Malvaceae	Balihari	Fresh root is crushed with black pepper and is taken orally once daily for 7 days to cure antipyretic, diuretic and gonorrhea.	Reduce crop production and native vegetation, also used for making broom.
27.	*Tridax procumbens* L.	Asteraceae	Ghamra	Leaf juice of plant is used to cure wound, dysentery, diarrhea and headaches.	Grow along the road side area, garden and crop field.
28.	*Triumfetta Rhomboidea* Jacq.	Malvaceae	Chineses Bar	Plant used in Dysentery, Diarrhea and Leprosy.	Grow along the road side area, garden and crop field.
29.	*Urena lobata* L.	Malvaceae	Bachita	Extract of leaves and roots are used in cough, malaria, venereal diseases, wounds, toothache and rheumatism.	Common weed along road side area.
30.	*Xanthium strumarium* L.	Asteraceae	GokhrooKanta	Decoction of root is used in the treatment of fever. Seed decoction is used for urinary tract problems.	Common weed in crop field and reduce crop production.

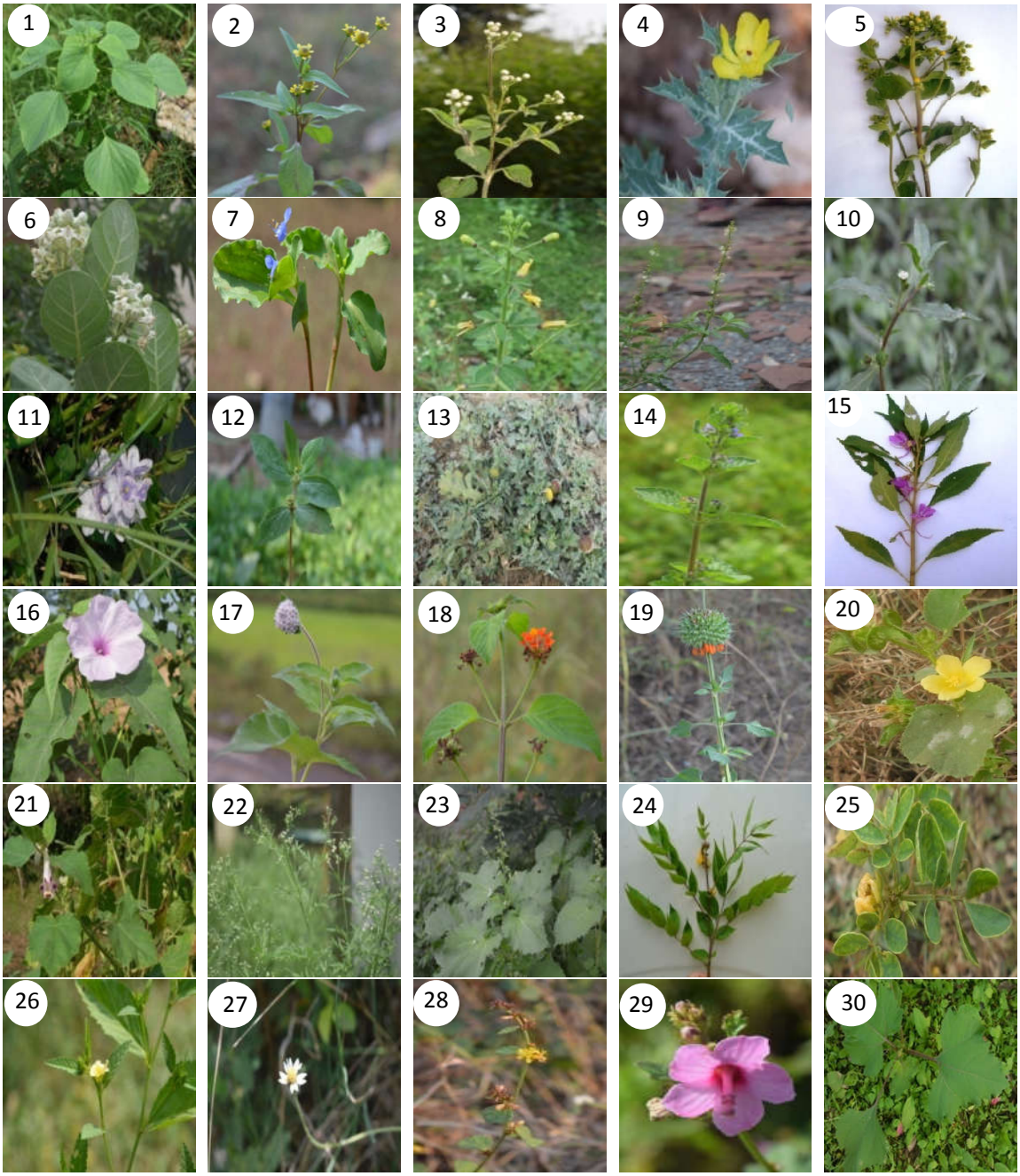

Photo Plate 1 (1-30):-1. *Acalypha indica* L. 2. *Acmella oleracea* (L.) R.K. Jansen 3. *Ageratum conyzoides* L. 4. *Argemone maxicana* L. 5. *Blumea lacera (*Burm.f.*)* DC.6. *Calotropis gigantea* (L.) W.T. Aiton (L.) R. Br. 7. *Commelina benghalensis* L. 8. *Cleome viscosa* L. 9. *Croton bonplandianus* Baill. 10. *Eclipta prostrata* (L.) L. 11. *Eichhornia crassipes* (Mart.) Solms 12. *Euphorbia hirta* L. 13. *Grangea maderaspatana* (L.) Poir. 14. *Hyptis suaveolens* (L.) Poit. 15. *Impatiens balsamina* L.16. *Ipomoea carne a*Jace. 17. *Lagascea mollis* Cav.18. *Lantana camara* L. 19. *Leonotis nepetifolia* (L.) R.Br. 20. *Malachra capitata* L. 21. *Martynia annua* L. 22.*Parthenium hysterophorus* L. 23. *Plectranthus mollis* (Aiton) Spreng. 24. *Senna occidentalis* L. 25. *Senna tora* (L.) Roxb. 26. *Sida acuta* B urm. f. 27. *Tridax procumbens* L. 28. *Triumfetta rhomboidea* Jacq. 29. *Urena lobata* L. 30. *Xanthium strumarium* L.

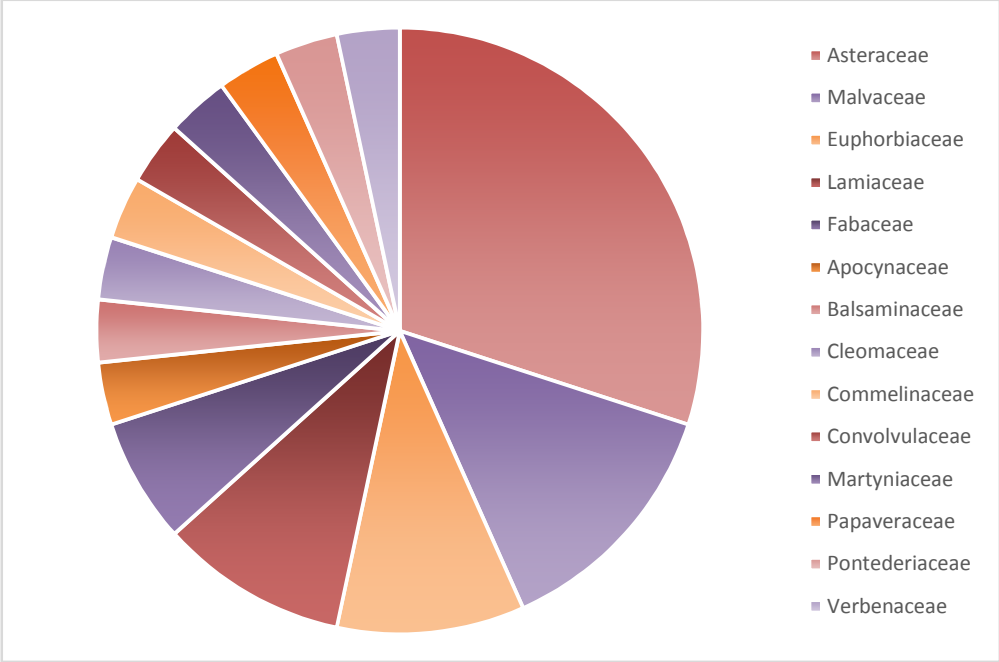

Figure 1: Percentage occurrence of families to which the species belongs.

In the present study 30 invasive plants of 14 families were recorded from the road side areas of the study site. The most dominant family was Asteraceae (9), Malvaceae (4), Lamiaceae (3), Euphorbiaceae (3) and Fabaceae (2) (Figure -1).All the recorded invasive species of the study area are used by the ethnic communities as ethno remedy. They are used to cure different common diseases including Skin allergies, malaria fever, stomach disorders, urinary infection, snakebites, liver complaints, asthma, dysentery, diarrhea, hair growth, blood pressures, cholera, jaundice, headache, chest pain, menstrual disorders etc.. These plant induce harmful ecological impact on our biodiversity which includes reduction in crop production, degradation in native plant species, block of drainage systems (*Ipomea aquatica, Eichornia crassipes*) and also responsible for the death of aquatic animals (*Eichornia crassipes*).

CONCLUSIONS

Present study revealed that the whole plant or parts of the plants such as roots, stem, flowers, leaves, fruits and seeds are used as medicine in treating different diseases. They are used in the treatment of tooth pain, respiratory problems, constipation, skin disease, snake bites, dysentery, diarrhea and headaches etc. By considering the ethnomedicinal and ethnobotanical importance of these invasive species it is inappropriate to classify this group of plants as 'harmful species'. These invasive plants have valuable medicinal uses, which helps to discover the possible beneficiary drugs and their authentication for the ethnomedicinal claims.

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