

## Exotic weeds of Bhopal and their medicinal utility

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### Abstract

Because of strategic location in the heart of the country, Bhopal is floristically rich and has more than 1000 species of flowering plants, predominantly angyosperms. Apart from indigenous species, there are exotic species also, which have their nativity in far off countries in the world. Many of these species have been encountered and recorded by the botanists from various parts of the country and their description can be witnessed in standard floras, published mostly in the late 19th century or early 20th century. Oommachan<sup>15</sup> in his flora of Bhopal has given a list of 24 exotic weeds which more or less have become naturalised in the ambience of Bhopal and its suburbs. Out of these species 11 medicinally important species have been mentioned in the present paper.

**Key words :** Antiinflammatory, Snake bite, Antimicrobial, *Immunomodulator*; anticancerous.

**B**hopal, the capital city of M.P. has a quite rich floristic composition which not only suits and supports the growth of diverse indigenous flora but at the same time has become home for a variety of exotic species which comprise of weeds, fruit plants as well as ornamentals. Oommachan<sup>15</sup> in his flora of Bhopal has given a list of 24 exotic weeds which belong to 21 genera and 11 families.

Out of these species 23 belong to dicotyledons, whereas one species *i.e.* *Eicchornia crassipes* belongs to

monocotyledons. These species are given in table-1.

The present paper deals with medicinal utility of 11 exotic weeds which belong to 11 genera, 11 species and 7 families. The medicinal utility given in the paper for a particular species pertains to local uses as well as they are based on the findings of various researchers in the field of herbal medicine. The medicinally important weeds are arranged alphabetically with their botanical names, vernacular name(s) followed by family name.

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Table-1. Showing exotic weeds of Bhopal as reported by Oommachan<sup>15</sup>  
in his flora of Bhopal

S.No.	Name of the species	Family
1.	* <i>Acanthospermum hispidum</i> DC.	Asteraceae
2.	<i>Agave mexicana</i> Dr.&Prain	Agavaceae
3.	<i>Ageratum conyzoides</i> L.	Asteraceae
4.	<i>Alternanthera ficoides</i> (L.) R.Br.	Amaranthaceae
5.	* <i>A. pungens</i> H.B.&K.	Amaranthaceae
6.	<i>Antigonum leptopus</i> Hook.&Arn	Polygonaceae
7.	* <i>Argemone mexicana</i> L.	Papaveraceae
8.	* <i>Cichorium intybus</i> L.	Asteraceae
9.	<i>Croton bonplandianum</i> Baill.	Euphorbiaceae
10.	* <i>Eichhornia crassipes</i> Solms.	Pontederiaceae
11.	<i>Euphorbia geniculata</i> Orteg.	Euphorbiaceae
12.	<i>Flaveria repanda</i> Lag.	Asteraceae
13.	<i>Gomphrena celosioides</i> Mart.	Amaranthaceae
14.	<i>Hymenanthemum tenuifolium</i> Cass.	Asteraceae
15.	* <i>Jatropha gossypifolia</i> L.	Euphorbiaceae
16.	<i>J. panduraefolia</i> Andr.	Euphorbiaceae
17.	* <i>Kirganelia reticulata</i> (Poir.)	Euphorbiaceae
18.	<i>Lagascea mollis</i> Cav.	Asteraceae
19.	* <i>Lantana camara</i> L.	Verbenaceae
20.	<i>Nicotiana plumbaginifolia</i> Viv.	Solanaceae
21.	<i>Opuntia dillenii</i> Haw	Cactaceae
22.	<i>Oxalis latifolia</i> H.B.&K.	Oxalidaceae
23.	<i>O. martiana</i> Zucc.	Oxalidaceae
24.	* <i>Parthenium hysterophorus</i> L.	Asteraceae

\* The exotic weeds which have been dealt with in the present paper.

*Enumeration of species :*

1. *Acanthospermum hispidum* DC. (Asteraceae)  
**Bidigadi kanta, Bristly starbur** (Fig. 1).

This weed was first reported by Gamble<sup>8</sup> in 1915 from Madras. It was later reported from Western Ghats by Santapau<sup>21</sup>. Now it is a common weed almost throughout India. It is abundantly found in Bhopal and its suburbs.

It is reported to have a number of medicinal attributes. According to Chakraborty<sup>3</sup>, who have reviewed its therapeutic efficacy. *A. hispidum's* paste is useful in skin afflictions and leaf juice has antipyretic properties. It has also been reported to have antimicrobial, antiviral, anthelmintic, immunomodulator, abortifacient, antitrypanosomal and antileishmanial properties.



Fig. 1. *Acanthospermum hispidum*

Koukouikila-Koussounda<sup>3</sup> have reported a very strong antiplasmodial activity of the methanolic extract of *A. hispidum* in their *in vitro* study against *Plasmodium falciparum*.

2. *Ageratum conyzoides* L. (Asteraceae).  
**Jangli pudina, Goat weed** (Fig. 2).

A fairly common weed in gardens and wastelands. It has been reported by Haines<sup>9</sup>, Hooker<sup>10</sup>, Duthie<sup>7</sup> and Gamble<sup>8</sup>.



Fig. 2. *Ageratum conyzoides*

*A. conyzoides* has also medicinal properties, and is being used in various parts of the country in the alleviation of many ailments. Kamboj and Saluja<sup>3</sup> report that it is utilized in the treatment of burns and wounds, as antimicrobial, in athrosis, headache, pneumonia, as analgesic, antiinflammatory, antispasmodic & antiasthmatic. It is also attributed with haemostatic properties, in gastrointestinal disorders, gynaecological problems and said to be useful in the treatment of leprosy and other dermal diseases.

3. *Alternanthera pungens* H.B.&K. Syn. *A. echinata* Sm.;  
*Achyranthus repens* L. (Amaranthaceae).  
**Khakiweed, patharchata** (Fig. 3).

It has been reported by Santapau<sup>20</sup>. The weed has become naturalised in many parts of the country especially in gravelly soils in hotter parts of India. It is a native of Tropical America.



Fig. 3. *Alternanthera pungens*

*A. pungens* is reported to have diuretic properties as reported by Calderon *et al.*<sup>3</sup>. They pharmacologically evaluated the diuretic activity of the ethanolic extract of this plant on rats. They investigated urinary excretion of water, pH, density and sodium concentration in isotonic saline loaded rats. According to them, the extract exercised an effective diuretic activity in comparison with furosemide, increasing significantly the renal loss of sodium.

Locally, it is given in the form of decoction, for crushing kidney stones or renal calculi and said to be very effective.

4. *Argemone mexicana* L. (Papaveraceae).  
**Shialkanta, Peelikatari** (Fig. 4)

A prickly herb from Mexico, has been reported by Hooker<sup>10</sup>, Cooke<sup>6</sup>, Duthie<sup>7</sup>, Gamble<sup>8</sup> and Haines<sup>9</sup>. It has naturalised in many parts of the country in waste places. It profusely flowers & fruits.



Fig. 4. *Argemone mexicana*

Vaidya *et al.*,<sup>23</sup> report that there is an inhibition of human pregnancy plasma diamine oxidase with berberine and sanguinarine, the two of the alkaloids of *Argemone mexicana*. The studies of Veni and Pushpanathan<sup>24</sup> indicate that ethanolic and methanolic extracts of *A. mexicana* root, stem and leaves have antibacterial activity against *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Bacillus subtilis*, *Pseudomonas aeruginosa* and *Proteus mirabilis*. Locally the yellow extract of this plant is externally applied on the leucodermic patches which are exposed to sunlight for effective treatment.

5. *Cichorium intybus* L. (Asteraceae)  
**Kasni, Chicory** (Fig. 5)

This economically important weed has

been reported by Hooker<sup>10</sup>, Cooke<sup>6</sup> and Duthie<sup>7</sup>. Oommachan<sup>15</sup> has reported it from Nabibagh, Bhopal. The present author has witnessed it in a field allotted to Saifia College, Bhopal at Karond, where it has been found growing abundantly and luxuriously.

*Cichorium intybus* as called Kasni in Hindi/Urdu. Rehman *et al.*<sup>19</sup>, conducted antibacterial and antifungal activity of the crude extract and organic solvent extracts. They found it to have significant antibacterial activity against *E. coli*, *K. pneumoniae*, *P. aeruginosa*, *Staphylococcus epidermidis*, methicillin resistant *S. aureus* and *B. subtilis*. According to them ethyl acetate fractions were effective against *Fusarium solani* and *Aspergillus niger*.



Fig. 5. *Cichorium intybus* L.

Asl *et al.*<sup>1</sup>, found out that a mixture infusion of *Cichorium intybus* and *Cinnamomum zeylanicum* (2.5 and 0.5 g/100ml and twice a day) administered to 25 patients with NAFLD (Non alcoholic fatty liver disease) was quite effective in controlling the disorder. Locally it is used in the form of whole plant decoction as antipyretic.

6. *Eichhornia crassipes* Solms. (Pontederiaceae)  
**Jalkumbhi, waterhyacinth** (Fig. 6)

It is commonly known as Jalkumbhi/ water hyacinth and in America it is known as Dollar weed. A very common free floating as well as amphibious plant in various parts of India. In Bhopal, it is said to have been introduced from Calcutta in 60's as claimed by a senior professor of M.V.M. it is a native of America.



Fig. 6. *Eichhornia crassipes*

*Eichhornia crassipes* has a very high rate of adventive spread and can be witnessed luxuriantly growing in various fresh water bodies of our country. According to Jayanthi *et al.*<sup>11</sup>, in Chhattisgarh, *E. crassipes* is used as styptic. The fresh juice of this weed is used to treat fresh wounds. It is also used to ease swellings, burning, haemorrhage and goiters. Their experiments with various solvent extracts of *E. crassipes* in formaldehyde induced paw oedema in Male Swiss Albino mice indicates high degree of antiinflammatory activity.

7. *Jatropha gossypifolia* L. (Euphorbiaceae)  
**Lal arand** (Fig. 7).

It is a shrubby plant and has been



reported by Cooke<sup>6</sup>, Gamble<sup>8</sup> and Haines<sup>9</sup> from Various parts of the country. It has become very common hedge plant and can also be witnessed on road sides and waste places in Bhopal and its suburbs. It is a native of Brazil.



Fig. 7. *Jatropha gossypifolia*

*J. gossypifolia* is reported to have a number of medicinal attributes. According to Chopra *et al.*<sup>5</sup>, the leaves are applied to boils and carbuncles, eczema and itches. Seeds are said to cause insanity and also act as emetic. Both leaves and seeds are purgative.

8. *Kirganelia reticulata* (Poir.) Baill. (Euphorbiaceae).

**Punjali** (Fig. 8).

A very common shrub among hedges and waste places. Often grows gregariously. It has been reported from many parts of India. Apart from medicine it is also used as fuel. Said to have been introduced throughout Tropical India, from Srilanka, China and Tropical Africa<sup>15</sup>.

Methanolic leaf extract of *K. reticulata* is reported to have the larvicidal and adult



Fig. 8. *Kirganelia reticulata*

emergence inhibition activity against human filarial vector *Culex quinquefasciatus*<sup>14</sup>. Shruthi *et al.*<sup>22</sup>, report that a phytoconstituent polyprenol isolated from the leaves of *K. reticulata* was found to have antibacterial activity against both Gram negative & Gram positive bacteria. It also showed anthelmintic activity against *Pheretima posthuma*.

9. *Lantana camara* L. (Verbenaceae).

**Gul sitara** (Fig. 9).

A native of Tropical America has almost naturalised in many parts of India. It is a straggling shrub and often met with on calcium rich soils and can also be witnessed on old masonry.

*L. camara* ethanolic extracts (Leaves and roots) are reported to have *in vitro* antibacterial activity against *S. aureus*, *Proteus*

*vulgaris*, *P. aeruginosa*, *Vibrio cholerae*, *E. coli* and two multiresistant strains of *E. coli* & *S. aureus*<sup>2</sup>.



Fig. 9. *Lantana camara*

The crushed leaves of *L. camara* are effective in snakebite. They are directly applied on the bitten area. A tea made from the leaves of this plant is effective in controlling headaches, fever, coughs, flu, toothache and indigestion. It is to be cautioned that leaves are also reported to be toxic and hence should only be used after consultation with a physician.

10. *Opuntia dillenii* Haw. (Cactaceae).  
**Nagphani** (Fig. 10).

A common cactus plant in many parts of this country. It is a native of South America. Often seen as a hedge plant. It has been reported by Hooker<sup>10</sup>, Gamble<sup>8</sup> and Haines<sup>9</sup> from various parts of the country indicating its introduction to more than 100 years back.

The fruits of *O. dillenii* are reported to be refrigerant, edible and sweet with a pleasant blend of acidity. The roots of this plant are very bitter. The roots are used for inducing



Fig. 10. *Opuntia dillenii*

quick vomiting in the case of persons bitten by snakes<sup>16</sup>. However, it is not used locally either as medicine or as fruit.

11. *Parthenium hysterophorus* L. (Asteraceae).  
**Gajar Ghas, carrot grass** (Fig. 11).

This weed has been witnessed in every conceivable habitat, be it xeric, mesic or even hydric. Wherever, it grows it grows luxuriantly and flowers & fruits profusely almost round the year. The weed finds its place in the list of exotic weeds in the flora of Bhopal<sup>15</sup>. It is an exotic from Tropical America.



Fig. 11. *Parthenium hysterophorus*

*Parthenium hysterophorus* is known as obnoxious weed and causes skin allergy to susceptible persons, but it has also been attributed with many medicinal attributes. For instance, it is a remedy for skin inflammation, rheumatic pain, diarrhoea, dysentery, urinary tract infections, malaria and neuralgia<sup>17</sup>.

A perusal of literature reveals that Oommachan<sup>15</sup> has carried out floristic studies exhaustively in Bhopal and its suburbs. In his treatise 'The Flora of Bhopal', he has reported 148 families of angiosperms from the said area (121 dicots and 27 monocots), 544 genera (436 dicots and 108 monocots) and 836 species (688 dicots and 144 monocots). He has reported 24 exotic weeds, which he came across during his exploratory work. These exotic weeds comprise of 06 species each of the families Asteraceae & Euphorbiaceae, 03 species of Amaranthaceae, 02 of oxalidaceae and one each of Agavaceae, Polygonaceae, Papaveraceae, Pontederiaceae, Verbenaceae, Cactaceae and Solanaceae.

Almost all the aforesaid exotics have become naturalized and well adapted to local edaphic and climatic conditions. The presence of these exotic weeds in the country may be attributed to tourists' robes, shoes, luggage and import of food grains, fruits or vegetables. Almost all these exotics have made their presence about 100 years back as revealed by the published literature. During such a long time, these species have become naturalized in this country because of their high degree of adaptability. When locals came in contact, they experimented with their therapeutic efficacy and found that some of them have medicinal properties against certain health disorders including cancer. It is worth mentioning that

*Eichhornia crassipes* and *Parthenium hysterophorus* have become problem, the former spreads adventively through offsets and has a high degree of totipotency and the latter profusely flowers and fruits and occupies every conceivable habitat. The other species which successfully grows and occupies huge areas of land is *Lantana camara*. It has a very high degree of allelopathic / teletoxic effect on the neighbouring seedlings of native / indigenous species, which fail to grow / survive. Some local species of plants, which used to be seen in abundance are seldom seen now. These include *Spergula arvensis* L., *Stellaria media* (L.) Vill., *Vaccaria pyramidata* Medik., *Fumaria parviflora*, *Hybanthus enneaspermus* (L.) F.Muell., *Anotis lancifolia* (Dlz.) Hook.f. and many other species. A very common weed, but medicinally important plant, *Cassia tora*, has become very rare in this area. *Opuntia dillenii* and *Agave mexicana* are being used as hedges and *Antigonum leptopus*, a climber with profusion of beautiful pink flowers is grown as ornamental as well as found as an escape. Persistent presence and spread of these exotic weeds have made these species more or less indigenous.

#### References :

1. Asl, Zeynab Sheybani, Ali Akbar Malekirad, Mohammad Abdollahi, Alireza Bakshipour, Hajar Akbari Dastjerdi, Sara Mostafalou and Razieh Yousef Poor (2014). *Health* 6: 1212-1217.
2. Barrete, F.S. *et al.*, (2010). *J. Young Pharm.* 2(1): 42-44.
3. Calderon, C.P., S.B. Garcia Aseff and L.B. Fuentes (1997). *Phytotherapy Research* 11 (8): 606-608.
4. Chakraborty, Anup K., V. Amit, Gaikwad



- and Karuna B. Singh (2012). *Journal of Applied Pharmaceutical Science* 2 (1): 144.
5. Chopra, R.N., S.L. Nayar and I.C. Chopra (1956). *Glossary of Indian Medicinal Plants*. C.S.I.R. New Delhi.
  6. Cooke, T. (1901-1908). *The Flora of the Presidency of Bombay*, London. 2 Vols. (Reprinted. Edn. *Bot. Surv. India*, Calcutta, 3 Vols., 1958).
  7. Duthie, J.F. (1903-1929). *Flora of the Upper Gangetic Plain and of the Adjacent Shivalik and Sub. Himalayan Tracts* (ed.1) Calcutta 3 Vols. (Reprinted. Edn., *Bot. Surv. India*, Calcutta 2 Vols., 1960).
  8. Gamble, J.S. and C.E.C. Fischer (1915-1936). *Flora of the Presidency of Madras*, London 11 parts.
  9. Haines, H.H. (1921-1924). *The Botany of Bihar and Orissa* (ed.1) London 6 parts. (Reprinted. edn. *Bot. Surv. India*, Calcutta, 3 Vols., 1961).
  10. Hooker, J.D. (1872-1897). *The Flora of British India* London, 7 Vols.
  11. Jayanthi, P., P. Lalitha, R. Sujitha and A. Thamaraiselvi (2013). *Int. J. Pharm. Tech Res* 5(2): 641-645.
  12. Kamboj, Anjoo and Ajay Kumar Saluja (2008). *Int. J. Green Pharm*, 2(2): 59-68.
  13. Koukouikila, Koussounda, Felix, Ange-Antoine Abena, August, Nzoungani, Jean-Vivien, Monbouli, Jean Maurille Ouamba, Jurgen Kun and Francine Ntoumi (2013). *Afr. J. Tradit. Complement Altern. Med.* 10(2): 270-276.
  14. Manimegalai, M. and S. Umavathi (2010). *Em International* 29(3): 413-416.
  15. Oommachan, M. (1977). *The Flora of Bhopal (Angiosperms)*. J.K. Jain Brothers, Bhopal.
  16. Parmar, C. and M.K. Kaushal (1982). *Opuntia dillenii* p. 54-57 In *Wild Fruits*: Kalyani Publishers, New Delhi India
  17. Prain, D. (1903). *Bengal Plants* (ed.1.) Calcutta 2 Vols. (Reprinted. edn. *Bot. Surv. India*, Calcutta 2 Vols. 1963).
  18. Patel, Seema (2011). *Biotech* 1(1): 1-9.
  19. Rehman, Ali Najeeb Ullah, Hussain Ullah and Ijaz Ahmad (2014). *Asian Pac. J. Tropical Dis.* 4(2): S943-S945.
  20. Santapau, H. (1957). *The Flora of Purandar*, New Delhi.
  21. Santapau, H. (1967). *The Flora of Khandala on the Western Ghats of India*. *Rec. Bot. Surv. India* 16(1): 1-372. ed. 3 Calcutta. (1<sup>st</sup> edn. 1953 & 2<sup>nd</sup> edn. 1960, Delhi.
  22. Shruthi, S.D., S. Padmalatha Rai and Y.L. Ramachandra (2013). *Med. Chem. Res.* 22(6): 2938-2945.
  23. Vaidya, A.B., T.G. Rajagopalan, A.G. Kole and R.J. Levine (1980). *J. Postgrad. Med.* 26(1): 22-33.
  24. Veni, T. and T. Pushpanathan (2014). *Asian Pharma Clini. Res.* 7(2): 93-97.