Explor Anim Med Res.
Vol. 13, Ethnomed. Spl., 2023
DOI : 10.52635/eamr/13(S)109-118

ISSN 2277-470X (Print), ISSN 2319-247X (Online)
Website: www.animalmedicalresearch.org

Research Article

STUDIES ON SOME AMERICAN EXOTIC WEEDS OF PASCHIM MEDINIPUR DISTRICT OF WEST BENGAL, INDIA, AND THEIR MEDICINAL USES

Paramita Maity*, B. Mahakur[1]

Received 24 February 2023, revised 28 June 2023

ABSTRACT: In Indian flora, there is the entry of many exotic plant species that came from tropical America, Africa, the Mediterranean region, China, Australia, and Malaysia, etc. mostly with food grains. The entry of these plant species, mostly the herbs and also the shrubs were reported from the then British India as many plants were taken for introduction to India. Some of these weeds had already established themselves in India due to the favorable tropical climatic condition and some flourished as dominant components in Indian flora, state flora, and also in local flora like in districts or regions. In West Bengal, there are many of them in the district of Paschim Medinipur. Due to the presence of these plant species in nature, many of them are used for different purposes and thus established their importance, particularly for medicinal uses. A few of them are of newly reported uses as known from the local people by query and some are studied as seen to be used for some diseases. Thus the newly recorded medicinal uses are presented here as additional reports besides their previous reported uses. All total 14 plant species of American origin are here presented with their life photographs, Botanical names including family and precise characters, along with English names, local names, native countries, reported previous uses and the present reports, mostly restricted to medicinal purposes.

Key words: American exotic weeds, Medicinal uses, Paschim Medinipur, West Bengal.

INTRODUCTION

The use of locally available plants with identified medicinal activities is a very old practice in human civilization and reporting of such uses is important for proper scientific analysis of the reported efficacies for effective use in modern or alternative medicine (Pradhan *et al.* 2021, Pattanayak 2021, Paul and Sujata 2022).

In India, there is the entry of many exotic plant species during the Portuguese, Dutch, and British periods due to either introduction of many plant species to India or carried out by chance with the food grains. It is already proved that they have high dispersal and reproductive potential (Raghubanshi *et al.* 2005) and spread aggressively over a huge area. In West Bengal, this entry of exotic plant species was mentioned in century-old literatures (Prain 1903, Bruhl 1908, Maiti and Guha Bakshi 1981). Of course, many were introduced and are now grown as garden plants, for forestry and also for other economic uses (Maity and Maiti 2019). Along with these introductions, many of the weeds were also entered into the Indian flora. Many of them are from Tropical America, Africa, the Mediterranean region, China, Malaysia, Australia, etc. These plant species are now well-established, and naturalized, and are commonly growing with our native plants. Aggressive growth affects biodiversity, the ecological integrity of native habitats and ecosystems (Kumar and Rohatgi 1999, Booth *et al.* 2003). Alien species are considered to be the second worst, threat to biological diversity (Bhakat and Maiti 2003).

Due to their presence in local flora, people are using these for various purposes and these are not yet been mentioned or even reported. With this view, this study has been undertaken to report the medicinal uses of 14 species of tropical American origin and these are

Department of Botany, Midnapore College (Autonomous), Midnapore, Paschim Medinipur,West Bengal, India.
[1]Joygopalpur Gram Vikash Kendra, Joygopalpur, Basanti, 24 Parganas (South), West Bengal, India.
**Corresponding author. e-mail: pragnapami@gmail.com*

enlisted here. The information on the plant species with botanical names, families, a short description of identity, English names, and vernacular names along with the report of their previous and present uses.

This work is initiated to add further reporting of some medicinal uses of the exotic species of American origin in addition to their earlier uses. The local names of these exotic plant species, whenever known, are presented.

The medicinal along with aromatic plants were already studied for the Red Laterite Region of West Bengal - Bankura, Medinipur, and Purulia but the report of uses was not mentioned (Anon 2004) and thus here included as a new inventory of the peoples of West Medinipur district of West Bengal.

MATERIALS AND METHODS

The study area is Paschim Medinipur district of West Bengal. This district is with an area of 9295.28 sq. Km. situated between 220 57' 10" and 210 36' 35" North latitude and between 880 12' 40" and 860 33' 50" East longitude. This district is mostly covered with lateritic red soil and falls under tropical climatic conditions (Anon 2011).

The plants were studied during field tours to different areas and enquired for their uses by the local inhabitants and villagers during 2017-2019 and later the study is extended to 2021. The uses were noted for each plant species and further matched with the literature about their uses. Thus additional or new information was obtained and provided here as present reports for 14 such common exotic weeds, particularly for medicinal uses. Many of the literatures were used, however, primarily it is verified from Wealth of India (Anon 1997). It is also verified from Medicinal and Aromatic plants of the Red Laterite Region of West Bengal - Bankura, Medinipur, and Purulia (Anon 2004) and Medicinal Plant Resources of South West Bengal (Santhosa and Kar 2005). Other information is also added regarding the different medicinal uses of these species. The latest information is added from different review papers regarding medicinal uses.

RESULT

The floristic work of the Midnapore district, West Bengal was done by Majhi (1983). The government of West Bengal under the Department of Science and Technology had also published the uses of plants growing in the red laterite soil regions of Bankura, Midnapore, and Purulia districts of West Bengal (Anon 2004). Some works are also performed afterward (Santhosa and Kar 2005, Pattanayak *et al.* 2012) but in many of the cases, these are not been included or reported.

The findings of the present study are stated in Table 1 and it is seen that all these plants of exotic origin adopted in the climate of that area and have some medicinal values. Information related to the plants was collected and the plants were properly identified. The life photographs for each plant species were taken and presented in Fig. 1 to facilitate the identity of each plant. In the table, each plant species is described with its botanical name, respective family, English names, and local names, native area of origin, medicinal uses, and present reports of the study. The related previous works performed by the researchers are also briefly stated in the table.

Table 1. American exotic weeds and their medicinal use in Paschim Medinipur distrct of West Bengal, India.

Plant [Family]	Parts used	Present finding	Previous reporting
Alternanthera philoxeroides (Mart.) Griseb. [Amaranthaceae] Local name: Hingche Native place: South America	Leaf/young twig/whole plant	Leaf and young twigs as vegetables in mal-nutrition, fresh leaves as fodder for cattle, given to poultry birds after chopping.	It is used as a vegetable taken after cooking (Majumder and Banerjee 1976, Maiti and Guha Bakshi 1981). It is used in various viral diseases like measles, influenza, and hemorrhagic fever (Nahar *et al.* 2022), as an antihyperglycaemic, anticoagulant, and antioxidant (Khandker *et al.* 2022). The leaf extract is taken as cardioprotective, and dried powder of leaves stems, and roots are used as an antifungal agent (Amin *et al.* 2022) and as an antiviral (Nahar *et al.* 2022).

Plant [Family]	Parts used	Present finding	Previous reporting
Argemone mexicana L. [Papaveraceae] Local name: Siyal Kanta Native place: Mexico, southern part of North America	Seed, latex	Used to cure skin disease along with fresh turmeric plant juice. Local people use latex as a dye.	Santals use latex for scabies and ophthalmia (Pal and Jain 1998). Peoples of Andhra Pradesh use this plant for the treatment of white patches on lips and body (Sinha and Sinha 2001). Latex is locally used to treat infection in nail corns (Anon 2004), to treat eye diseases, to cure scabies, ringworm, and skin diseases; to kill parasitic insects affecting domestic animals (Anon 2004). The whole plant is used in whooping cough and bronchitis (Kala 2005, Priya and Rao 2012, Alam and Khan 2020). The crude extract of the plant is used as an antimicrobial agent (Saranya *et al.* 2012, Brahmachari *et al.* 2013). Latex is used for wound healing (Brahmachari *et al.* 2013), and fresh latex is applied externally to treat warts, tumors, and cancer (Khare 2008). Seed powder is used as an antistress and as an antiallergic (Bhalke and Gosavi 2009). Ethanolic extract of the root is used for its antioxidant activity (Bhardwaj *et al.* 2011, Priya *et al.* 2012).
Cassia alata L. [Caesalpiniaceae] Local name: Dad mari, Dadmardan, Chakulda Native place: Neotropics (from Mexico, West Indies to Paraguay),	Root, leaf, flower	2-3 mature leaflets along with a pinch of common salt are mixed and rubbed on the diseased skin 2-3 times a day.	Leaves are used in skin diseases like herpes, blotch, eczema, and mycosis (Ambasta 1986, Khare 2008, Fatmawati *et al.* 2020), for leprosy (Khare 2008). The aqueous extract of leaves reduces levels of blood glucose and serum cholesterol (Oladeji *et al.* 2020). The ethanolic extract of leaves is used as anti-diabetic (Oladeji *et al.* 2020, Fatmawati *et al.* 2020). Decoction of leaves and flowers is used in intestinal worms and stomach disorders and is also used to regulate lipid absorption, obesity, and fat levels in blood serum (Oladeji *et al.* 2020).
Croton bonplandianus Baill. [Euphorbiaceae] Local name: Churchuri, Lankasira Native place: South America	Leaf, latex	Fresh latex of the plant is used to stop the bleeding of new cuts, reduce inflammation, and as an antiseptic. Roots are chewed to lower the blood sugar level.	Communities of Santals, Lodhas, and Mundas use leaves and latex, in cholera, rickets, scabies and vaginal sores, etc. (Pal and Jain1998). Latex can stop bleeding (Anon 2004, Pattanayak *et al.* 2012, 2015), used as an antiseptic in fresh cuts and wounds (Ghosh *et al.* 2018). The extract of the twigs is used as an antitumor (Ghosh *et al.* 2018).
Eichhornia crassipes (Mart.) Solms. [Pontederiaceae] Local name: Kachuripana Native place: South America	Rhizome, root, whole plant	Lodhas use fresh root paste for toothache.	Santals use this plant in Goiter (Pal and Jain1998). Tribals of Assam cook rhizomes as vegetables (Sinha and Sinha 2001). The root powder is used to treat toothache (Anon 2004). Tribal peoples use flowers to treat wounds, burn, and stop bleeding (Rajarajan *et al.* 2021).The secondary metabolites as phenolic and polyphenolic compounds are used as antimicrobial agents (Ben Bakrim *et al.* 2022, Parveen *et al.* 2018). So also alkaloids and flavonoids are used as antiviral, antibacterial, antiamoebic, and even anticancer agents (Parveen *et al.* 2018, Ben Bakrim *et al.* 2022).

Plant [Family]	Parts used	Present finding	Previous reporting
Eupatorium odoratum L. [Compositae] Local name: Kharhkharh, Banseuli Native place: North and South America	Whole plant, fruit	Leaf paste and juice are used to stop the bleeding of new cuts, to reduce inflammation	Fresh leaf juice is used as a hemostatic (Anon 2004), and antioxidant (Chakraborty *et al.* 2010). The whole plant extract is used as an antihelmintic (Patel *et al.* 2010, Mishra *et al.* 2010). Tribals use it as an anti-inflammatory, analgesic, and antiprotozoal agent (Chakraborty *et al.* 2010, Zahara 2019).
Hyptis suaveolens (L.) Poit. [Lamiaceae] Local name: Bilayetitulsi Native place : South America	Plant and calyx	Leave paste is rubbed on the forehead for headaches, and used to relieve cold and cough. Leaves are used as mosquito and other insect repellent	The plant is known to use as a stimulant, carminative, sudorific, and galactagogue (Ambasta 1986). The fresh juice of calyx is taken on an empty stomach in jaundice (Anon 2004). It is used as an anticancer agent (Mabberly 2018). It is also used as an anti-secretory, hepatoprotective, insecticidal agent (Li *et al.* 2020), in inflammation and gastric ulcer (Jesus *et al.* 2013). Oil of this plant is antibacterial (Sharma *et al.* 2013). The juice of leaves Leaf juice is used externally in skin eruptions and swelling (Sumitha and Thoppil 2016).
Jatropha gossypifolia L. [Euphorbiaceae] Local name: Bheranda Native place: Mexico, South America, Caribbean islands	Root, stem, bark, leaf	Local peoples chew young shoots as a remedy for toothache and inflammation; use latex for the remedy of wound pain.	The plant is purgative, stomatic, and emetic (Ambasta 1986, Pal and Jain 1998). Juice of stems is applied to nostrils to treat migraine and the latex to cut as an antiseptic (Anon 2004). The latex of the stem is hemostatic (Pande *et al.* 2021), and the bark of the stem is anti-inflammatory (Felix-Silva *et al.* 2014). The whole plant is anti-inflammatory, antihypertensive, and antimicrobial (Pande *et al.* 2021), with antifertility activity as oral contraceptives (Pande *et al.* 2021). The leaves are used for antidermatosis (Khare 2008), seeds as emetic, and purgative (Pal and Jain 1998, Khare 2008). Seed oil is used in paralysis and skin diseases (Khare 2008).
Lantana camara L. [Verbenaceae] Local name: Putush Native place: American tropics	Leaf, flower	Leaf juice is used for cuts and wounds, and also as a remedy for pain.	Leaf juice is used as vulnerary, diaphoretic, carminative, and antispasmodic (Ambasta 1986). Leaves and flowers are used as antibacterial (Kalita *et al.* 2012, Shah *et al.* 2020) and antifungal (Shah *et al.* 2020). Extract of leaves has wound-healing properties (Kalita *et al.* 2012) and is also used as an anti-mycobacterial (Kirimuhuzya *et al.* 2009).
Mikania cordata (Brum.f.) Robinson [Compositae] Local name: Taralata, Native place: Sub-tropical zones of North, Central, and South America	Leaf	Juice of fresh leaves is used to stop the bleeding of the new cut, cure wounds, and reduce inflammation. Juice of leaves is taken as the remedy for dysentery.	Juice of fresh leaves is applied on the forehead to treat headaches (Anon 2004). Extract of leaves is used in pain, inflammation, cuts, wounds, and dengue fever (Ghani 2003, Rahamatullah *et al.* 2009, Siddiqui *et al.* 2018). The extract of the root is used as an anti-inflammatory (Bhattacharya *et al.* 1992). Juice of leaves is used for the treatment of insect and scorpion stings (Sastri 1962). Hydroalcoholic extract of leaves is used in the treatment of neuro-pharmacological and CNS-depressant activity (Dey *et al.* 2011, Siddiqui *et al.* 2018).

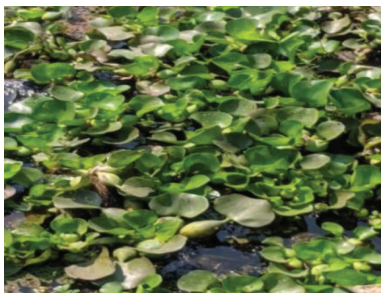
Plant [Family]	Parts used	Present finding	Previous reporting
Ruellia tuberosa L. [Acanthaceae] Local name: Chatpati Native place: Central America	Root, aerial parts	The root is used in gonorrhea and as a remedy for dysentery.	Plant is used as emetic (Ambasta 1986). The roots are used as an antifertility agent (Sinha and Sinha 2001). The plant is used as an antimicrobial and anticancer (Chothani *et al.* 2010); antinociceptive and anti-inflammatory (Alam *et al.* 2009). Dried and ground roots in the dose of two ounces are used for abortion (Chothani *et al.* 2010). Roots are used as cooling in urinary problems and also in the treatment of uterine fibroids (Chothani *et al.* 2010). Aerial parts of the plant are used as anthelmintic (Pueblos *et al.* 2015). The stem is with antioxidant activity (Chothani *et al.* 2010).
Scoparia dulcis L. [Scrophulariaceae] Local name: Ban dhaney Native place: Neotropics (from Mexico, West Indies to Paraguay).	Whole plant, leaf	Juice of 6-8 fresh leaves is mixed in a cup of cow milk, added with the powder of 2-3 black pepper, and taken on an empty stomach for 2-3 days in unusual sleeping urination of children. Fresh leaves are taken as antidiabetic.	Lodhas, Santals, and Oraons use the leaves for fever, cold, cough, bronchial trouble, and as a gargle in toothache (Pal and Jain 1998, Sarkar *et al.* 2020, Jiang *et al.* 2021). Decoction of leaves is used as antidiabetic (Mishra *et al.* 2013, Sarkar *et al.* 2020). Aqueous extract of leaves is used as an anti-ulcer (Sarkar *et al.* 2020). The whole plant is used as an antimicrobial (Yisa 2009, Sarkar *et al.* 2020) and antioxidant (Sarkar *et al.* 2020, Jiang *et al.* 2021).
Solanum sisymbrifolium Lam. [Solanaceae] Local name: Kanta banbegun Native place: South America	Aerial parts, leaf, flower	Fruits are cooked and eaten like brinjal. The roots are used for cough and fever.	Leaves are used to cure pain (Anon 2004). Juice of fresh leaves is taken to treat abnormal and irregular menstrual cycles (Anon 2004). Steroidal saponins from the roots have inhibitory activity against dengue virus and yellow fever virus (Figueiredo *et al.* 2021). Extract of the aerial parts is used as antimicrobial and antioxidant, anti-diarrhoeal and antidiabetic activity (More 2017), as anticonvulsant (Chauhan *et al.* 2011). Flowers are used as analgesic (Ferro *et al.* 2005, More 2017). Fruits are having an insecticidal and molluscicidal activity (Bagalwa *et al.* 2010, More 2017).
Tridax procumbens L. [Compositae] Local name: Bhringaraj, Jangibhringaraj Native place: Tropical Americas including Mexico	Aerial parts, leaf, flower	Used as a substitute for *Wedelia chinensis* Merr. for black coloration of hairs. Leaves are also used as an insecticide; leaf juice is used to stop bleeding in wounds, to wash the wounds as an antiseptic, and also used in inflammation.	Leaves are used for diarrhea, dysentery, and bronchial trouble (Ambasta 1986, Andriana *et al.* 2019), to check hemorrhage of wound (Ambasta 1986), as anti-diabetic, anesthetic (Beck *et al.* 2018). Leaf juice is used in kidney stones (Sinha and Sinha 2001), and mixed with coconut oil is applied on the skull after bath as a hair tonic (Anon 2004). Flowers, leaves, and aerial parts are used as hepatoprotective (Ravikumar *et al.* 2005, Nwanjo 2008, Beck *et al.* 2018). The plant is used as an anti-inflammatory (Beck *et al.* 2018), for hair growth (Jadhav *et al.* 2009).

Alternanthera philoxeroides

Argemone mexicana

Cassia alata

Croton bonplandianus



Eichhornia crassipes

Eupatorium odoratum

Hyptis suaveolens

Jatropha gossypifolia

Lantana camara

Mikania cordata

Ruellia tuberosa

Alternanthera philoxeroides

Solanum sisymbriifolium

Tridax procumbens

Tridax procumbens

Fig. 1. Photographs of exotic weeds found in the study area.

DISCUSSION

A total of 14 (fourteen) exotic plants are identified and their medicinal uses are discussed along with previous reports. From the study, it was evident that the rural and ethnic people accustomed themselves to the use of plants of exotic origin, though they encountered these plants comparatively recently. Like their common practices, they use the parts of the plants as some medicines mostly in their naturally available condition. The paste, physically extracted juice, etc. are commonly used. During the validation of reported efficacies of the medicinal use of plants, this point is generally not given proper importance, as the diluents extracted section of the dry parts of the medicinal plants are generally analyzed (Pattanayak *et al.* 2016, 2020).

Plants have always had some importance for the use of human beings. For livelihood, human beings are always in search of new information from plants growing in their surroundings. So, by trial and error most probably people can gain and adopt the knowledge of using a new plant for its new application. Long-been use makes them confirm to use the plant or plant parts as a drug for the remedial purpose of diseases. Although the plants are native to America with the trial of uses, the local peoples become able to confirm the medicinal uses. So, these are the new inventory to people. Some of the species are very troublesome to native flora as *Eichhornia crassipes, Lantana camara, Hyptis suaveolens, Eupatorium odoratum,* etc. However, some are bioprospecting and can be used for commercial utilization as *Hyptis suaveolens* having much aromatic essential oil. Of course, *Lantana camara* had already been established for different garden varieties growing for the beautification of the garden. Similarly, *Eichhornia crassipes* is used as the raw material for paper pulp, etc.

ACKNOWLEDGEMENT

I am indebted to the Head of the Department of Botany, Midnapore College (autonomous), and Principal, Midnapore College (autonomous), Midnapore, West Bengal for providing facilities for doing this work.

REFERENCES

Alam A, Khan AA (2020) *Argemone mexicana* L.: A weed with versatile medicinal and pharmacological applications. Annals Phytomed Int J 9(1): 218-223.

Alam MA, Subhan N, Awal MA, Alam MS, Sarder M *et al.* (2009) Antinociceptive and anti-inflammatory properties of *Ruellia tuberosa*. Pharmac Biol 47(3): 209-214.

Ambasta SP (ed.) (1986) The Useful Plants of India. Council of Scientific and Industrial Research, New Delhi, India.

Amin A, Akbar M, Khalil T, Akram W, Ahmad A (2022) Antifungal activity of *Alternanthera philoxeroides* organic solvent extracts against plant pathogenic fungi. Pakistan J Bot 54(1): 337-344.

Andriana Y, Xuan TD, Quy TN, Minh TN, Van TM, Viet TD (2019) Antihyperuricemia, antioxidant and antibacterial activities of *Tridax procumbens* L. Foods 8: 21-33.

Anonymous (1997) The Wealth of India (Raw Materials), Council of Scientific and Industrial Research, New Delhi (Rev edn), India.

Anonymous (2004) Medicinal and Aromatic Plants of Red Laterite Region of West Bengal - Bankura, Medinipur and Purulia. Department of Science and Technology, Govt. of West Bengal, Calcutta, India.

Anonymous (2011) District Human Development Report: 2011. Development and Planning Department, Government of West Bengal, Kolkata, India.

Bagalwa JJ, Voutquenne-Nazabadioko L, Sayagh C, Bashwira AS (2010) Evaluation of the biological activity of the molluscicidal fraction of *Solanum sisymbriifolium* against non target organisms. Fitoterapia 81(7): 767-71. DOI: 10.1016/j.fitote.2010.04.003.

Beck S, Mathison H, Todorov T, Calderón-Juárez EA, Kopp OR (2018) A review of medicinal uses and pharmacological activities of *Tridax procumbens* L. J Plant Stud 7(1): 1-17.

Ben Bakrim W, Ezzariai A, Karouach F, Sobeh M, Kibret M *et al.* (2022) *Eichhornia crassipes* (Mart.) Solms: A comprehensive review of its chemical composition, traditional use, and value-added products. Front Pharmacol 13(842511): 1-12.

Bhakat RK, Maiti GG (2003) Invasive species and displacement of plant diversity. J Curr Sci 3(2): 483-486.

Bhalke RD, Gosavi SA (2009) Anti-stress and antiallergic effect of *Argemone mexicana* stems in asthma. Arch Pharm Sci Res 1: 127-129.

Bhardwaj M, Surekha Duhan JS (2011) Free radical scavenging and anti-mutagenic potential of acetone,

chloroform and methanol extracts of leaf of *Argemone mexicana.* Int J Pharm Biosci 2: 455-464.

Bhattacharya S, Pal S, Nag Chaudhuri AK (1992) Pharmacological studies of the anti-inflammatory profile of *Mikania cordata* (Burm) B.L. Robinson root extract in rodents. Phytotherap Res 6(5): 255-260.

Booth BD, Murphy SP, Swanton CO (2003) Weed Ecology in Natural and Agricultural Systems, CABI Publishing, Willingford Oxfordshire, U.K.

Brahmachari G, Gorai D, Roy R (2013) *Argemone mexicana:* chemical and pharmacological aspects. Revista Brasileira de Farmacog 23: 559-567.

Bruhl P (1908) Recent plant immigrants. J Asiat Soc Bengal (N.S.) 4(2) : 603-656.

Chakraborty A K., Roy H, Bastia S (2010) Evaluation of antioxidant activity of the leaves of *Eupatorium odoratum* Linn. Int J Pharm Pharmaceut Sci 4: 77-79.

Chauhan K, Sheth N, Ranpariya V, Parmar S (2011) Anticonvulsant activity of solasodine isolated from *Solanum sisymbriifolium* fruits in rodents. Pharma Biol 49(2): 194-199.

Chothani DL, Patel MB, Mishra SH, Vaghasiya HU (2010) Review on *Ruellia tuberosa* (cracker plant). Pharma J 2(12): 506-512.

Dey P, Chandra S, Chatterjee P, Bhattacharya S (2011) Neuromorphological properties of *M. scandens* (L.) Willd. (Asteraceae). J Adv Pharm Res 2: 255-259.

Fatmawati S, Purnomo AS, Bakar MFA (2020) Chemical constituents, usage and pharmacological activity of *Cassia alata*. Heliyon 6(7): e04396.

Félix-Silva J, Giordani RB, Silva-Jr AD, Zucolotto SM, Fernandes-Pedrosa MDF (2014) *Jatropha gossypiifolia* L. (Euphorbiaceae): a review of traditional uses, phytochemistry, pharmacology, and toxicology of this medicinal plant. Evi-Based Compl Alt Med 369204: 1-33.

Ferro EA, Alvarenga NL, Ibarrola DA, Hellion-Ibarrola MC, Ravelo AG (2005) A new steroidal saponin from *Solanum sisymbriifolium* roots. Fitoter 76: 577-579.

Figueiredo GG, Coronel OA, Trabuco AC, Bazán DE, Russo RR *et al.* (2021) Steroidal saponins from the roots of *Solanum sisymbriifolium* Lam. (Solanaceae) have inhibitory activity against dengue virus and yellow fever virus. Brazilian J Med Biol Res 54(7): e10240.

Ghani A (2003) Medicinal plants of Bangladesh with chemical constituents and uses, (2nd edn). Asiat Soc Bangladesh, Dhaka.

Ghosh T, Biswas MK, Roy P, Guin C (2018) A review on traditional and pharmacological uses of *Croton bonplandianum* with special reference to phytochemical aspect. Euro J Med Plants 22(4): 1-10.

Jadhav VM, Thorat RM, Kadam VJ, Gholve SB (2009) Kesharaja: hair vitalizing herbs. Int J PharmTech Res 1(3): 454-467.

Jesus NZT, Falcão HS, Lima GRM, Caldas Filho MRD, Sales IRP *et al.* (2013) *Hyptis suaveolens* (L.) Poit (Lamiaceae), a medicinal plant protects the stomach against several gastric ulcer models. J Ethnopharmacol 150(3): 982-988.

Jiang Z, Sung J, Wang X, Zhang Y, Wang Y *et al.* (2021) A review on the phytochemistry and pharmacology of the herb *Scoparia dulcis* L. for the potential treatment of metabolic syndrome. Royal Soc Chem 11(50): 31235-31259.

Kala CP (2005) Ethnomedicinal botany of the Apatani in the Eastern Himalayan region of India. J Ethnobio Ethnomed 1: 1-8.

Kalita S, Kumar G, Karthik L, Rao KVB (2012) A review on medicinal properties of *Lantana camara* Linn. Res J Pharm Tech 5(6): 711-715.

Khandker SS, Alam M, Uddin F, Shapla UM, Lubna N *et al.* (2022) Subchronic toxicity study of *Alternanthera philoxeroides* in Swiss albino mice having antioxidant and anticoagulant activities. J Toxic 2022: 1-12.

Khare CP (2008) Indian medicinal plants: an illustrated dictionary. Springer Science and Business Media, ILC.

Kirimuhuzya C, Waako P, Joloba M, Odyek O (2009) The anti-mycobacterial activity of *Lantana camara*, a plant traditionally used to treat symptoms of tuberculosis in South-western Uganda. African Health Sci 9(1): 40-45.

Kumar S, Rohatgi N (1999) The role of invasive weeds in changing floristic diversity. Ann Forest 7(1): 147-150.

Li R, Tang G, Liu X, Li J, Wang D, Ji S (2020) An ethnopharmacological review of *Hyptis suaveolens* (L.) Poit. Trop J Pharm Res 19(7): 1541-1550.

Mabberley DJ (2018) Mabberley's Plant Book: A Portable Dictionary of Plants, their Classification and Uses. Cambridge University Press, Cambridge.

Maiti GG, Guha Bakshi DN (1981) Invasion of exotic weeds in West Bengal since 1903: Dicotyledons and Monocotyledons. J Econ Taxon Bot 2: 1-21

Maity P, Maiti GG (2019) Innovative practices of medicinal uses of cultivated garden plants by the peoples of Purba Medinipur district, West Bengal. Intern Res J Basic Appl Sci 4: 18-35.

Majhi S (1983) Flora of Midnapore district, West Bengal. Ph.D. Thesis, Department of Botany, Faculty of Science, University of Calcutta.

Majumdar NC, Banerjee RN (1976) The distribution and economic uses of *Alternanthera philoxeroides* (Mart.) Griseb. - an exotic aquatic herb in India and Burma. Bull Bot Soc Bengal 30: 147-148.

Mishra D, Sarkar DK, Nayak BS, Rout PK, Ellaiah P, Ramakrishna S (2010) Phytochemical investigation and evaluation of anthelmintic activity of extract from leaves of *Eupatorium odoratum* Linn. Indian J Pharm Educ Res 44(4): 369-374.

Mishra MR, Mishra A, Pradhan DK, Panda AK, Behera RK, Jha S (2013). Antidiabetic and antioxidant activity of *Scoparia dulcis* Linn. Indian J Pharma Sci 75(5): 610-616.

More GK (2017) A review of the ethnopharmacology, phytochemistry and pharmacological relevance of the South African weed *Solanum sisymbriifolium* Lam. (Solanaceae). Env Dev Sustain 21: 37-50.

Nahar L, Nath S, Sarker SD (2022) "Malancha" [*Alternanthera philoxeroides* (Mart.) Griseb.]: A potential therapeutic option against viral diseases. Biomol 12(4): 582-608.

Nwanjo HU (2008) Aqueous extract of *Tridax procumbens* leaves: Effect on lipid peroxidative stress and antioxidant status in chloroquine-induced hepatotoxicity in rats. J Herbs Spices Med Pl 14(3-4): 154-165.

Oladeji OS, Adelowo FE, Oluyori AP, Bankole DT (2020) Ethnobotanical description and biological activities of *Senna alata*. Evi-Based Compl Altern Med 2020: 1-12.

Pal DC, Jain SK (1998) Tribal Medicine. Naya Prakash, Calcutta, India.

Pande MS, Trivedi N, Kumar B (2021) Review on medicinal properties of *Jatropha gossypiifolia* L. J Pharma Res Int 33(46B): 505-511.

Parveen F, Raja W, Dutta AK (2018) A review on pharmacological contents of *Eichhornia crassipes*. Int J Adv Sci Eng Technol 6: 1-3.

Patel J, Kumar GS, Qureshi MS, Jena PK (2010) Anthelmintic activity of ethanolic extract of whole plant of *Eupatorium odoratum*. L. Int J Phytomed 2(2): 127-132.

Pattanayak S (2020) Succulent biomedicines - an effective way of getting protection against diseases through immunomodulation. Explor Anim Med Res 10(2): 112-123.

Pattanayak S (2021) Plants in healthcare: past, present and future. Explor Anim Med Res 11(2): 140-144, DOI: 10.52635/eamr/11.2.140-144.

Pattanayak S, Dutta MK, Debnath PK, Bandyopadhyay SK, Saha B, Maity D (2012) A study on ethno- medicinal use of some commonly available plants for wound healing and related activities in three southern districts of West Bengal, India. Explor Anim Med Res 2(2): 97-110.

Pattanayak S, Mandal TK, Bandyopadhyay SK (2016) Validation and therapeutic use of succulent plant parts - opening of a new horizon of alternative medicine. Explor Anim Med Res 6(1): 8-14.

Pattanayak S, Mandal TK, Debnath PK, Das AK, Bandyopadhyay SK (2015). Comparative haemostatic efficacy of succulent leaf extracts and latex of some wound healing plants on fresh wound of rabbit. Explor Anim Med Res 5(1): 20-26.

Paul A, Sujatha K (2022) Concurrent effect of *Linum usitatissimum* and *Emblica officinalis* on lead induced oxidative stress and histomorphological changes in uterus of female Wistar rats. Explor Anim Med Res 12(2): 264-272, DOI: 10.52635/eamr/12.2.264-272.

Pradhan DK, Ghosh J, Lepcha N, Nandi A, Banerjee D *et al.* (2021) New ethnomedicinal information from Lepcha community of Dzongu, Sikkim. Explor Anim Med Res 11(2): 179- 187, DOI: 10.52635/eamr/11.2.179-187.

Prain D (1903) Bengal Plants, 2 vols. (rep.edn.1963). Botanical Survey of India, Calcutta.

Priya CL, Rao KVB (2012) Ethanobotanical and current ethanopharmacological aspects of *Argemone mexicana* Linn: an overview. Int J Pharma Sci Res 3(7): 2143-2148.

Pueblos KRS, Lagare JPB, Tapales VPP, Quimque MTJ (2015) *In vitro* antihelmintic activity evaluation of the aerial part of *Ruellia tuberosa* Linn. against *Eudrilus eugeniae*. Pro Chem 16: 570-577.

Raghubanshi AS, Rai LC, Gaur JP, Singh JS (2005) Invasive allien species and biodiversity in India. Curr Sci 88(4): 539-540.

Rahmatullah M, Mollick MAH, Azam ATMA, Islam MR, Chowdhury MAM *et al.* (2009) Ethnobotanical Survey of the Santal tribe residing in Thakurgaon district, Bangladesh. Amer Euras J Sustan Agri 3(4): 889-998.

Rajarajan S, Sivakrishnan S, Ganesan V (2021) Phytochemical screening of ethanolic extract of *Eichhornia crassipes* flowers. Int J Biol Pharma All Sci 10(9): 3321-3330.

Ravikumar V, Shivashangari KS, Devaki T (2005) Hepatoprotective activity of *Tridax procumbens* against D-galactosamine/lipopolysaccharide-induced hepatitis in rats. J Ethnopharmacol 101: 55-60.

Santhosa GR, Kar A (eds) (2005) Medicinal Plants Resources of South West Bengal, Research Wing, Directorate of Forests, Govt. of West Bengal, Kolkata, India.

Saranya MS, Arun T, Iyappan P (2012) *In vitro* antibacterial activity and preliminary phytochemical analysis of leaf extracts of *Argemone mexicana* L. - A medicinal plant. Int J Curr Pharm Res 4: 85-87.

Sarkar A, Ghosh P, Poddar S, Sarkar T, Choudhury S, Chatterjee S (2020) Phytochemical, botanical and ethnopharmacological study of *Scoparia dulcis* Linn. (Scrophulariaceae): A concise review. Pharm Innov J 9(7): 30-35.

Sastri BN (1962) The Wealth of India. A Dictionary of Indian Raw Materials and Industrial Products. Raw Materials. Vol. 6. CSIR, New Delhi, India.

Shah M, Alharby HF, Hakeem KR (2020) *Lantana camara*: a comprehensive review on phytochemistry, ethnopharmacology and essential oil composition. Lett Appl Nano Biomed Sci 9(3): 1199-1207.

Sharma PP, Roy RK, Anurag, DG, Vipin KS (2013) *Hyptis suaveolens* (L.) Poit: A phyto-pharmacological review. Int J Chem Pharma Sci 4(1): 1-11.

Siddiqui SA, Rahman A, Rahman MO, Akbar MA, Rouf ASS *et al.* (2018) Evaluation of anti-nociceptive, anti-inflamatory and antipyretic potential of *Mikania cordata* (Burm.f.) Robinson in experimental animal model. Saudi J Biol Sci 25: 1049-1055.

Sinha RK, Sinha S (2001) Ethnobiology (Role of Indigenous and Ethnic Societies in Biodiversity Conservation, Human Health Protection and Sustainable Development). Surabhi Publications, Jaipur.

Sumitha KV, Thoppil JE (2016) Genotoxicity assessment of two common curing weeds: *Hyptis suaveolens* (L.) Poir. and *Leucas indica* (L.) R. Br. Cytotech 68: 1513-1527.

Yisa J (2009) Phytochemical analysis and antimicrobial activity of *Scoparia dulcis* and *Nymphaea lotus*. Australian J Basic Appl Sci 3(4): 3975-3979.

Zahara M (2019) Description of *Chromolaena odorata* LRM King and H. Robinson as medicinal plant: A review. In: IOP Confer Series: Materials Sci Engineeri, IOP Publishing, 506(1): 1-7.

***Cite this article as:** Maity P, B. Mahakur PB (2023) Studies on some American exotic weeds of Paschim Medinipur district of West Bengal, India, and their medicinal uses. Explor Anim Med Res 13(Ethnomed. Spl.): 109-118, DOI: 10.52635/eamr/13(S)109-118.