
BOERHAAVIA DIFFUSA LINN (PUNARNAVA) - PHYTOCHEMISTRY & PHARMACOLOGICAL EFFECTS ON VARIOUS DISEASES IN CONDITION

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ABSTRACT

Boerhaavia diffusa is a perennial creeping plant distributed in tropical and subtropical regions and is a known ethno medicinal plant. In the treatment of various ailments mentioned in Ayurveda, Sushrita Samhita and Charaka Samhita diseases, whole plants and their various parts (leaves, stems and roots) and plant extracts are used in various traditional and folklore medicine systems. The whole plant or its special parts (sycamore and roots) have many medicinal properties and are used by local people and tribes in Indian medicine and in Unani medicine in Arab countries. This herb has antibacterial, anti-inflammatory, anti-inflammatory, hepatoprotective, hypoglycemic, antiproliferative, anti-estrogenic, anti-anxiety and anti-functional properties. It is also used to treat pain, anxiety, jaundice, indigestion, and stomach ache. Many scientists, researchers and others have conducted various experimental, medical, phytochemical and clinical studies on Boerhaavia diffusa to gain a clear understanding of ancient Ayurveda, regional and tribal areas. This article provides an evidence-based summary of the pharmacological and phytochemical properties of the air of the plant Boerhaavia diffusa, which may aid in the development of natural medicines for further research.

Keywords- Boerhaavia diffusa, Ethnobotany, Phytochemistry, Pharmacological Properties.

1. INTRODUCTION

Boerhaavia diffusa (Nyctaginaceae), its commonly known as 'Punarnava' in the Indian system of medicine. Its perennial creeping herb found throughout the waste land of India. Its root is believed to have diuretic and laxative properties and is used to treat anasarfasia, ascites and jaundice.[1] Boerhaavia sp. It has ancient medicinal uses in many cultures since B.C. Plants have evolved and changed over the years. Many herbal products have been identified as phytochemical, and extracts from different parts of the plant can be used in the treatment of various diseases without side effects.[2] The genus Boerhaavia L.(Family:- Nyctaginaceae) has 40 tropical and subtropical species [3] which found growing wild in a variety of terrestrial habitats, from managed grasslands, scrublands, agricultural ecosystems to large forests. The plants grow vigorously as weeds in tropical and subtropical regions such as India, Australia, Africa, Sri Lanka, China, Brazil, Pakistan, Sudan, USA, Iran and Egypt in several countries of the Middle East. Out of these, six species of Boerhaavia are reported to occur in India – B. diffusa, B. erecta, B. chinensis, B. repens, B. rubicunda and B. rependa [4-5]. Boerhaavia diffusa was described as Punarnava (its meaning one that rejuvenates the old body) in the Atharvaveda, as the top of the plant dries up during the summer season and regenerates again during the rainy season. The plant is named after the famous Dutch physician of the 18th century, Hermann Boerhaavia [4]. The whole plant Boerhaavia diffusa, fresh or dried, forms the basis of the drug Punarnava, which is officially classified as a diuretic in the Indian Pharmacopoeia. The plant Boerhaavia diffusa is mentioned in Atharvaveda under the name "Punarnava" because part of its upper plant dries up in summer and regenerates in the rainy season. And also known as "Punarnava" (Punar or Nava) because of Punar means 'once again' and Nava means 'becoming new'. This is known as spiderlings as this plant like a spider because this can grow low and spreads.[6-7]

- **Taxonomical Classification: -**

Kingdom :- Plantae

Subkingdom :- Tracheobionta

Superdivision :- Spermatophyta

Division :- Magnoliophyta

Class :- Magnoliopsida

Subclass :- Caryophyllidae

Order :- Caryophyllales

Family :- Nyctaginaceae

Genus :- Boerhaavia Linn.

Species Name :- Boerhaavia diffusa L.

Scientifically Name :- Boerhaavia diffusa Linn.

Family :- Hog weed, Horse Purslane

Parts used :- Roots, seeds and leaves.



• **Names as per Different Languages (Vernacular Name): -**

Marathi :- Punarnava, Vasuchimuli, Satodimula, Khaparkhuti, Ghetuli, Tambadivasu

Sanskrit :- Punarnava, Kahtilla, Varshabhu, Raktakanda, Shothaghni, Sophaghni.

Hindi :- Gadahpurna, Lalpunarnava, Snathikari, Biskhafra, Beshakapori

English:- Horse Purslane, spreading Hog – Weed

Bengali :- Raktapunarnava, Punarnav

Gujrati :- Dholisatardi, Motosatodo

Punjabi :- Khattan

Kashmiri: Vanjula Punarnava

Assamese: Ranga Punarnabha

Kannada: Sanadika, Kommeberu, Komma, Kommegida

Malayalam: Chuvanna Tazhuta Tamil: Mukurattai (Shihappu)

Oriya :- Nalipuruni, Lalapuiruni

Telugu: Erragalijeru, Atikamamidi, Punarnava.[8-13]

2. ETHNOBOTANY

The whole parts of Boerhaavia diffusa are used in different parts of India (Maharashtra, Meghalaya, Gujarat, Rajasthan, Uttar Pradesh, Orissa, Haryana etc.) and all over the world to treat pressure, kidney disease, rheumatism, etc It is used in the treatment of various diseases such as. (Table 1).In addition to being a tonic, the plant is bitter, astringent, cooling, anthelmintic, diuretic, aphrodisiac, cardiogenic, diaphoretic, emetic, expectorant, anti-inflammatory, antipyretic and laxative. It is used in the treatment of all diseases such as gonorrhea, Leucorrhea, ophthalmology, back pain, myalgia, heart disease, jaundice, anemia, indigestion, constipation, cough, bronchitis and fatigue.[14]

The Boerhaavia diffusa plants leaves are used for treatment of liver complaints, hypotension, jaundice, skin diseases (itches and eczema), night blindness and this plants also used as an antidote to snake poisoning. Similarly, the roots are used to treat gonorrhea, edema, bronchial asthma, night blindness, rheumatism and various urinary, liver, kidney and heart diseases[15-20]. In the Jaipur district of Orissa, India, a decoction of the plant (1 teaspoon twice daily) is given to

mothers when they experience postpartum discomfort such as body swelling [21]. Half a tablespoon of herbal powder taken with water three times a day can reduce menstrual bleeding; It can cure the common cold when taken once a day for seven days along with mashed black pepper[22]. The Boerhaavia diffusa plants root decoction is used to treat fever[23], It is reportedly used to treat internal inflammation of all kinds, dyspepsia, edema, jaundice, cough, hemorrhoids, pulmonary cavitation, anemia, enlargement of spleen, abdominal pain, abdominal tumors, cancers and acts as an antistress agent[24-25]. The roots are anticonvulsant [26], expectorant, laxative and stomachic [27].

Root powder mixed with Mamira (*Thalictrum foliolosum*) is used to treat eye diseases, can treat to cure bone(corneal) ulcers and night blindness, and help treat male infertility [28]. People from many Aboriginal tribes use it to boost fertility [29]. The juice of Boerhaavia diffusa leaves serves as a lotion in ophthalmic such as eye cream. It can also be taken orally as a blood purifier and can reduce muscle pain[30]. Boerhaavia diffusa is used as a diuretic to treat kidney disease [31-32]. This plants used to treatment of cough, cold, stomach ache, anemia as well as potent antidote for snake and rat bites[33]. The seeds and flowers can be used as contraceptives[27]. All of the plants, including their roots, are used as vegetables. India's Purulia (West Bengal), Assam etc. In many parts of the world, tribal people use Boerhaavia leaves as vegetables [34]. Roots and seeds added to pancakes, cereals, and other foods [30]. The seeds can also be used as bird food. The Boerhaavia diffusa plants are grazed by sheep's, goats and cows and in West Bengal it is believed that the plant enhances lactation period and also the amount of milk in cattle[30].

The Boerhaavia diffusa plant parts are applicable for stomachic, diuretic, cardi tonic, febrifuse, hepatoprotective, laxative, anthelmintic, expectorant and The during higher doses can affected on body such as emetic and purgative[35].

Table 1:- Ethnobotany medical uses of the Boerhaavia Diffusa by different countries.

Name of the Country	Ethno Medical Uses
India	Its used for urinary disorders, blood purification, weakness, abdominal pain, asthma, impotence, anemia, ascites, anasarca, hepatoprotective, cancer, cataracts, childbirth, cholera, constipation, cough, laxative, debility. And such as a wound healer, sluggishness, digestive, dropsy (swelling in tissue), gonorrhea, dyspepsia, edema, eye problems, fever, heart disease, ascites, guinea worms, hemorrhages (childbirth and thoracic), hemorrhoids, internal inflammation, internal parasites, jaundice, renal disease, renal stones, hepatic disorders, liver support, lactation relieve, menstrual disease, rheumatism, splenomegaly, snakebite, expectorant and diuretic.
Philippine	Its used for diuretic, fever, purgative and vermifuge.
Brazils	Its used for kidney stones, liver disorders, beri-beri, gallstones, bile insufficiency, cystitis, laxative, edema, gallbladder problems, gonorrhea, albuminuria, guinea, worms, hepatitis, hypertension, jaundice, sclerosis, snakebite, spleen enlarged, nephritis, renal disorders, urinary disorders, urinary retention.
Guatemala	Its used for guinea worms & erysipelas.
Ghana	It can be used for treatment of asthma and Boils.
Iran	Its used for edema, gonorrhea, intestinal gas, poisoning, jaundice, joint pain, lumbago, ascites, glomerular nephritis, anasarca, appetite stimulant, diuretic and expectorant.
West Africa	Its used for Guinea worms, urinary disorders, menstrual irregularities, abortion and as an aphrodisiac.
Nigeria	Its used for asthma, boils, renal insufficiency, convulsions, abscesses, epilepsy, guinea worms, Fever, jaundice, expectorant and laxative.
Elsewhere	Its used for jaundice, childbirth, guinea worms, yaws, sterility.

3. PHYTOCHEMISTRY

To identify and isolate new plants from *Boerhaavia diffusa*, many researchers have discovered many compounds such as flavonoids, alkaloids, retenoids, glycosides, steroids and triterpenoids from its leaves, stems and seeds. , proteins and glycoproteins [Table 2] shows some of them. Ghosal is a pioneer in researching and reporting the phytochemical properties of *Boerhaavia diffusa*. After that, many researchers isolated *Boerhaavia diffusa* extract and found its properties. [36]

Boerhaavia diffusa(Punarnavine) C₁₇H₂₂N₂O mp.236-237°C[37-38]. Boeravinone A-F[39-40], hypoxanthine 9.-Larabinofuranoside[41], ursolic acid[42]. Punarnavoside [43], lirodendrin [44] and glycoproteins with a molecular weight of 16-20 K have been isolated and their biological activities have been examined in detail [45]. Punarnava also contains arachidic acid, beta-sitosterol, alpha-2-sitosterol, palmitic acid, beta-sitosterol ester, tetracosanoic acid, hexacosanoic acid, stearic acid, urosilic acid, triacontane. B-ecdysone, triacotanol, etc. Phytochemical analysis of in vivo roots of garden-grown B.

The highest alkaloid content (2%) of *Boerhaavia diffusa* at different ages was recorded in the roots of 3-year-old plants. Herbs and roots are rich in protein and fat. The plant contains 15 amino acids, including essential amino acids, while the base contains 14 amino acids, including 7 essential amino acids. Besides Punarnavine, the plant also contains large amounts of potassium nitrate [46].

Table 2:- *Boerhaavia diffusa* Plant Chemical constituents isolated .

Class	Compound
Alkaloid	Punarnavine
Retenoid	Boeravinone A-F , Hypoxanthine 9-L-arabinofuranoside , Hentriacontane, B-sitosterol and ursolic acid
Glycoside	Punarnavoside C-methylflavone 5,7-dihydroxy-3,4-dimethoxy- 6,8-dimethylflavone B-ecdysone, triacontane B-sitosterol- B-D-glucoside
Acids	Tetracosanoic, hexacosanoic, stearic, palmitic, arachidic acids, Boerhavin and boerhavic acid
Lignans	Liriodendrin syringaresinol mono- B- D-glucoside Glycoprotein
Lipids	5-methyleicos-4-ene Eicos-4-ene , 4-methyloctadec-3-ene 4-methylnonadecylbenzene
Phenolic compound	3,4-dihydroxy-5-methoxycinnamoylrhamnoside Quercetin 3-0-rhamnosyl (1→6) galactoside (quercetin3-0 robinobioside) Quercetin 3-0-(2"- thamnony) -robinobioside Kaempferol 3-0-(2"-rhamnosyl)-robinobioside 3,5,4- rihydroxy-6,7-dimethoxyflavone 3-0 galactosyl(1-2)glucoside [eupalitin 3-0 galactosyl(1-2)glucoside] Caffeoyltartaric acid Kaempferol 3-0-robinobioside , eupalitin 3-0-galactoside Quercetin ,Kaempferol 6,9, 11-Trihydroxy-6a

4. PHARMACOLOGICAL ACTIVITIES

Anti-bacterial activity: Boerhaavia Diffusa leaves have potent antibacterial activity against various Gram-negative and Gram-positive bacteria which might be due to the phytochemicals present in the leaves. Ethanol extract showed inhibitory effect on gram-positive bacteria and all gram-negative bacteria selected for the present study. [47].

The Extracts of Prosopis cineraria (Linn.) Druce root bark was evaluated by agar diffusion method. [48] Studies have shown that water extract and methanol extract of Hedyotis diffusa have significant antibacterial activity against many human pathogens (including Gram-positive bacteria such as Staphylococcus aureus). Staphylococcus aureus, Bacillus subtilis, Streptococcus faecalis, Bacterium luteus, Klebsiella pneumoniae, pneumococcal p Gram-negative bacterial are Smarcescens, S. flexner, Smarcescens, S. flexner, Bacillus cereus, Bacillus subtilis, Escherichia coli, Klebsiella, Proteus mirabilis, Pseudomonas aeruginosa, Salmonella typhi, Shigella. Staphylococcus aureus and Yersinia enterocolitica at a concentration of 50ul [49].

Antifungal activity: Various extracts of aerial parts and roots of Boerhaavia Diffusa (platinum ether, chloroform, ethyl acetate, ethanol and water) were studied for antifungal activity against Microsporum gypsum dermatophytes, Micro Flavosporum and canis. [50-51] aerial parts extract failed to show significant antifungal activity. The study found that ethyl acetate extract from the roots of the plant was most effective against this type of fungal infection. The greatest inhibition of hyphal growth of Mycobacterium gypsum (78. 83%) was observed at the test concentration of ethyl acetate of 1000 µg/ml for 24 h incubation, followed by Mycobacterium flavum (62. 33%) and Mycobacterium canis (42.30%). watched. Qureshi et al. [55] evaluated the preventive properties of 18 Chhindwara plant extracts, including Boerhaavia Diffusa, against the 3-keratophilic fungi Microsporum gypsum, Chrysosporium tropicals and Trichophyton terrestris. Boerhaavia Diffusa showed resistance to all three diseases tested. Sankar and Sreeramul reported the preventive effect of hot water extract of Boerhaavia Diffusa leaves on the powdery mildew fungus Uncinula tectonae infecting Tectona grandis. [53]

Antiviral activity: Boerhaavia diffusa has many ethnobotanical uses (leaves are used as vegetables; root juice is used to treat asthma, urinary tract infections, leucorrhoea, rheumatism and encephalitis) and is used in medicine in the traditional Ayurvedic system. Additionally, Hedyotis diffusa plant has been reported to have many pharmacological, clinical and antibacterial activities. Recently, authors have found that this plant has the ability to protect against bacterial infections. The antibody isolated from this plant was found to be a glycoprotein with a molecular weight of 16-20 kDa. Administered by foliar spraying in the field, this antiviral agent could protect some economically important crops against natural infection by plant viruses [54]. The large number of plants screened, The aqueous established before the extracts of plant material were prepared and tested on Boerhaavia Diffusa root extracts were found to have a broad spectrum and very high antiviral activity. and act on in-vitro as well as in-vivo against phyto-pathogenic viruses on their hypersensitive and systemic hosts. Boerhaavia Diffusa root extracts were found to have a broad spectrum and very high antiviral activity [54].

Analgesic and Anti-Inflammatory Activity: The Boerhaavia diffusa is used for treatment of analgesic and anti-inflammatory properties and such can also known as "Martinican folk medicine". Santhosh Kumar muthu et al. (2014) evaluated Anti-Inflammatory Effect of Ethanolic Extract of Boerhaavia diffusa leaves in Wistar rats. Boerhaavia diffusa leaves can exhibit in-vivo and in-vitro anti-inflammatory potentials providing a scientific basis for anti-inflammatory effect in inflammatory diseases and support traditional claims. [55] Manisha Gharate et al. (2013) reported anti-inflammatory, analgesic, antipyretic and antiulcer activity of Punarnavasava: Ayurvedic formulation of Boerhaavia diffusa. Mudgal studied the anti-inflammatory effect of a water-insoluble extract of Boerhaavia Diffusa in mice. Leaf and flower extracts have been shown to have anti-inflammatory properties and reduce paw edema in rats by only 55.78%. [56] Leaf ethanol extract had the best anti-carrageenan, serotonin, histamine and dextran-induced rat paw edema model with 30.4%, 32.2%, 33. 9% and 32%, respectively, at a dose of 400 mg/kg. has. Root bark ethanolic extract has also proven its medicinal use by showing COX-1 and IC50 values of 100 mg/ml [57]. Anti-inflammatory activity was assessed using extract of latex of the plant by using a carrageenin induced inflammatory model [58].

Anticonvulsant Activity : Study shows that crude methanolic extract of Boerhaavia diffusa and its tulipogenin rich fraction showed a dose-sparing effect against PTZ-induced convulsions [59]. In Nigerian folk medicine, Boerhaavia diffusa has been found to be widely used in the treatment of epilepsy [26]. The "liriodendron" compound isolated from the methanol root extract of this plant has been reported to have calcium channel antagonist activity [60]. Based on these facts, Kaur and Goel analyzed the anti-inflammatory activity of various root extracts of Boerhaavia diffusa. [61]

Anti-Stress/Adaptogenic/Immunomodulatory Activity : Studies on ethanolic extract of Boerhaavia diffusa root showed greater stress and anti-stress distressing in the swim test. Increased carbon has been shown to have

Immunomodulatory activity, this It also indicates that the reticuloendothelial system is stimulated. DTH responses of mice to SRBC were increased, consistent with cellular immunity, and were shown to affect lymphocyte and accessory cell types [62]. Boerhaavia diffusa has the ability to stimulate adrenal overactivation and underactivation. In the stressfully conditions it can demonstrated to ability of buffer the elevations of serum cortisol and prevent the suppression of the immune system that takes place with elevated cortisol. On the other hand, Boerhaavia diffusa had also demonstrated the ability to improve cortisol levels with end stage adrenal exhaustion[63].

Anti Fibrinolytic Activity : A study evaluated the effect of anti- Fibrinolytic agents; a-aminocaproic acid (a-ACA), tranexamic acid (AMCA); anti-inflammatory drugs (indomethacin, ibuprofen, naproxen); and plant extract (root extract of Boerhaavia diffusa) on endometrial histology of IUD-fitted menstruating monkeys. It is effective in reducing stromal edema, inflammation, and tortuosity of glands, and in increasing the degree of deposition of fibrin and platelets in the vessel lumen[64].

Bronchial Asthma : Dried leaves of Punarnava can be used in dhoomapana in treatment of bronchial asthma. The leaf decoction is said to be an excellent expectorant when decocted with punarnava (Boerhaavia d.) and then combined with ginger juice and black pepper[65].

Hypoglycemic Activity : Study investigating the effect of oral administration of an aqueous solution of Boerhaavia diffusa leaf extract on normal and alloxan induced diabetic rats showed a significant decrease in blood glucose and a significant increase in plasma insulin levels in normal and diabetic rats. Its effect is more significant than glyburide. The chloroform extract of Boerhaavia diffusa leaves produced dose dependent reduction in blood glucose in streptozotocin induced NIDDM rats comparable to that of glibenclamide and this supports the traditional usage of the plant by Ayurvedic physicians for the control of diabetes[66]. An alcoholic extract of the whole plant of Boerhaavia diffusa exhibited hepatoprotective activity against experimentally induced carbon tetrachloride hepatotoxicity in rats and mice. Study of leaf extract of Boerhaavia diffusa produced dose-dependent reduction in blood glucose probably through rejuvenation of pancreatic β -cells or through extra pancreatic action[66].

Anti-cancer Activity : Various preliminary studies (in vitro as well as in vivo) with crude plant extract and its various purified fraction have shown anticancer activity against pulmonary metastases[67], Bharali et al. [68] demonstrated its chemopreventive action against 7, 12- dimethyl Benz(a)anthracene (DMBA) induced skin and Manu et al. [69] demonstrated the protective activity of the hydro-alcoholic extract of the plant against gamma radiation induced damage. Sreeja and Sreeja observed the anti-proliferative and antiestrogenic properties of methanol extract of Boerhaavia diffusa in MCE-7 breast cancer cell lines suggesting its therapeutic role in estrogen induced breast cancers. [70].

Antitumor Activity : A study evaluated of Boerhaavia diffusa plants extract can affect to an assumption that the inhibition of tumorigenesis by the plant extract might have been executed either by preventing the formation of active carcinogens from their precursors or by augmenting detoxification process, preventing promotional events in the skin through free radical scavenging mechanism. The anticancer effect of Hedyotis diffusa was evaluated by 7,12-dimethylbenzanthracene (DMBA) induction of cutaneous papilloma development in male Swiss albino mice (6–7 weeks). The cancer chemopreventive efficacy was assessed by its ability to modulate the activities of enzymes associated with drug metabolism and bifunctional modulators reduced the availability of ultimate carcinogen metabolites in the epithelial stage. A significant increase in the activities of hepatic phase I, phase II system enzymes and antioxidant enzymes (glutathione peroxidase, glutathione reductase, superoxide dismutase, catalase and glutathione level) were observed when mice were fed by oral gavage with Boerhaavia diffusa extract at a dose level of 125 mg and 250 mg/kg body weight for a period of 14 days in our laboratory. [71].

Antiproliferative and Antiestrogenic Activity : Boerhaavia diffusa methanol extract in treatment of MCF-7 breast cancer cells and this can have Antiproliferative and antiestrogenic activities [72].

Hepatoprotective Activity : Aqueous root extract of Boerhaavia diffusa (2ml/kg) possessed marked hepatoprotective activity against thioacetamide induced hepatotoxicity and marked protection against a majority of serum parameters like, ACP, GOT, ALP and GPT but not GLDH and bilirubin. Study also proved that aqueous form of drug (2 ml/kg) administration has more hepato-protective Properties than the powder form [1].

Anti-Fibrinolytic activity : Intrauterine devices (IUDs) used for contraception resulted in in vitro Fibrinolytic activity in the uterus. Local fibrinolysis increases levels of plasminogen activators resulting in uterine hemorrhage and excessive menstrual blood and iron loss. Studies using 50% freeze dried Ethanolic extract (conc. 150 mg/ml) of B. diffusa showed to inhibit in vitro Fibrinolytic activity on fibrin plates in the copper-IUD fitted rabbits. Similarly, increased Fibrinolytic activity of human fallopian tube when tested histochemically on fibrin film was found to be inhibited by aqueous extract of B. diffusa (80 mg/0.06 ml)[73]. The root extracts produced noticeable reduction in the amount and duration of

menstrual flow (124%) and menstrual iron loss[74] and reduced activity of uterine tissue plasminogen activator (tPA) in IUD fitted monkeys[75]. Boerhaavia diffusa plants extract from root was found most effective in reducing stromal edema, inflammation, tortuosity of glands, and in increasing the degree of deposition of fibrin and platelets in the vessel lumen as revealed by endometrial histology of IUD-fitted menstruating monkeys.[64]

5. CONCLUSION

The Boerhaavia diffusa plants also known as Punarnava as well as rejuvenates or renews the body in Ayurveda because its Pharmacological studies showed many benefit to human life to treatment and diagnosis many more diseases such as inflammations, renal stone, anaemia, jaundice, eye diseases, joint pains, antidiabetic, antistress, adoptogenic, immunopotentiator, antioxidant, anti-diabetic, anti-fibrinolytic, analgesic, antioxidant, adoptogenic, and skin cancer, etc Punarnava is one of the potent herbal drugs. That are being used nowadays as a single or Mixed herbal and herbo-mineral formulation. Boerhaavia diffusa is a well-known medicinal plant that is frequently prescribed in various indigenous systems of medicine such as Ayurveda and Unani. The traditional texts give us the knowledge about its various properties and formulations being used in various conditions like Inflammations, renal stone, anaemia, jaundice, Eye diseases, joint pains etc. The modern Research has also proved the efficacy of this Plant as antidiabetic, antistress, adoptogenic, Immunopotentiator and as an antioxidant in Various conditions. From the above review, we Can conclude that the plant Boerhaavia diffusa which is having a wide range of medicinal value due to their variety of chemical constituents can be further investigated on toxicological and other parameters to obtain a valuable marketed product. The many benefits of Hedyotis diffusa make Hedyotis a true miracle. A lot of research has been done on different varieties of Boerhaavia diffusa, but the plant has not yet been developed as a medicine by the pharmaceutical industry. Detailed and appropriate research is required to identify, name and collect plants that can provide a useful means of improving knowledge of medicinal plants. Considering the properties of this plant, more research can be done in the future to bring drugs with various effects to humans.

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