HERB OF LIFE PUNARNAVA

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ABSTRACT

Boerhaavia diffusa is the most important herb for the life, commonly known as Punarnava in Sanskrit, is an herbaceous plant of the family Nyctaginaceae. The whole plant or its specific parts (leaves, stem, and roots) are known to have medicinal properties and have a long history of use by indigenous and tribal people in India. The medicinal value of this plant in the treatment of a large number of human ailments is mentioned in Ayurveda, Charaka Samhita, and Sushruta Samhita. It has many ethanobotanical uses (the leaves are used as vegetable; the root juice is used to cure asthma, urinary disorders, leukorrhea, rheumatism, and encephalitis), and is medicinally used in the traditional, Ayurvedic system.

Keywords: Punarnava, habits, ethanobotanical, pharmacological uses.
INTRODUCTION

*Boerhaavia diffusa* (*Nyctaginaceae*) commonly known as Raktapunarnava, Shothaghni, Kathillaka, Kshudra, Varshabhu, Raktapushpa, Varshaketu, Shilatika, an herbaceous plant species growing prostrate or ascending upward in habitats like grasslands, agricultural fields, fallow lands, wastelands and residential compounds.

The plant was named in honor of Hermann Boerhaave, a famous Dutch physician of the 18\textsuperscript{th} century. The plant is mentioned in the Atharvaveda with the name ‘Punarnava’, because the top of the plant dries up during the summer season and regenerates again during the rainy season. In Ayurveda, Punarnava has many medicinal properties. It is called as Punarnava (Punar + nava). Punar means - once again, nava means - becoming new. This is also known as spiderlings as this plant grows low and spreads like spider.

PLANT PROFILE

Botanical Name: Boerhaavia diffusa

Family: Nyctaginaceae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Caryophyllales

Genus: Boerhaavia

Species: diffusa,

NAMES IN DIFFERENT LANGUAGES (VERNACULAR NAME)

Sanskrit: Kahtilla, Sophaghni, Sothaghni, Varshabhu

Assamese: Ranga Punarnabha

Bengali: Rakta punarnava
GEOGRAPHICAL DISTRIBUTION: The genus Boerhaavia has several species, and is distributed in the tropical, subtropical, and temperate regions of the world. It is found in Australia, China, Pakistan, Sudan, Sri Lanka, Egypt, South Africa, USA and in several countries of the Middle East. *Boerhaavia diffusa* is also indigenous to India; it is found throughout the warmer parts of the country up to an altitude of 2000 m in the Himalayan region.

ORIGIN AND HABITAT: *Boerhaavia diffusa* is a perennial creeping weed, prostrate or ascending herb, up to 1 m long or more, having spreading branches. The stem is prostrate, woody or succulent, cylindrical, often purplish, hairy, and thickened at the nodes. Leaves are simple, thick, fleshy, and hairy, arranged in unequal pairs, green and glabrous. The roots are stout and fusiform with a woody. The shape of the leaves varies considerably – ovate-oblong, round, or subcordate at the base and smooth above. The upper surface of the leaves is green, smooth, and glabrous, whereas it is pinkish white and hairy beneath. Flowers are minute and subcapitate. These are hermaphrodite, pedicellate, and white, pink, or pinkish-red in color. Bracts are deciduous and involucrate. A perianth is present in the place of a calyx and corolla, which is tubular in shape, the tube being short and narrow at the base and funnel-shaped at the top and constricted above the ovary. There are five lobes, which are small and acute. Two or three stamens are present and the stigma is peltate.
ETHANOBOTANICAL USES: In Purulia (West Bengal), tribals eat this plant as vegetable. *Boerhaavia* leaves are cooked and eaten in Assam, where it is commonly found in the markets. Its roots are used in the treatment of piles by the inhabitants of the Garhwal Himalaya (Uttaranchal). The root paste is used to cure bloody dysentery by the Bhils of the Jhabua district in Madhya Pradesh. The decoction of the plant is given in the treatment of nodules in the body. The root juice is used in treating asthma, scanty urine, and internal inflammation disorders. *Boerhaavia diffusa* is used for curing ailments such as leukorrhea, rheumatism, and stomach ache by the Sahariya tribe in the Lalitpur district of Uttar Pradesh. This plant is also used by the tribes of Ambikapur district (Madhya Pradesh) for the treatment of elephantiasis. In the Indo-Nepal Himalayan terai region, the tribals harvest this plant for medicinal purposes, mainly for flushing out the renal system, and to treat seminal weakness and blood pressure (Mitra and Gupta, 1997).

CHEMICAL COMPOSITION: The *Boerhaavia diffusa* plant contains a large number of such compounds as flavonoids, alkaloids, steroids, triterpenoids, lipids, lignins, carbohydrates, proteins, and glycoprotein's. Punarnavine, boeravinone, hypoxanthine 9-L-arabinofuranoside, ursolic acid, punarnavoside, Liriodendrin (lignans), B-sitosterol (Phytosterols) and two lignans, liirodendrin and syringaresinol mono-ß-D-glucoside, have also been reported in the roots. Chopra et al. (1923) reported that the plant contained large quantities of potassium nitrate, besides punarnavine. The herb and roots are rich in proteins and fats. The herb contains 15 amino acids, including 6 essential amino acids, while the root contains 14 amino acids, including 7 essential amino acids. Seth et al. (1986) isolated a new antifibrinolytic compound 'punarnavoside' from the roots of *B. diffusa*. Phytochemical screening of the roots from garden-grown in vivo plants of *B. diffusa* of different ages revealed that the maximum alkaloid content (2%) accumulated in the roots of 3-year old mature plants.

AS MEDICINE IN THE AYURVEDIC SYSTEM

In old Indian books of medicine such as the Charaka Samhita and Sushrita Samhita, it is mentioned that the Ayurvedic preparations made from *Punarnava* – namely, *punarnavastaka kvath*, *Punarnava kshar*, and *Punarnava taila* – were used for the treatment of various ailments. The whole plant of *B. diffusa* is a very useful which is documented in Indian Pharmacopoeia as a diuretic (Chopra, 1969). The active principle contained in the herb is an alkaloid, known as punarnavine. In Ayurvedic medicine, different parts of this plant were reported to have various medicinal properties. It was used in renal ailments as diuretic and to treat seminal weakness and blood pressure and also used in the treatment of stomach ache, anemia, cough, and cold, and as a diaphoretic, laxative, expectorant, and a potent antidote.
for snake and rat bites in the treatment of nephrotic syndrome, hepatitis, gall bladder abnormalities, and urinary disorders. The flowers and seeds are used as contraceptive (Chopra et al., 1956).

**AYURVEDIC ACTION:**

- **Deepana:** Enkindles appetite
- **Shothaghna:** Destroys oedema
- **Kasahara:** Alleviates coughs
- **Vyasthapana:** Promoter of youth and longevity
- **Rasayana:** Rejuvenative
- **Hridaya:** Nourishes the heart
- **Stambhana:** Astringes bleeding
- **Chakshushya:** Benefits the eyes
- **Arshoghna:** Reduces haemorrhoids
- **Grahi:** Absorbs fluids from the intestines and is constipative
- **Shula prashamana:** Alleviates colic
- **Mutrala:** Diuretic
- **Mutravaha rasayana:** Rejuvenative to the urinary system
- **Ashmarighna:** Lithotriptic
- **Mutrakricchaghna:** Alleviates dysuria

**TRADITIONAL PRODUCTS:** Punarnavastaka, Punarnavadi Mandura, Punarnavastaka, Punarnavambu, Punarnava Guggula, Punarnavasak Kwath / Churnas, Sukumar Ghrit, Sothaghna Lepa etc.

**USES:** Anemia, Anti-inflammatory, Asthma, Blood Purifier, Cholera, Cough, Diuretic, Dropsy, Dyspepsia, Edema, Emetic, Expectorant, Gonorrhea, Guinea Worms, Heart Disease, Heart Ailments, Hemorrhages (childbirth), Hepatoprotective, Inflammation (internal), Jaundice, Kidney Disorders, Lactagogue, Laxative, Liver, Menstrual, Ophthalmic, Renal, Rheumatism, Snakebite, Spleen (enlarged), Stomachic,
Urinary Disorders, Weakness, Albuminuria, Blenorrhagia, Cholagogue, Cystitis, Gallbladder, Hepatitis, Hepatotropic, Hydropsy, Nephritis, Sclerosis (Liver), Urinary Disorders, Sterility, Anti-flatulent, Appetite Stimulant, Joint Pain, Lumbago, Nephritis, Tonic, Urticaria, Anti-convulsant, Epilepsy, Febrifuge, Abortifacient, Aphrodisiac, Dysmenorrhagia, Abdomen, Abdominal Pain, Anthelmintic, Ascites, Cancer (abdominal). This plant rejuvenates liver, male reproductive system and other organ system; this plant cleanses to get rid of renal calculi (kidney stones). Mainly, the roots and the whole plant is used for the medicinal purpose, externally Punarnava is used for alleviate the pain and swelling. The fresh juice of its roots instilled into eyes, mitigates the ailments of the eyes like night blindness and conjunctivitis. In large doses, Punarnava acts as a purgative.

**PHARMACOLOGICAL AND BIOLOGICAL ACTIVITY**

The plant has drawn lot of pharmacological and biological activities such as- Antidiabatic, Anti-metastatic, Antioxidant, Antiproliferative and Anti-estrogenic, Analgesic and Anti-inflammatory, Antilymphoproliferative, Anti-viral, Hepatoprotective, Antibacterial, Antistress & adaptogenic, Anti fibrinolytic, Nitric Oxide Scavenging, Adaptogen, Bronchial asthma, Chemo preventive action, Immunomodulatory, Immunosuppressive and Diuretic activity.
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