

Review on punarnava[Boerhaviadiffusa]

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ABSTRACT

Review aims- to produce affirmations on the phytochemical and medicine aspects of BoerhaviaDiffusa, Nyctaginaceae conjointly referred to as "Punarnava". It possesses a massive ethnomedical history & presents a phytochemical reservoir of heuristic healthful worth, it's one among the oldest oriental medicines mentioned in writing as potential remedy for numerous ailments.

Keywords- BoerhaviaDiffusa, Punarnava, Ayurveda, Pharmacotherapeutic Properties.

I. INTRODUCTION -

The use of healthful plants is predicated on the expertise of the many generations of physicians and ancient systems of drugs from completely different ethnic societies. [1]

based on the expertise of the many generations of physicians and ancient systems of drugs from completely different ethnic societies, healthful plants are wont to cure several ailments.[2]

Indian system of drugs (Ayurveda) is enjoying a significant role on top of things and management of assorted health disorders and it depends on plant resources and used as a full drug.

This is the time to enlist and analyse the phytochemicals that area unit liable for therapeutic values found in healthful plants and scientific validation of people claims. it should conjointly encourage be a brandnew discovery of distinctive biomolecule to cure threat health disorders.

In this regard, we've got chosen Punarnava (BoerhaviaDiffusa) and its healthful richness. BoerhaaviaDiffusa L. (Nyctaginaceae), ordinarily referred to as 'Punarnava' within the Indian system of drugs, could be a perennial locomotion herb found throughout the waste land of Asian country.[3]

Use this ayurvedic herb, Punarnava which holds antioxidants, wound healing power, anti-inflammatory properties, and can be used for urinary tract infection, liver detoxification, and more.

If you trying to lose some extra weight then add punarnava powder and tea in your diet. Another health benefits of punarnava leaf are that it is good for the removal of kidney stones.

You can find Punarnava tablets, Punarnava powder and Punarnava root extracts in your local stores, and add this herb in your lifestyle to get Punarnava Extract Acts as Natural Remedy for Urinary Tract Infections

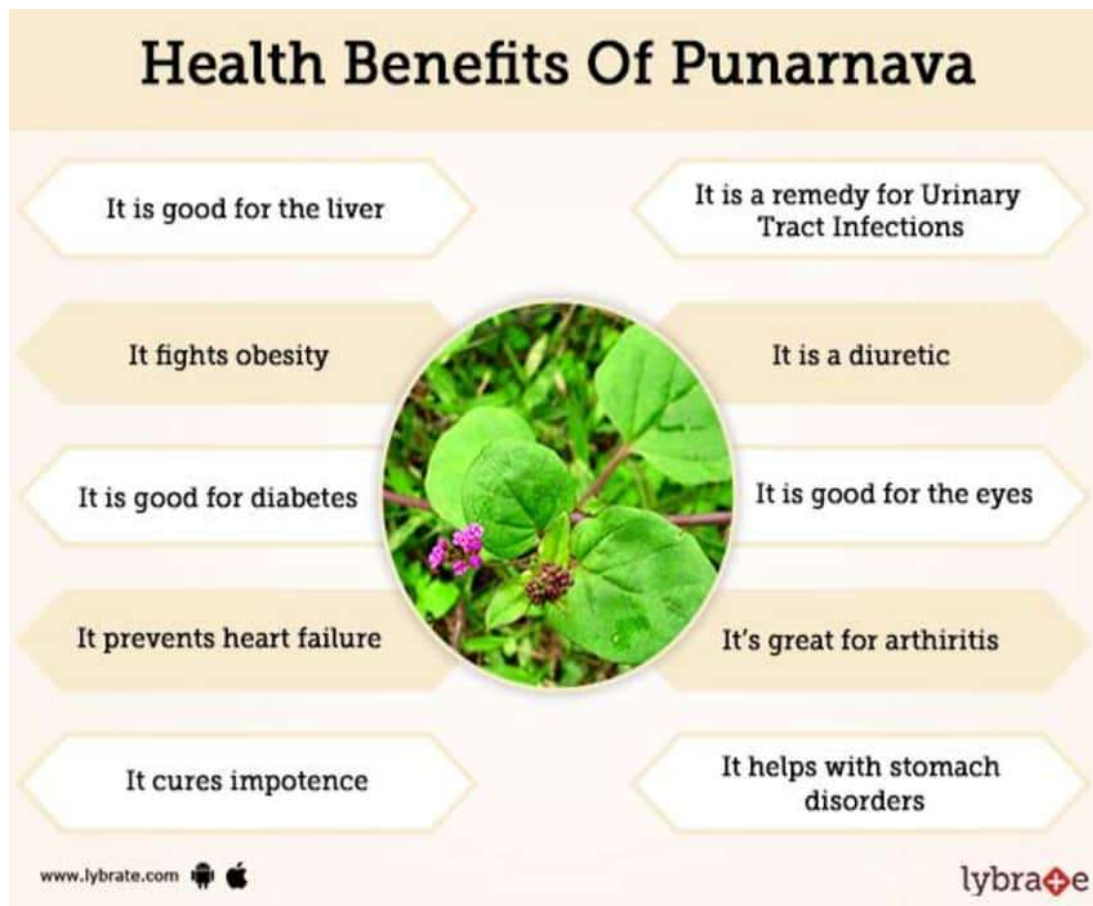
Urinary Tract Infections are extremely common in women, although they can happen to men as well. They cause a lot of discomfort, as well as a burning sensation while urinating. Punarnava powder has anti-spasmodic, anti-microbial, and anti-inflammatory properties in it.

Together, these work as a fantastic cure for UTIs, clearing out the infection effectively in no time. Punarnava herb can also be used to cure UTIs during pregnancy as it does not have any adverse effects on the mother or baby.effective health benefits. Even you can make and drink punarnava juice which is good for your eyesight

Properties :

1. Anticancer Activity
2. Antidiabetic drug and symptom Activity
3. Antifibrinolytic Activity
4. Medicine Activity
5. Water pill and urinary organ Activity
6. Hepatoprotective Activity
7. Antimicrobial Activity
- (a) Medicament Activity
- (b) Antifungal Activity
8. Inhibitor Activity
9. Opposed wheezing Activity
10. Medicine Active

Health Benefits of Punarnava :



MORPHOLOGY –

Punarnava's list of benefits and history of use is extensive, stretching back thousands of years and throughout many cultures and regions.

It is particularly revered for its unique ability to gently purge the body of excess liquids and stagnation, which benefits many areas of the body, including the urinary system and joints.

From an Ayurvedic perspective, punarnava has a bitter and sweet taste (rasa), with a heating action (virya) and pungent postdigestive effect (vipaka).

It is balancing for all doshas (especially kapha) but may aggravate vata in excess

Boerhaavia Diffusa - a perennial locomotion weed, prostrate or ascending herb, up to one m Health Benefits of Punarnava :long or additional having spreading branches.

The plant grows extravagantly within the season, and mature seeds area unit fashioned in October-November.[4]

leaves - ovate, shape.

Flowers - minute, typically fascicled or sub umbellate on the last word branch lets, pink, white and concerning one.5 mm long.

Tap root - stalk,cylindrical to narrowly cigar-shaped to conelike or tapering, light-weight yellow, brown or chromatic grey.

medicinal uses

Boerhaavia Diffusa occupied a reputed position of having valuable medicinal properties in both folk and classical streams of indigenous medicinal systems. It is pungent, astringent and bitter in taste; the various parts of the plant are used in the treatment of cancer, jaundice, dyspepsia, inflammation, enlargement of spleen, abdominal pain and as an anti-stress agent.

Medicinal usage on various plant parts of BD in indigenous system of medicines in India and other countries is outlined below:[9]

Leaves:

Punarnava leaf juice is used in the eyes for topical application.[10]**Punarnava** leaves vegetable is consumed to reduce edema .Leaf juice with honey, dropped into the eyes for chronic ophthalmia .The leaves are useful in dyspepsia, tumors, spleen enlargement; abdominal pains According to Unani

system of medicine, the leaves are appetizer, alexiteric, useful in ophthalmia, in joint pains.The leaves of *B.Diffusa* are used as a green vegetable in many parts of India. It cures ulcers of cornea, night blindness and helps to bring back virility in men.[11]

COMPOSITION OF LEAF OF PUNARNAVA :

Leaf Composition	Percent (%)
Moisture	82.2
Protein	6.1
Fats	0.9
Carbohydrates	7.2
Phosphorous	0.99
Ash	0.96
Fibre	1.56
Calcium	0.667



Fig -LEAVES OF PUNARNAVA

Seeds: Seeds are tonic expectorant, carminative, useful in lumbago, scabies . The seeds are considered as promising blood purifier.Seeds are used as energizer and for help in digestion.[

Roots: The roots are reputed to be diuretic and laxative and are given for the treatment of anasarca, ascites and jaundice. [12] The root juice is used to cure asthma, urinary disorders, leucorrhea, rheumatism, and encephalitis . [13] *B. Diffusa* roots have been widely used for the treatment of dyspepsia, jaundice, enlargement of spleen, and

abdominal pain, and as an anti-stress agent. The worldwide use of *B. Diffusa* roots to treat liver disorders was validated when researchers demonstrated, in 1980 and 1991 that its root extract had antihepatotoxic properties .[14]

Punarnava is also valued in ophthalmic disorders,the *Sharangadhara*samhita recommending a collierium (*anjana*) for itching, prepared by mixing the churna with milk; mixed with honey to treat ophthalmic discharges; with ghee for corneal wounds; with *taila* for poor vision; and with rice water (*kanjika*) for night blindness.[15]



Fig - ROOT OF PUNARNAVA

Phyto-chemical constituents :

Generally whole plant consists the subsequent phytochemical constituents; those area unit Panuramine (Alkaloids), β -sitosterol (Phytosterols), Liriodendrin (lignans), Punarnavoside (Rotenoids), Boerhavin (Xanthones) and saltpetre (Salts). Rasa PanchakRasa- Madhura, Tikta, Kashaya Guna-Laghu, RukshaVirya- UshnaVipaka-MadhuraDosha karma- Tridoshaghna

Nutritional value of Punarnava:

In one hundred g of Punarnava, you'll realize a complete fat content of one.61% of the daily suggested indefinite quantity. it's 162 mg of atomic number 11 and a couple of.26% of the daily suggested indefinite quantity of macromolecule. It has 44.8 mg of vitamin C in it, in conjunction with 142 mg of metal. It conjointly has zero.012 mg of iron in it. [16]

Characteristics of the Punarnava Plant:

Punarnava is sometimes called "the renewer" thanks in part to the translation of its Sanskrit name—punar ("again") and nava ("new"). This name speaks not only to punarnava's rejuvenative properties, but also to its hardiness as a plant.

After drying out in the hot summer season, it "renews" itself, blooming and growing fruits in the rainy season. Although it can be found throughout the world, it grows most abundantly in India and Brazil, where it goes by the name erva tostão.^{3,4}

Other names for this herb include Indian hogweed, spreading hogweed, tarvine, gadhapurana, and spiderling (so called because of its long, slender stems).

A perennial creeper that belongs to the four o'clock family or Nyctaginaceae, this plant can thrive in various growing conditions—and we even found it growing wild on one of our farms in India, along with bala, bhumyamalaki, shankhapushpi, and ashwagandha.

In appearance, punarnava grows up to a meter long, with spreading branches and clusters of small, thick, fleshy leaves that are often green and smooth on the top with a pale pink and hairy-textured under-side. It has large, tuberous roots that are usually yellow, brown, or grey.

These roots are also sweet in taste, which can attract pests and pose problems to farmers. Thanks to its hairiness and sticky quality, parts of the plant can get stuck to animal's legs and human clothing, which can help spread seeds from one place to another place. [17]

%	Boerhaavia diffusa
Plant	A perennial herb from a fusiform root
Stem	Prostrate, decumbent or ascending, 4-10 cm long, rather slender, divaricately branched
Leaves	Opposite or sub-opposite, two of a node unequal, broadly ovate or sub-orbicular, obtuse to rounded or sub-cordate at the base.
Flowers	In pendunculate, glomerulate clusters arranged in slender, long stalked, axillary or terminal corymbs
Fruit	Ovoid or sub-ellipsoid, rounded above, slightly cuneate, below, broadly and bluntly 5-ribbed, very glandular throughout
Flowering and Fruiting	Throughout the year in Indian conditions

AYURVEDA ASPECT:

- Diuretic
- Stomachic
- Prescribed within the treatment of jaundice
- Given within the loss of biological process power
- Enlargement of spleen
- Used for relieving abdominal pains

ADVANTAGES OF PUNARNAVA :

- 1.Digestion and Cleansing :- Thanks to its heating qualities, punarnava enkindles agni(digestive fire) and can help stimulate a sluggish digestive system. It's opening and cleansing, helping to cleanse out excess kapha, which makes way for nourishment to reach the tissues.
- 2.Healthy Weight Management:-Punarnava assists the body with breaking down and digesting fat and absorbing excess fluids in the digestive system. This makes it an effective weight management ally—especially for those naturally prone to gaining weight.
- 3.Liver and Kidney Health:- Well-known as a tonic for the liver and kidneys, punarnava is often used to support these areas of the body.
- 4.Joint Comfort and Mobility:-Punarnava has been traditionally used to bring comfort to the joints and

muscles. It promotes comfortable movement of the joints, providing relief from joints experiencing pain due to imbalanced kapha.

5.Supporting the Lungs:- Its heating qualities also make it a powerful herb for melting excess kapha in the lungs and respiratory tract.

6.Heart Health:-Punarnava is said to be an excellent and nourishing herb for heart health due in part to its clearing action in the circulatory system.

Uses of Punarnava:

1. Punarnava have to be compelled to be employed in conjunction with Sunthi to urge Associate in nursing improved medication result.
2. Punarnava is useful in Aamavata.
3. The juice extracted from Punarnava leaf is used at intervals the eyes through topical application.
4. Punarnava roots rubbed in honey area unit regionally assigned for cataract, continual redness, inflammation.
5. When the Punarnava root juice is placed into eyes that provides live in eye diseases like avitaminosis and redness.
6. Punarnava is beneficial in decreasing swelling and stinking in pores and skin disorders.

7. Paste crafted from Punarnava roots is enforced at the injured wounds as a result of it permits dehydration the oozing out of that wound.

8. The leaves of Punarnava area unit utilised in vegetable preparations, that tends to point a reduction in edema. Punarnava is applied in enemas, it works as a purgative and treats flatulence.

9. It's used as in numerous panchakarma ways like Swedana (fomentation) where Punarnava roots considerably and Punarnava plant as an entire is used to alleviate ache and swelling.

10. Punarnava reduces haematoidin level to forestall jaundice.

11. In Charak Vedic literature, By Acharya Charak- at intervals the kind of ointment in communicable disease and skin condition and nephrolith.

12. In Shusruta Vedic literature, By Acharya Shusruta- Use in snake poisoning, rat biting, troubles, viscus troubles.

13. Nighantu, By Dhanvantri- edema, anemia, heart condition, laxative, hemorrhage.

14. In Rigveda, use in ill health cause by water and passerine.[18]

THERAPEUTIC USES OF PUNARNAVA IN TRADITIONAL LITERATURE :

Name of the Author	Literature	Uses
Dhanvantari	Nighantu	Laxative, diaphoretic properties, oedema, anaemia, heart disease, cough & cold, intestinal colic pain, hemorrhage and biliousness.
-	Rajnighantu	Nervous system disorder
-	Bhavaprakash	Heart disease and piles
Charaka	Charaka	In the form of ointment in leprosy, skin disease, kidney stone, oedematous swelling
	Samhita	Stone ,oedematous swelling
Sushruta	Sushruta	Snake poisoning, rat bite infection, urinary troubles, cardiac
	Samhita	Ailments and rejuvenation
Chalkradatta	-	Chronic alcoholism
-	Rigveda	Disease caused by water and pitta
-	Matsyapurana	Plant decoction is universal antidote of poisoning
-	Agnipurana	Remove abscesses
Tibbi physicians	-	Asthma, jaundice, ascites

Future scope:

- Isolation and purification of pure compounds from BD flowers root or leaves.
- Therapeutic validation of these pure compounds to validate traditional claims.
- Translation of these findings into a possible therapeutic alternative for human consumption that is potent with minimal side effects.
- Preclinical toxicological evaluation of various biologically active BD extracts.

HOW TO USE PUNARNAVA

1. A. Punarnava Leaf Juice:

- Take 1-2 teaspoon of Punarnava leaf juice.
- Add the same quantity of water to it.
- Take this juice once a day to improve the function of the liver and for fast recovery from jaundice.

B. Punarnava Paste:

- Take ½ -1 teaspoon of Punarnava root or leave paste.
- Add cow's milk to it and consume.
- Use this remedy twice a day to improve the functioning of female reproductive system.

C. Punarnava Churna

- Take ¼ - ½ teaspoon of Punarnava Churna.
- Add cow's milk or honey to it.
- Use this remedy once or twice a day to improve the functioning of the male and the female reproductive system.

D. Punarnava Kwath

- Take 1/2- 1 teaspoon of Punarnava powder.

- b. Add 2 cups of water and boil till the volume reduces to 1/2 cup.
- c. This is PunarnavaKwath.
- d. Take 3-4 teaspoons of this PunarnavaKwath.
- e. Add the same quantity of water to it.
- f. Drink it preferably once or twice a day to manage jaundice, conjunctivitis. It is also good to improve the respiratory and urinary system

II. METHODS:

1. Collection of Plant material:
Healthy, ailment free whole Boerhaaviadiffusa L. plant were collected fromSamanthipuramvillage, Arcot, Tamil Nadu. The taxonomical identification was done by Dr. P.JAYARAMAN, Director, Plant anatomy research center, Chennai and voucher specimen was kept for further reference with register number PARC/2014/2078.
2. Preparation of extract:
The plant was shade dried and ground to make fine powder that was then extracted with methanol. The extract solution was evaporated under reduced pressure to obtain solid crude extract.
3. Column-chromatography:
A cylinder shaped glass column containing stationary phase (silica gel) is encountered slowly from the top with a liquid solvent (mobile phase) that flows down the column with the help gravity or external pressure applied. This technique is used for the purificationofcompounds from a mixture. Once the column is ready, the sample is loaded inside the topofthe column. The mobile solvent is then allowed to flow downthrough the column.The compounds in mixture have different interaction ability with stationary phase(silica gel), and mobile phase, thereby will flow along the mobile phase at

different time intervals or degrees. In this way,the separation of compounds from the mixture is achieved. The individual compounds are collected as fractions and analyzed further for structure elucidation.

Compositon of kidney stone :-

A kidney stone is a cluster of crystals when they formed together to create a hard lump in one or both kidneys. They can vary in size from a few millimeters to several centimeters. The majority of stones will pass out of the body in the urine without any help, but some will require intervention to remove them. The Urinary stone have been developed with the crystals of phosphate, uric acid, magnesium ammonium phosphate with apatite and struvite.⁵ Among the urinary stones, calcium- containing stones have been found to about 75% of all urinary calculi, which may be present in the form of crystals of pure calcium oxalate (50%), calcium phosphate (5%) and a mixture of both compounds (45%). The diet can affect the concentration of certain substances in the urine and can affect the acidity of urine. The 24 hour urine collection of urine may found any of the given properties have increased risk of forming a stone:

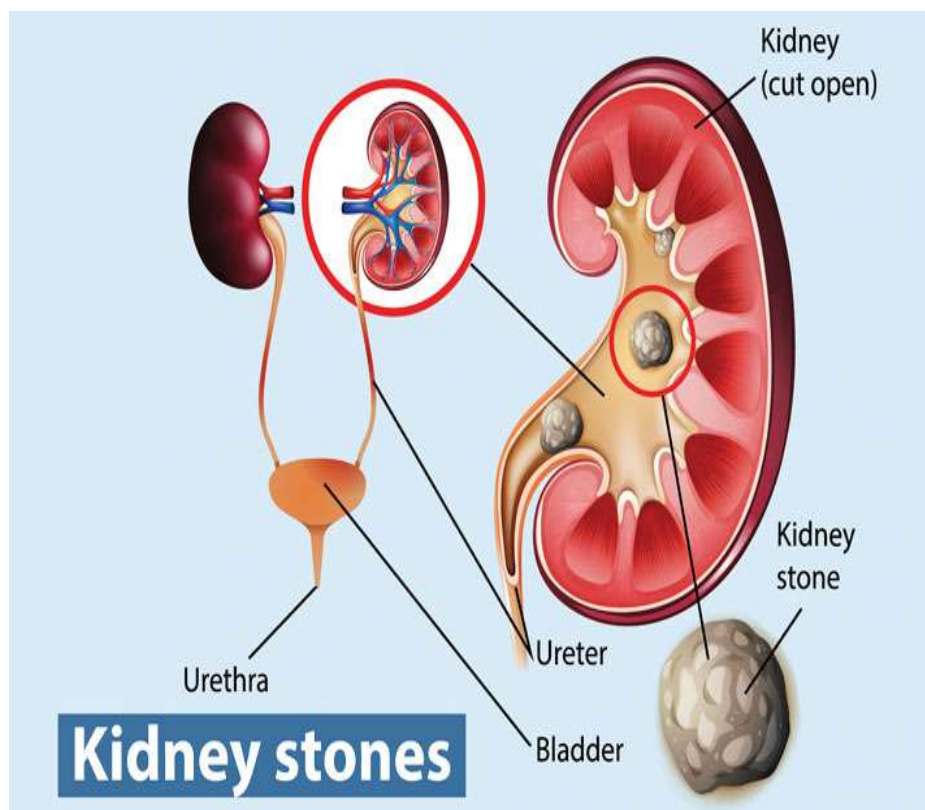
High levels of calcium (hypercalciuria)

High levels of oxalate (hyperoxaluria)

High levels of uric acid (hyperuricaemia)

Low levels of citrate (hypocitraturia)⁶

Calcium, oxalate, uric acid and citrate are normal substances found in the blood.The acidity of any fluid are expressed as pH. The pH of less than 7 is called acidic while pH greater than 7 is belongs to alkaline. Normal urine pH will vary during the day depending on diet and will usually range between 5 and 8. Calcium oxalate stones can be found in any pH of urine. The formation of uric acid stones is more in acidic urine while calcium phosphate stones form in more alkaline urine .



Diuretic Activity :

Many research workers studied the effect of *Boerhaaviadiffusa* extract on kidney and are in agreement that it has diuretic effect.

The diuretic activity was attributed to increased sodium excretion rate, presence of potassium, glucosides, ecdysone in various parts of plant. However, the maximum diuretic effect observed if roots are taken and as for as collection of season is concerned, maximum activity obtained in plants of rainy season .

Moreover, the extract modulates succinic dehydrogenase level (dose dependent manner i.e. stimulatory at low dose and inhibitory at high dose), stimulatory for d-amino acid oxidase; however has no effect on phosphatase of kidney .

Extract of *Boerhaaviadiffusa* has definite bearing on renal therapeutics in various renal pathology viz. *E.coli* induced pyelonephritis, polycystic end stage renal diseases, urolithiasis due to deposition of ammonium magnesium phosphate hexahydrate, calcium oxalate and oedema, ascites and nephritic syndrome developing at the early onset of liver cirrhosis and chronic peritonitis.

Diuretics are the first line of therapy in renal inflammatory disorders as it almost always

involve derangement in fluid dynamics of the body, in this regard hepatoprotective property of the plant has an added benefit .[19]

TOXICITY:

Vomiting may be associated with larger doses of *Punarnava*. Major thrust by whole of the pharmaceutical industry is focused towards designand development of innovative/indigenous plant based drugs through investigation of leads fromtraditional system of medicine recent years, ethno- botanical and traditional uses of naturalcompounds, especially of plant origin received much attention as they are well tested for their efficacy and generally believed to be safe for human use. It is best classical approach in thesearch of new molecules for management of various diseases.

DISEASES:

Stomach disorder

The herb is useful in strengthening the stomachand promoting its action.It is beneficial in the treatment of several stomach disorders, particularly intestinal colic. A powder of the rootis given in doses of 5 gms (1 tsp) three

times aday. It is also useful in killing or expellingintestinal worms

Asthma

Punarnava promotes the removal of catarrhalmatter and phlegm from the bronchial tubes. It is,therefore, beneficial in the treatment of asthma. A powder of the root can be taken in small doses thr ee times a day.

Fevers and hot flashes

Punarnava is beneficial in the treatment of fevers.It brings down temperature by inducing copious perspiration.

Skin diseases

The root of the plant is an effective remedy for several skin diseases. A paste of the root can beapplied beneficially as a dressing for edematousswellings. A hot poultice of the root can beapplied with gratifying results to ulcers, abscessesand similar skin disease

Diuretic Nature of PunarnavaPlant :

Urinating is one of the most important body functions. This is because it helps get rid of excess toxins, water, and fat from the body, ultimately keeping it healthy and ensuring that all organs function as smoothly as possible.

Punarnava drug is a diuretic, which means that it stimulates regular and plenty of urination.

This helps keep the body clean. Furthermore, regular urination also clears out the calcium accumulated in the kidneys, thus preventing kidney stones from occurring. The diuretic properties of Punarnava root powder also help prevent dropsy, a condition in which water or watery fluids settle down in the tissue and cavities of the body and cause problems with the health.

Frequently urinating can help get rid of these excess fluids and prevent the condition from occurring in the first place. It also helps cures ascites, which is also the accumulation of watery fluids in the body tissues. This is normally caused by a problem in the liver.

Urinary Tract Infection :

Urinary tract infection is described under the broad term of Mutrakcchra in Ayurveda. Mutra means ooze, krichra means painful. Thus, dysuria and painful urination are called as Mutrakcchra. In urinary tract infection, Punarnava helps to control burning sensation because it has Mutral (diuretic) effect. It increases theurine flow and subsides the symptoms of UTI like burning sensation during urination.

Tips:

- a. Take 1-2 teaspoon of Punarnava juice.
- b. Add the same quantity of water to it.
- c. Have it once or twice a day before taking meals to get rid of the symptoms of UTI.

PUNARNAVA USES IN DIFFERENT SYSTEM OF MEDICINE :

Medicine system	Health problems in which ‘punarnava’ is used
Ayurvedic system	Heart disease, anaemia, asthma, cough & cold , tumours, enlargement of spleen of children, abdominal pain, dropsy, dyspepsia, sprains, immune-modular
Siddha system	Anti-inflammatory, diuretic , laxative, hepato-protective, anthelmintic, expectorant
Unani system	Diuretic, asthma, jaundice, dropsical swelling, urethritis, laxative, expectorant, emetic, stomachic
Homeopathy	Head disease, liver disease, abdominal pain, urinary tract infection, cough& cold, heart disease
Modern system	Restoration of virility of man, night blindness, lowering serum uric acid level, anticonvulsant, boils, antiviral, anti-inflammatory, diuretic, cardiac disorder,beri-beri,jaundice
Tribal system	Santals-hasten delivery, laxative, epilepsy, fistula, abdominal pain, lodha-urinary toubles, asthma, diarrhea, liver & spleen, enlargement of children, muscular pain, watering of eyes
Magico-religious	Trial people-Tie 2-3 cm long root in white thread on waist to cure asthma; touch root on body to cure epilepsy

Marketed product of punarnava [Boerhaviadiffusa] :

Product Name	Dosage foam	Mfg.by	Uses
Punarnava Urinary WELLNESS	Tablets	Himalaya	urinary distension, kidney stones and painful urination
Punarnava capsule	Capsule	Zandu	It helps treat urinary disorders.
HERBAL HILLS	Powder	Isha Agro Developers Pvt. Ltd.	Joint Health
HealthVitPunarnava	Capsule	Netmeds.	Reduces the Swellings & Inflammation Maintains Functions of the Urinary Tract
Punarnava Roots Powder	Powder	<u>Dr. JPG Organic Herbals</u>	It plays a key role in preventing urinary distension, kidney stones and painful urination.
DIVYA PUNARNAVADYARISTA	Syrup	Patanjali	Kidney failure, liver disorders, jaundice, anemia, heart diseases.
PunarnavaGuggulu	Tablet	Baidyanath	<ul style="list-style-type: none"> Used to relieve backache
Punarnavasava	Syup	Kerala Ayurveda Ltd.	<ul style="list-style-type: none"> Natural diuretic Good for kidney health
DIVYA PUNARNAVADI MANDOOR	Tablet	Patanjal	Useful in Oedema, Anemia
PunarnavadiManduraGutika	Tablets	SKM	worm infestation ,Skin diseases
Punarnavapanchang	Juice	Axiome	Effective in prostrate, its help to reduce weight
Punaenava	Tablet	Merlion	Suooort healthy kidney and liver
PunarnavasakChurna	Powder		useful at intervals the treatment of abdominal diseases

Sukumara	Powder	AYUSH CARE	use for the procedure of panchakarma
SBL BoerhaaviaDiffusa	Dilution	<u>SBL Pvt Ltd</u>	is used to diseases such as asthma, high blood pressure
ShothaharLepa	Raw herbs	Green pharmacy	anti-inflammatory

III. CONCLUSION :

- As the name affirmed Punarnava (Punar + Nava).
- Punar means - once again, nava means becoming new, really because of its multiple benefits and pharmacological actions.
- Punarnava proved itself as magical natural remedy by Ayurveda.
- Further research needs to be undertaken to establish the authentic activities.
- Confirmation of these activities will be assured by pharmacological activity on experimental animals.

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