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THERAPEUTIC POTENTIAL OF DURVA (*CYNODON DACTYLON* L.PERS.): REVIEW STUDY

Awanish Pandey *¹ and Hari Shanker Mishra ²

Department of Dravyaguna ¹, SAS Ayurvedic Medical College, Varanasi - 221105, Uttar Pradesh, India.
Department of Dravyaguna ², LHSPG Ayurveda College and Hospital, Pilibhit - 262001, Uttar Pradesh, India.

ABSTRACT: According to Acharya Charaka and Sushrut, there is no substance in the universe that cannot be used as a drug on the condition of rational use with definite objectives. Grasses are interesting and important plant drugs with potential to be used in therapeutics. Classical texts of Ayurveda are filled with the description of the therapeutic potential of grasses and fact has been recognized by herbalists/botanists all over the world. The grasses are underestimated medicinal repository. Durva is one of the most effective medicinal grass. In the present paper, an effort has been made to work out the therapeutic potential of one of the most primitive plant drugs with a wide range of uses in human life.

Keywords: Ayurveda, *Cynodon dactylon*, The therapeutic potential

Correspondence to Author:
Awanish Pandey

Department of Dravyaguna, SAS Ayurvedic Medical College, Varanasi - 221105, Uttar Pradesh, India.

E-mail: avi24hr4u@gmail.com

INTRODUCTION: The durva grass [*Cynodon dactylon* (L.) Pers] is an auspicious grass used in the worship of the Lord Ganesha, the God who removes the obstacles from the path of his devotees.

Durva is one of the ancient medicinal plants, frequently used in therapeutics since the Vedic period. Durva is described in “Dasham Mandal of Rigveda”¹. Durva has rich ethnobotanical history. Classical texts and Nighantus have established therapeutic potential of this herb. Term Durva dvaya has been used in classical texts and both have been used therapeutically extensively.

Literary Review of Durva Grass in Ayurveda

Classics: Acharya Charaka has been described Durva in Prajasthapana (Procreant) and Varnya (Complexion promoter) Mahakashaya². (CS.Su.4.8)

Varieties of Durva:

- In classical texts, four varieties of durva have been described which are gand durva, shweta durva, neel durva and mala durva. shweta durva, neel durva and mala durva⁹ are botanically identical and identified as *Cynodon dactylon* Linn. Another variety of durva was found during field survey which may be equivalent to gand durva, described in Ayurveda classics. From Botanical Survey of India, Allahabad, the plant was identified as *Dactyloctenium aegyptium* (L.) Willd [Egyptian crow foot]¹⁰.
- Following four varieties have been described by Raj Nighantu in Shalmalyadi Varga:

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TABLE 1: CHARAKA SAMHITA (1000 B.C. TO 4th CENTURY A.D.)^{2,3}

S. no.	Therapeutic Indications	Forms/Formulations	References
1	Jwar (Fever) and Raktapitta (bleeding disorders) Chikitsa	Chandanadi Taila	CS.Ci.3.257.
2	Raktapitta Chikitsa	Kwath	CS.Ci.4.67
3	Nasa Raktasrava (Nasal bleeding)	Durva Swaras	CS.Ci.4.100
4	Raktarsh (Bleeding piles) Chikitsa	Durva Ghrita	CS.Ci.14.219
5	Visarp (Erysipelas) Chikitsa	Durva Yoga Lepa	CS.Ci.21.76
6	Vrana Ropan (wound healing)	Durva Ghrita	CS.Ci.21.96
7	Visarp Chikitsa	Shadwaladi Pradeha	CS.Ci.21.75
8	Jeevadan (vital blood loss) Chikitsa	Basti	CS.Si.6.82

CS.-Charaka Samhita, Su.-Sutra Sthana, Ci.-Chikitsa Sthana

TABLE 2: SUSHRUT SAMHITA (1000 B.C. TO 5th, CENTURY A.D.)^{4,5}

S. no.	Therapeutic Indications	Forms/Formulations	References
1	Paittik Shoph (Inflammation)	Durva Lepa	SS.Su.36.3
2	Pitta mitigating	Durva	SS.Su.39.8
3	Virechanyvyapad Chikitsa (complications after Virechana karma)	Durva as Asthapan Basti	SS.Ci.34.13
4	Indicated in ninth month of pregnancy	Durva Siddha Ksheer	SS.Sa.10.69
5	Medhya for children (Nervine)	Durva yoga	SS.Sa.10.73
6	Mutra Dosh Chikitsa (Urinary disorders)	Bala Ghrita	SS.U.58.58-64
7	Shirahshool, Netra Shool (Pain in head and eye)	Durva Yoga Lepa	SS.U.15.15
8	Rakta Pitta Chikitsa	Leha of Durva	SS.U.45.21
9	Loota Vish Chikitsa (Spider bite treatment)	Durva Yoga	SS.Ka.8.106
10	Pitaa-Raktaj Shiroroga	Durva Lepa	SS.U.26.14

SS.-Sushrut Samhita, Su.-Sutra Sthana, Ci.-Chikitsa Sthana, Sa.-Sharir Sthana, U.-Uttar Tantra

TABLE 3: ASHTANG HRIDAYA (7th, CENTURY A.D.)⁶

S. no.	Therapeutic Indications	Forms/Formulations	References
1	Pitta mitigating Dravya	Durva swaras	AH.Su.15.6
2	Applied over face in all Ritu	Durva Kalka Lepa (external application)	AH.Su.22.20
3	Jwar, Daha Chikitsa (Fever and burning treatment)	Durvadi Parishek	AH.Ci.1.131
4	Kapha-Pitta Visarp Chikitsa	Durva Ghrita (Ext.)	AH.Ci.18.36
5	Vatarakta (Gout), Daha, Jwar Chikitsa	Madhuyashtyadi Taila	AH.Ci.22.42
6	Given in case of Vaman Virechan Vyapad to alleviate Mada, Murcha, Trishna.	Durvadi Yoga Anuvasan Basti	AH.Ka.3.37

AH.-Ashtang Hridaya, Su.-Sutra Sthana, Ci.-Chikitsa Sthana, Ka.-Kalpa Sthana

TABLE 4: SHARANGDHAR SAMHITA (13th, CENTURY A.D.)⁷

S. no.	Therapeutic Indications	Forms/Formulations	References
1	Shiroroga (Diseases of head) Chikitsa	Lepa (external application)	Sa.S.U.K.11.66
2	Shoth Chikitsa (Inflammation and swelling)	Nishadi Lepa	Sa.S.U.K.11.82
3	Nasagata Raktapitta Chikitsa (Nasal bleeding)	Durva Swaras Nasya	Sa.S.M.K.12.81
4	Kandu, Pama Chikitsa (Itching)	Lepa (external application)	Sa.S.U.K.11.54
5	Shiroroga Chikitsa (Headache)	Yoga Lepa	Sa.S.M.K.11.70

Sa.S.-Sharangdhar Samhita, U.K.-Uttar Khand, M.K.-Madhyam Khand, U.K.-Uttar Khand

TABLE 5: CHAKRADATTA (11th, CENTURY A.D.)⁸

S. no.	Therapeutic Indications	Forms/Formulations	References
1	Nasa Raktapitta (nasal bleeding)	Durva Swaras	C.D.Raktapitta. 35-36
2	Shukrameha (Spermatorea)	Durvadi Kwath	C.D.Prameha. 9
3	Vrana Ropan (wound healing)	Durvadi Taila	C.D.Vranshatha. 91
4	Netra Roga Chikitsa (eye diseases)	Durvadi Lepa	C.D.Netraroga. 149
5	Shankhak Chikitsa (type of headache)	Shatvaryadi Lepa	C.D.Shiroroga. 50-511
	Raktasrava Chikitsa (bleeding disorders)	Garbhsrava Hara Yoga	C.D.Yonivyapad. 24
	Pama, Vicharchika, Kushtha (skin diseases)	Durvadi Taila Abhyang	C.D.Kushtha. 150

C.D.-Chakradatta

TABLE 6: RAJ NIGHANTU: (17th CENTURY A.D.), SHALMALYADI VARGA (VERSES: 108-117) ⁹

	Classical Pharmacology	Therapeutic- Indications
Nila Durva	Rasa- Tikta, Madhur, Kashaya	Visarp, Trishna (Thirst), Daha, Twak Roga
Shweta Durva	Rasa- Kashay, Madhur, Tikta Virya-Sheet	Visarp, Daha, Vranaya (wound healing)
Ganda Durva	Rasa-Tikta, Kashaya, Madhur; Guna-Laghu; Virya-Sheet; Vipaka- Katu	Daha, Trishna, Kushatha (Leprosy/Skin disorders), Paittik Jwar
Mala Durva	Madhur, Tikta Rasa, Sheet Virya; Alleviates Pitta and Kapha	Chardi (Emesis), Trishna

Phytochemistry: The phytochemical analysis showed that the plant contained flavonoids, alkaloids, glycosides, terpenoids, triterpenoids, steroids, saponins, tannins, resins, phytosterols, reducing sugars, carbohydrates, proteins, volatile oils and fixed oils. It contains mineral constituents, oxides of magnesium, phosphorous, calcium, sodium and potassium; other compounds like carotene, vitamin C, fats, palmitic acid are also reported. It contains the hormone precursor sitosterol as well as carotene. Green grass contains (on dry matter basis) 10.47% crude protein, 28.17% fiber and 11.75% of total ash ¹¹.

Classical Pharmacological Properties:

Karma: Prajasthapak, Grabhposhak, Raktastambhak, Raktashodhan, Mutrala, Kushthaghna-Twachya-Varnya, Jivaniya, Vishaghna, Chardinigrahana, Stambhana, Trishnanigrahan, Grahahbutbadhahara, Dahaprashmana, Ruchikara.

Indications:

Abhyantar (Internal Uses): Yonivyapad, Garbhsrava- Garbhapata, Pradararoga, Mutravikar-Mutrakriccha, Raktapitta, Raktasrava, Nasasrava, Atisar, Pravhika, Arsha, Chardi, Trishna, Daha, Murcha, Mastishk daurbalya, Unmad, Apasmar, Twagdosh, Kusth.

Bahya (External Uses): Kshat vana, Arsha, Daha, Netrabhishyand, Paittik - shiroroga, Visarp, Sheetpitta, Charmdal, Dadru ¹².

Dosage: Whole plant- 10-20 ml juice ¹³. Root- 5-10 ml juice ¹⁴.

Folk Uses: Traditionally, the plant is used as a folk remedy for diarrhea, dysentery, wounds, hemorrhages, sores, cough, urinogenital disorders, headache, cramps, cystitis, hemorrhoids, leucoderma, hypertension, asthma, snakebite, stones, wounds and eye disorders. Decoctions of root were used in vesical calculus and secondary syphilis, stoppage of bleeding from piles, and irritation of urinary organs ¹⁵.

An ointment containing the residue of aqueous extract of leaves is reported to facilitate wound healing. In Nigeria, the tribal use the cold concoction of the plant in convulsions; the decoction is used for the treatment of epileptic seizures. The expressed juice of the plant act as astringent and is applied to bleeding cuts and wounds to stop bleeding. In the Konkan, oral administration of the juice of the plant with honey 2-3 times a day for few days effective treats dysentery and menorrhagia. Ethano-medicinal uses of Durva are supported classically except its use as Galactagogue. Though, it has not been used in the treatment of haematuria, there are several references regarding the use of Durva as a haemostatic drug. Use of the drug in wound healing is well supported classically with a difference in the preparations used, a polyherbal preparation being used classically.

Action of the drug as Galactagogue needs further evaluation. The decoction of the roots is used in Mysore for secondary syphilis. The Mundas use it as a diuretic, especially in dropsy ¹⁶.

Modern Therapeutic Potential Based on Researches:

Modern scientific studies have substantiated its anti-diabetic, diuretic, anti-inflammatory, antipyretic, anti-oxidant, wound healing, cardio-protective, anti-infertility, anti-microbial and anti-cancer activities.

Anti-diabetic: An investigation showed that the aqueous extract of *C. dactylon* has high antidiabetic potential along with significant hypoglycemic and hypolipidemic effects. The total cholesterol level (TCL), low-density lipoprotein (LDL) and triglyceride level (TGL) were also found to decrease by 35, 77 and 29% respectively in severely diabetic rats whereas high-density lipoprotein level (HDL) was found to be increased by 18% ¹⁷.

Anti-inflammatory and Antipyretic Activity: The analgesic and antipyretic activities of aqueous

extract of *C. dactylon* at different doses were studied using a hot plate, acetic acid-induced writhing and yeast induced hyperthermia in rats. *C. dactylon* showed significant analgesic and antipyretic activities in all models studied. Anti-inflammatory properties may be due to the high concentrations of flavonoids and glycosides found in *C. dactylon* extracts. Flavonoids and glycosides are able to block many of the enzymes that regulate the inflammatory processes in the body¹⁷.

Antioxidant: The antioxidant activity of the hydro-alcoholic extract of aerial parts of *C. dactylon* was studied *in-vitro* by different methods (DPPH radical scavenging activity, superoxide anion radical scavenging assay, nitric oxide scavenging assay, ferrous chelating ability, hydroxyl radical scavenging assay, hydrogen peroxide scavenging activity, and ABTS assay)¹⁷.

Anti-diarrheal: In investigation hexane, dichloromethane, ethyl acetate and methanol extracts of *C. dactylon* whole plant were tested in albino rats for anti-diarrheal activity on castor oil-induced diarrhea. The methanolic extract exhibited a considerable reduction in inhibition of castor oil-induced diarrhea and also showed a significant decrease in gastrointestinal motility. These results indicate that the plant possesses good anti-diarrheal property¹¹.

Anti-viral: *C. dactylon* exhibited potent antiviral activity against the White spot syndrome virus (WSSV) and it has also been reported to possess antiviral activity against the human Vaccinia virus. The plant extracts isolated from *C. dactylon* was incorporated with artificial pellet feed at a concentration of 1% or 2%. For experimental challenge shrimp were fed with WSSV-infected shrimp meat. WSSV-infection was confirmed by the PCR technique, bioassay and Western blot analysis at the end of experiment¹¹.

Wound Healing: The wound healing activity of the hydro-alcoholic extract of *C. dactylon* was evaluated by using the excision wound model. The parameters included the rate of wound contraction and the period of epithelization in an excision wound model. The herbal ointment was prepared using different bases and concentrations 7.5% and 10% compared with standard cipladine (povidone-iodine)¹⁷.

Cardio-Protective: The effects of hydro-alcoholic extract of *C. dactylon* rhizomes on cardiac contractility in normal hearts and on cardiac functions in right-heart failure in rats were studied. The treated rats showed very less signs of fatigue, peripheral cyanosis, and dyspnea¹⁷.

CONCLUSION: The plant is acrid, sweet cooling useful in biliousness, thirst, vomiting, burning sensation, bad taste in the mouth, hallucinations, epileptic fits, fatigue, leprosy, scabies, skin diseases, dysentery, fever, erysipelas and epistaxis. The expressed juice is astringent and is used as an application to fresh cuts and wounds. It is also diuretic and is used in cases of dropsy and anasarca. It is also useful in catarrhal ophthalmia. According to Yunani system of medicine, the plant is bitterish; vulnerary, expectorant, useful in vomiting, diarrhea, cobra-bite, burning sensation, diseases of the blood, stomatitis, epistaxis, bruises, biliousness, and hiccough.

The expressed juice is used in hysteria, epilepsy, insanity. Classically durva is reputed as Prajasthapak Grabhposhak, Raktastambhak, Raktashodhan, Mutrala, Kushthaghna-Twachya-Varnya, Jivaniya, Vishaghna, Chardinigrahana, Stambhana, Trishnanigrahan, Grahabhutbadhahara, Dahaprashmana, Ruchikara. In this regard, further studies need to carry out to explore durva for its potential in preventing and treating diseases.

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