



Study Of Biological Activity of Eragrostis Cynosuroides (B. A.) based on Ayurvedas Literature

KEYWORDS

Sachin Sakhalkar

Assist Prof. Dept of Botany, Dapoli Urban Bank Senior Science College, Dapoli

Naina Kambale

M.Sc. student, Dapoli Urban Bank Senior Science College, Dapoli

ABSTRACT *Eragrostis cynosuroides* Beauv. Agrost. is belonging to family Poaceae i.e. grass family. It is distributed all over the tropical and sub-tropical area. It abundantly habited in Dapoli at coastal zone. It has also found to cited in many literature of Hindu Mythology. This plant is show good conductivity in aqueous form. It has also potential antioxidant reveals by thiocyanate method. Daarbha grass has proved to be enhancing the dissolve oxygen in stored water.

INTRODUCTION

This work is based on one of the practices widely used by Indian Brahmins all over using a holy grass named Dharbha. It's botanical name is *Eragrostis cynosuroides* (Retz.) P.Beauv, in hindi it call as Kus or Kusha. In all the religious belief this Darbha grass used most commonly in all auspicious or inauspicious functions, a performing person needs to wear a ring made of this Dharbham, but many have lost the reason of why it is to be used. In this work we employed different methods to investigate the scientific reason for use of this grass in religious work. *Eragrostis* comes from two Greek words, *Ερος* (Eros), the god of Love, and *αγρωστις* (agrostis) a type of grass - hence the name of the Lovegrass genus.

While chanting and reciting some Vedic phrases and versus, one needs to wear a ring made of Dharbham on his right hand ring finger. This is most essential, while performing all the rituals, such as pooja, Homas and all sorts of Havans. The count of leaves depends upon the function that is held viz.: for some functions related to death only single leaf Dharbham is used; for auspicious and daily routine a ring made of two leaves is used; for inauspicious but not death related functions, (i.e. Amavasya, Pooja etc) a three leaf Dharbham ring is used. And for the Temple Prayer and Pooja, a Four-leaf Dharbham ring is used. Also, when a fire ritual (Homas) is performed, these Dharbham are spread all the four sides of the agnikunda.

Medicinal plants are considered new resources for producing agents that could act as alternatives to antibiotics in the treatment of antibiotic-resistant bacteria. The aim of this study was to evaluate the antibacterial activity darbha grass plant extracts. Medicinal and aromatic plants are used on a large scale in medicine against drug-resistant bacteria, which are considered one of the most important reasons for the lack of success of treatment in infectious diseases. Medicinal plants are the major sources of new medicines and may constitute an alternative to the usual drugs.

REVIEW OF LITERATURE

Traditional Use

The Kusa has religious significance with socio-cultural background and ceremonial utility in Indian traditions as a sacred plant. As single drug as well as an ingredient of *trunapanchamoola* and some other preparations, is used in the disease of urinary system *Trunapanchamoola* decoction is given in dysuria caused by the pitta humour. In calculus *Kusadya Grantham* and *kusavaleha* are prescribed in treatment of piles, kusa root is mixed with bala root (*Sida cordifolia* Linn) and given with rice soup and this recipe is considered useful to check bleeding from piles or haemorrhoides and menorrhagia. Kusa and some other drugs suitably selected are made a decoction which is externally applied to clean

wounds. The root of kusa pounded with rice soup, is taken in *pradara roga* and same preparation is taken for three days for checking the bleeding. Decoction of root with paste of 21 black peppers used in constitutional disorders. Roots useful in treatment of wounds and pimples (*Charaka Sanhita*). Useful in studying corpse (*Sushruta Sanhita*). Decoction of root is useful in indigestion (*Bhavaprakash*). Roots beneficial in menorrhagia (*Chakradatta*). Root paste consumption is good in bleeding piles (*Bangasena*). Extraction of leaves beneficial in pimples (*Agni Purana*).

Ayurveda

Root-paste : consumption is good in blood dysentery and in piles, using the same as ointment over a skin helps to remove bad odour of the body. Root extract : consumption along with the stem of *Tribulus terrestris* and bark of *Creatava religiosa* helps to dissolve gall-stone.

Sacred values

The 'Darbha' grass is needed in the funeral ceremonies of Hindus and the chief mourner wears a ring of the grass on his finger. It is also placed beneath the pindas. It is mentioned in *Chaturmas Mahatmya*. Many articles were cited in reference to experimental plant regard it's important in metaphysics.

शुची देशे प्रतिष्ठाप्य स्थिरमासनमात्मनः ।

नात्युच्छ्रितं नातिनीचं चैलजिनकुशोत्तरम् ॥

तत्रैकाग्रं मनः कृत्वा यतचित्तेन्द्रियकीयः ।

उपविश्यासने युज्याद्योगमात्मविशुद्धये ॥

ःहीहअंजहममजं वैचजमत 6एीसवां11ए 12द

विरिश्चेन सहोत्पन्न परमेष्ठीनिसर्गज ।

नुद सर्वाणि पापानि दर्भ स्वस्तिकरो भव ॥

ःछपजलेंजवजतंचंजीदद

Ayurvedic Properties

दर्भः सिन्धो हिमः स्वादु कषायः कफपित्तहा ।

विसर्पदाहकृच्छ्राश्रमतृष्णाबस्तिकारनुत ॥

कै.नि. 1241 (औषधीवर्ग)

दर्भयुग्मं पवित्रं स्यान्मूत्रकृच्छ्रघ्नशीतलम् ।

रक्तापित्ताप्रशमनं केवल पित्तनाशनम् ।।

घ. नि. 4/119 (करवीरादि वर्ग)

दर्भः सिग्धरसः स्वादू कषायः कफपित्तहा ।

विसर्पदाहकृच्छ्रास्त्रतृष्णाबस्ती विकारनुत् ।।

कुशमूलं हिमं रुच्यं मधुरं पित्तनाशनम् ।

रक्तज्वरं तृषाशवासकामलादोषनाशकृत् ।।

दर्भा ब्दी च गुणैस्तुल्यौ तथापि च सितोऽधिकः ।

य दिश्वेतकुशामाकः त्वपरं योजयेद् मिषक् ।।

नि. आ. (तृष्णादिवर्ग) रा. नि.

दर्भद्वयं त्रिदोषघ्नं मधुरं तुवरं हिमम् ।

मूत्रकृच्छ्राश्मरीतृष्णाबस्तिरुक्तप्रदरास्रजित् ।।

भा.प्र.नि. नि.आ. (तृष्णादिवर्ग)

Medicinal Properties

वृक्षादनीश्वदंष्ट्रादर्भत्कटवसुकवशिरकुशाकाशाः ।

मूत्रं विरेचयेयुर्गुन्दापाषाणभेदश्च ।।

अ. सं. सु. 15/32 (मूत्रविरेचन गण)

शलि कुशाकाशाषट्कवीरणदर्भसुवालिकेक्षुणाम् ।।

तद्वद्गुन्दोत्कटयोर्मूलमलं स्तन्यजननाय ।।

अ. सं. सु. 15/19 (स्तन्यजननगण)

Disease Treatment

फलगुर्वृश्चीरदर्भश्मसारचूर्णं च वारिणा ।

सुरेसुरसदर्भानुपीतं कृच्छ्ररूजापहम् ।। सु. सं. उ. 59/24

तदेव दर्भमृदितं रक्तं बस्ति प्रदापयेत् ।

श्यामाकाशमर्यवदरीद्वोशीरे शृतं पयः ।। च. सि. 7/83

समप्रमाणैर्हरितैर्दर्भैः प्रागभिमन्त्रितैः ।

अच्छिन्नाग्रैः समूलैश्च कुर्यात्तस्यापमार्जनम् ।। अ.सं.उ. /104

Pharmacognosy

The study of antioxidant activity of the plant was assessed in *Cyperus rotundus*, which was extracted by using different extraction solvents and evaluated for their antioxidant activity using different in vitro antioxidant assays by Asad Bashir in 2012.

Behboud Jafari et. al. showed that methanol extract of lemon grass plant prevented bacterial growth of *Staphylococcus aureus*, *Bacillus cereus* and *Escherichia coli* which with increasing concentration, their antibacterial effect also increased.

Nooman A. Khalaf et. al (2008). were screened methanolic crude extracts of some commonly used medicinal plants for their free radical scavenging properties using ascorbic acid as standard antioxidant. Free radical scavenging activity was evaluated using 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical. The overall antioxidant activity of green tea (*Camellia sinensis* Linn.) was the strongest, followed in descending order by black tea (*Camellia sinensis* Linn.), *Eugenia caryophyllus* (Spreng.) Bullock and Harrison, *Piper cubeba* Linn., *Zingiber officinale*, Roscoe and *Piper nigrum*, Linn. *Trigonella foenum graecum*, Linn. and *Elettaria cardamomum* (Linn.) Maton.

MATERIAL METHODS

DISSOLVE OXYGEN

Fill the oxygen bottles to over flowing with water sample. Add 1ml of Wrinkler's reagent A and 1ml of Wrinkler's reagent B. Place the inverted glass stopper and keep for 15 min. After 15 min. remove the stopper and add 1me of conc. HCl and replace the stopper quickly. Mix the content of the bottle vigorously and dissolved the precipitate, if the precipitate in the bottle is not dissolve completely add more of conc. HCl a few drop till the precipitate dissolves. Take out 50ml of this treated in a conical flask and add 2-3 drops of starch indicator and titrate it against 0.014N $\text{Na}_2\text{S}_2\text{O}_3$ solution till the mixture become colorless. Note burette reading. Then in given water sample add chopped pieces of *Eragrostis cynosuroides* Beauv. *Agrost.* Place this water for 10 days. After 10 days take a reading of dissolve oxygen of the water by repeating the above procedure. Dissolve oxygen can be calculated by the following formula.

CONDUCTIVITY

1gm plant material was taken and crushed in mortar and pestle in water and prepare plant extract. 1ml conc. plant extract was pipette out and was transfer to the 2nd test tube containing 9ml distilled water. This procedure (serial dilution) was repeated and 5 test tubes of serial dilution were prepared. Then the reading was taken of above dilutions using conductometer.

ANTIOXIDATION

Water Extract :- 5 gm. dried sample was chopped into small parts in a blender then extracted with 100 ml of boiled water by stirring for 30 min. followed by filtration. Afterwards filtrate was dried by keeping on water bath.

Antioxidant Activity by Thiocyanate Method

Each sample containing 500µg to 1000 µg extract in 0.5 ml of distilled water was mixed with 2.5 ml of linoleic acid emulsion (0.02 M, in 0.04 M, pH 7 phosphate buffer). To this add 2 ml of phosphate buffer. Test tubes were incubated in darkness at 37° C. The amount of peroxide was determined by reading absorbance at 500nm after coloring with FeCl_3 and potassium thiocyanate. Ascorbic acid was used as standard antioxidant.

OBSERVATIONS AND RESULTS

A) DISSOLVE OXYGEN

Observation Table – Part I (Without Darbha)

Readings	Burette Reading in cm^3			C.B.R in cm^3
	I	II	III	
	1.1	1.2	1.2	1.2

Observations – Part II (After with Darbha)

Readings	Burette Reading in cm^3			C.B.R in cm^3
	I	II	III	
	8.5	8.4	8.5	8.5

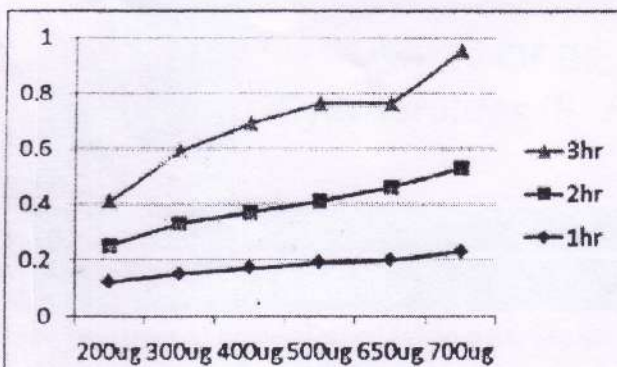
Result –

- 1) Amount of Oxygen dissolved is 2.68 gms O_2 / lit.
- 2) Amount of Oxygen dissolved after 10 days is 19.04 gms O_2 / lit.

D) ANTIOXIDATION

In this experiment antioxidant activity was determined by thiocyanate method in that the amount of peroxides formed during incubation was determined spectrometrically by measuring absorbance at 500 nm.

Graph of Incubation Time Vs. Time



Conc. / incubation time	1hr	2hr	3hr
200ug	0.12	0.13	0.16
300ug	0.15	0.18	0.26
400ug	0.17	0.2	0.32
500ug	0.19	0.22	0.35
650ug	0.2	0.26	0.3
700ug	0.23	0.3	0.42

CONCLUSION AND DISCUSSION

The detailed study of *Eragrostis cynosuroides* Beauv. Agrost. was carried by extraction of fresh plant extract and also dry plant powder in aqueous form. We use only aqueous extract for experiment as in all religious function and purana referred is use with water only. The biological and analytical property such as dissolved oxygen, antioxidant, conductivity, absorbance, has been worked out properly.

Dissolve oxygen is purity indicator of water. Water incubated with *Eragrostis cynosuroides* Beauv. Agrost. reveals increase in dissolve oxygen; therefore the weight and period of incubation has be find out by proper way and detailed study.

Conductivity of plant extract is comparatively good which indicates free ions in solution. This conductivity of extract is indicator of good sign for human health, as it used in panchagavya and tirtha; as body purifier. Conductivity of solution is inversely proportional to concentration gradient.

The detailed study on Antioxidant activity of leaves of *Cydonia vulgaris* was done by Yildirim et al (2001). They showed that antioxidant activity of the water, as well as ethanol extracts of the leaves of *C.vulgari* increased with increasing amount of extract. But in case of *Eragrostis cynosuroides*, Beauv. Agrost. such condition was not observed. Antioxidant activity of extract was irrespective of its concentration. Unlike *Cydonia vulgaris*, Aqueous concentration of plant has shown great results.

The antioxidant property of extract gives good result and it depends on concentration of solution and incubation period. The diluted extract regreats its activity where as incubation period is directly proportional to the antioxidant activity.

REFERENCE

- Asad Bashir et al. (2012). Investigation on the Antioxidant Activity of Dhesla Grass (*Cyperus rotundus*) African Jnl of Basic and Acid Scis 4 (1): 01-06. | Ayman AF Mann, Mazen Saif. 2014. In Vitro Antibacterial Activity of Several Plant Extracts and Oils against Some Gram-Negative Bacteria. Iranian Journal of Medical Science Vol 39, No. | Behboud Jafari, et al. 2012. Antibacterial Activities of Lemon Grass Methanol Extract and Essence on Pathogenic Bacteria. American-Eurasian J. Agric. and Environ. Sci., 12 (8): 1042-1046. | Bhagwat Geeta, Chapter 6, Shlok 11 and 12. | Elmastas M, Gulcin I, Ozturk L, Gokce I (2005). Investigation of antioxidant properties of spearmint (*Mentha spicata* L.). *Asian J Chem*, 17: 137-148. | Gulcin I, Sat IG, Beydemir S, Kufrevioglu OI (2003). Evaluation of the in vitro antioxidant properties of extracts of broccolf (*Brassica oleracea* L.) Ital J. Food Sci, 16: 17-30. | Gulcin I, Sat IG, Beydemir S, Kufrevioglu OI (2004b). Evaluation of the in vitro antioxidant properties of extracts of broccolf (*Brassica oleracea* L.) Ital J. Food Sci, 16: 17-30. | Gulcin I, Berasivilli D, Gepdiremen A (2005a). Antiradical and antioxidant activity of total anthocyanins from *Perilla pankensis* Deche. *J. Ethnopharmacol.*, 101: 287-293. | Gulcin I, Elias R, Gepdiremen A, Boyer L, Koksali E. 19 February 2007. a comparative study on the antioxidant activity of fringe tree (*Chionanthus virginicus* L.) extracts. *African Journal of Biotechnology*, Vol. 6, No. 4: 410-418. | Joa A, Vinson, Yousef A, Dabbagh, Mamdouh M, Semy, and Jinhee Jang (1995) Plant Flavonoids, Especially Tea Flavonols, are powerful antioxidants using an in vitro oxidation model for heart disease. *J. Agric. Food Chem.*, 43: 2800-2802. | Osman A, Khalil, et al. (2008) Antioxidant Activity of Some Common Plants. *Turk J Biol* 32 (1): 51-55. | Pietta PG. (2000). Flavonoids as antioxidants. *J. Nat. Prod.* 63: 1035-1042. | Yildirim A, Oktay M, Bilaloglu V (2001) The antioxidant activity of Leaves of *Cydonia vulgaris* L. *Turk J Med Sci*, 31: 23-27.