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STRATEGIC REVIEW ON DESMOSTACHYA BIPINNATA

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ABSTRACT
The present review will highlight on the Geographical Distribution, Microscopy, Powder Analysis, Traditional Indian Practice, Phytoconstituents, Pharmacological Activity, Benefits, Toxicity, Doses& Traditional Uses of Desmostachya bipinnata Gramineae (Poaceae)].

INTRODUCTION

Desmo = Woolly; Stachyns = Spiked; bi = two; pinnata = having feathers. Nature's gift to humans is medicinal plants, which can help them cure diseases and live a healthy life.Plants have been used as drugs by humans for thousands of years. Plants have a wide range of pharmacological activities including antimicrobial, antioxidant, anticancer, hypolipidemic, cardiovascular, central nervous, respiratory, immunological, anti-inflammatory, analgesic antipyretic, and many other pharmacological effects. Desmostachya bipinnata phytochemical investigation yielded the isolation of coumarins (scopoletine and umbelliferone), carbohydrates, sugars, proteins, alkaloids, tannins, phenolics, flavonoids, triterpenoids, amino acids, and glycosides. The current review will focus on the chemical ingredients, pharmacological effects, and diverse portions of the plant of Desmostachya Bipinnata.[1]

Synonyms:
Briza bipinnata L., Eragrostis cynosuroides (Retz.) P. Beauv., Poa cynosuroides Retz., Stapfiola bipinnata (L.) Kuntze and Uniola bipinnata (L.).[2]

Common names:
Arabic: Halfa, Jilda;
English: sacrificial grass, Tail Grass, Halfa grass, big cordgrass, salt reed-grass;
Sanskkrit: Darbha.

Taxonomic classification:
Kingdom: Plantae;
Phylum: Spermatophyta;
Subphylum: Angiospermae;
Class: Monocotyledonae;
Order: Cyperales;
Family: Poaceae;
Genus: Desmostachya;
Species: Desmostachya bipinnata[3]

Geographical distribution:
The plant is distributed from North Africa to South Asia. In Africa, it was recorded in (Chad, Eritrea, Ethiopia, Somalia, Sudan, Algeria, Egypt, Libya, Tunisia and Mauritania) and, in Asia it was distributed in (Saudi Arabia, Yemen, China, Iran, Iraq, Syria, Palestine, India, Nepal, Pakistan, Afghanistan, Burma, Myanmar, Thailand and Vietnam).

Fig. 1: Desmostachya bipinnata.

Medicinal properties of desmostachya bipinnata:
Rasa (Taste)-Madhura (Sweet), Kashaya (Astringent)
Guna (Qualities) – Laghu (Light), Snigdha (Slimy)
Vipaka – Madhura (Undergoes sweet, taste after digestion)
Veerya (Potency) – Sheeta (Cold)
Karma (Actions) – Tridoshagna (Pacifies all the three vitiated dosha).[4]

Botanical description:
The grass is tall, with a smooth, tufted, green stem that branches erect from a sturdy creeping rootstock.It is a 2.5cm shrub that develops to a height of 1-3 feet. The roots are thick and deep. The leaves sprout from the plant's base. They are 2 inches wide, grow, and have a pointy tip. The leaves have a hairy texture. The seeds are flat and 1cm long.

D. bipinnata is a rhizomatous perennial grass with a rough surface. Unrolled, leaf blades can be up to 65 cm long and 3.8-10.5 mm thick. Lower leaf sheaths are leathery and heavily flabellate near the base of the cluster. The inflorescence is panicles, rigid, narrowly, erect, pyramidal, or columnar, and can reach 60 cm long 14 cm long with grouped or scattered spikes. 3-10 mm long, narrowly ovate to linear-oblong spikelets with 3-17 flowers Flower stalks are 15cm-45cm long and straight, with spikelets that are unilateral, bi seriate, and dense..

Lower glume thickness ranges from 0.7 to 1.5 mm, whereas upper glume thickness ranges from 1.1 to 2.0 mm.Lemmas have 1.8-2.7 mm long straw-colored or violet-tinged flowers that bloom between July and November.Seeds are 0.75cm long, with grains that are ovoid, laterally compressed. The flowering and fruiting season lasts all year.[5]
Dosage used: Powder – 2 to 4gm and for Decoction – 50 – 100ml

Microscopy, powder Analysis and Standardization parameters:
Microscopical characterisation was performed on fresh root, stem, and leaf hand sections. To eliminate chlorophyll, sections were treated with chloral hydrate. Different sections were stained with saffranin, phloroglucinol HCl, iodine, ruthenium, sudan red, sulphuric acid, and other chemicals.

For one month, various plant parts, including roots, stems, and leaves, were dried in the shade. Dried plant pieces were crushed and ground using an electric mixer-grinder before being screened through a BSS standard sieve no. 22 with an average aperture size of 710 m. Powder analyses, fluorescence investigations, and extract production all used shade-dried, coarsely powdered medication.

Microscopy
Leaf:
Figure 2 depicts the microscopic properties of leaves. The mid-rib collateral vascular bundle is made up of two metaxylem and a phloem in between (Figure 2c). This vascular bundle is also seen. 2c shows a continuous layer of sclerenchymatous cells covering the vascular bundle. The lower portion of the leaf has thick walled, small cells, whereas the upper portion has thin walled, larger cells (Figure 2e).

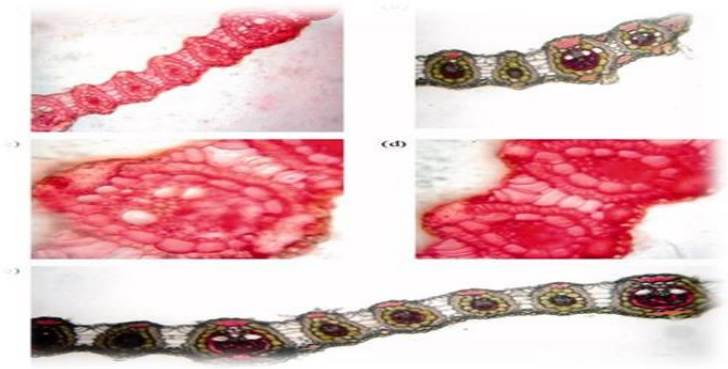


Figure 2: Microscopical characters of desmostachya bipinnata leaf..

(a) T.S. of leaf lamina,
(b) T.S. of leaf margin, bundle sheath cells,
(c) Vascularbundles,phloem,xylem, sclerenchymatous cells,
(d) Cuticle and bulliform cells and
(e) T.S. of mid rib with lamina.

Leaf lamina Section and Marginal section
The lower epidermis of the leaf lamina is smooth and composed of circular cells with thick cuticle, whereas the top epidermis is not as smooth and composed of circular cells with papillate walls (Figure 2a). Both epidermal layers are smooth in the leaf's marginal slice, and cells are square shaped with thickening (Figure 2a). Vascular bundles are somewhat smaller than mid-rib vascular bundles (Figure 2e). Furrows in the leaf generate bulliform cells, which are formed by epidermal and mesophyll cells (Figure 2d). In Cynodon dactylon leaves, xylem and pholem are less differentiated and covered by 9 to 10 chloroplast bearing bundle sheath cells (Figure 2b), whereas the vascular bundle is covered by 5 to 6 chloroplast bearing bundle sheath cells.

Stem:

Cuticle protects a continuous layer of epidermis.Ground tissue, found on the inner side, is made up of parenchymatous cells. The epidermis and parenchymatous cells (2-3 layers) are lignified first, followed by parenchymatous cells, which exhibit the presence of starch grains and oil glands (Figure 2a). Vascular bundles are conjoint, collateral, and closed (Figure 2e).Different sized vascular bundles are dispersed in the ground tissue (Figure 2c), coated by a sclerenchymatous sheath (Figure 2f), and reveal lignin deposition (Figure 2b). The same form of vascular bundle and lignin depositon is seen in the stem of Saccharum spontaneum Linn (Poaceae). Roots have been discovered sprouting from stem nodes (Figure 2d). Saccharum spontaneum and D. bipinnata are members of the Poaceae family.

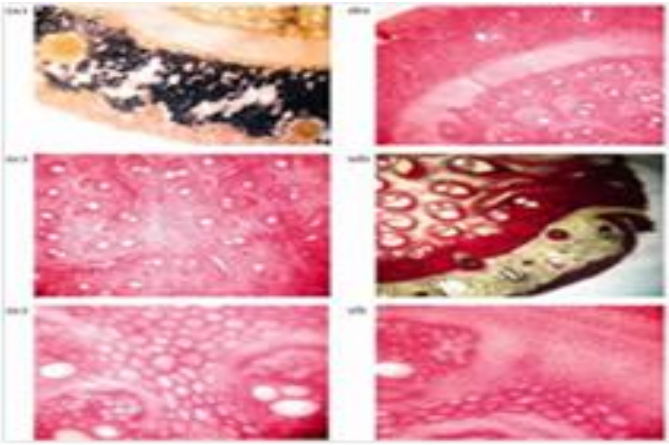


Figure 3: Microscopical characters of desmostachya bipinnata stem.

(a) Starch with oil glands,
(b) Cortical region, sclerenchymatous sheath followed by vascular bundles,
(c) Scattered vascular bundles,
(d) Emerging root from node,
(e) Meta xylem and pholeum and
(f) Sclerenchymatous sheath.

Root:

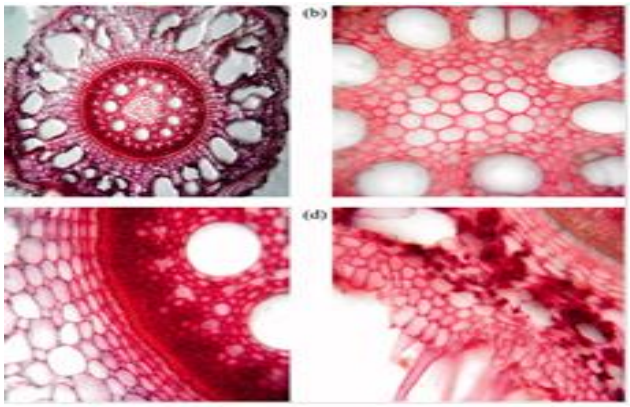


Figure 4: Microscopical characters of desmostachya bipinnata root.

(a) T.S. of root,
(a) b) T.S. showing steler region having sclerenchymatous cells,
(b) Endodermis, metaxylem and phloem and
(c) Epidermis, trichomes and aerenchymatous cells.

Powder analysis

Aerial plant parts powder showed the presence of parenchymatous cells (58.8 µm length and 14.7 µm width) (Figure 4c and d), vessels (223.65 µm length and 50.4 µm width) both simple and lignified (Figure 4a and d), trichomes (186.69 µm length and 14.7 µm width), starch grains (27.93 µm length and 22.86 µm width), phloem (Figure 4b), and fibers (306.02 µm length and 14.7 µm width) (Figure 4c and d). Underground plant part powder analysis revealed the presence of trichomes (235.08 µm length and 17.35 µm width) (Figure 5a), vessels (241.68 µm length and 35.35 µm width) (Figure 5b), fibers (339.96 µm length and 17.27 µm width) (Figure 5c), starch grains (37.57 µm length and 32.46 µm width) (Figure 5d), sclerenchymatous cells (32.19 µm length and 15.15 µm width) (Figure 5b), and endodermal cells (Figure 5b).

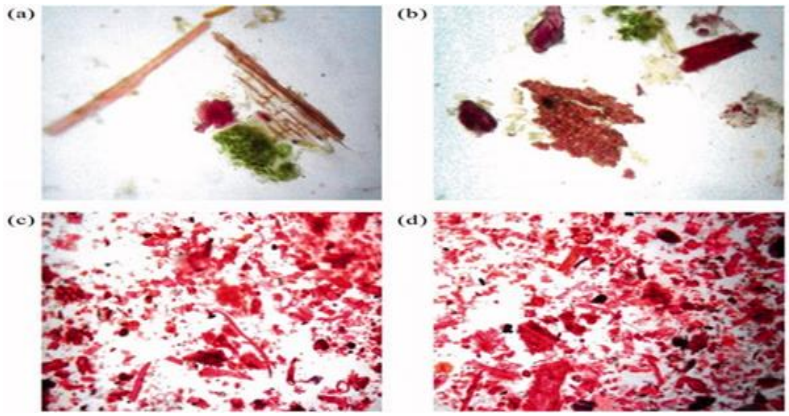


Figure 5: Powder characteristics of aerial parts of Desmostachya bipinnata. (a) Lignified vessel, (b) phloem, (c) fiber, parenchymatous cells and (d) fibers, epidermal cells, parenchymatous cells and vessels.

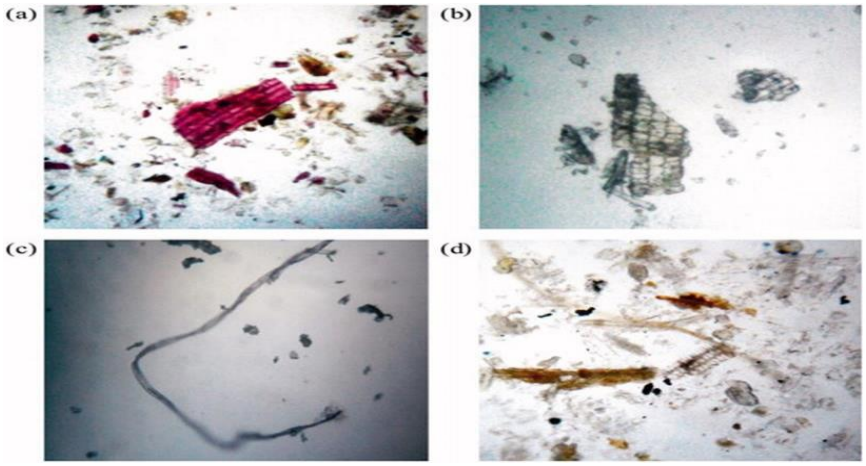
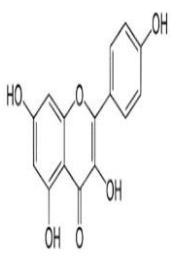


Figure 6: Powder characteristics of underground parts of Desmostachya bipinnata. (a) Endodermal cells, trichomes, (b) sclerenchymatous cells, (c) fiber and (d) starch grains, vessels.

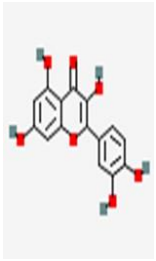
Chemical constituents:

The plant's phytochemical examination resulted in the identification of coumarins (scopoletine and umbelliferone), carbohydrates, sugars, proteins, amino acids, alkaloids, tannins, phenolics, flavonoids, triterpenoids, and glycosides.[6]

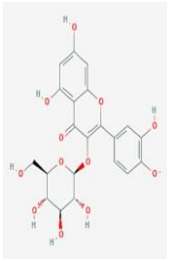
Desmostachya bipinnata ethanol extract was used to isolate five flavonoid glycosides. They have been recognized as follows[7]



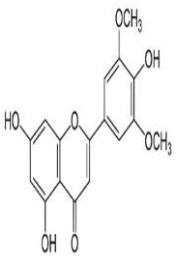
Kaempferol



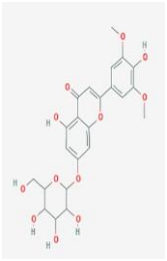
Quercetin



Quercetin-3-glucose

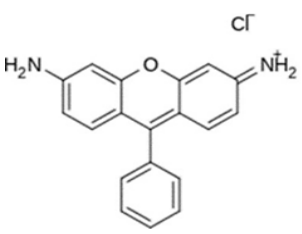


Trycin

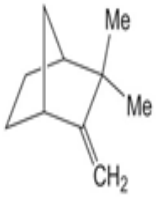


Trycin-7-glucoside

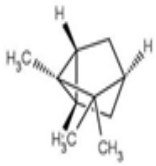
A Xanthenes was isolated from the methanolic extract of Desmostachya bipinnata



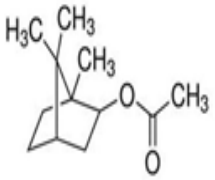
The essential oils of the aerial parts of Desmostachya bipinnata was analyzed as it consist of the following :



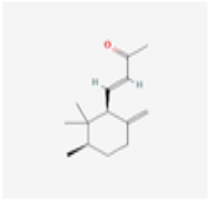
Camphene (16.79%)



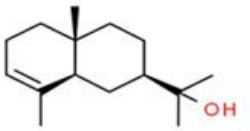
Tricyclene (4.30%)



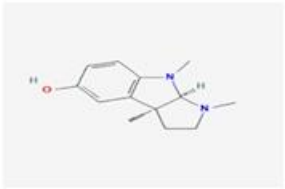
Isobornyl acetate (9.92%)



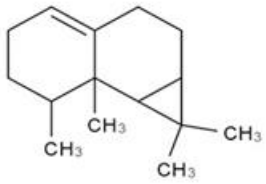
trans-2, 6-gamma-irone (2.21%)



Eduesmol (11.16%)



Eseroline (25.15%)



Calarene (3.48%)

Scopoletin, Umbelliferone, Stigmasterol, -Sitosterol1, Daucosterol, Apigenin, luteolin, Diphenyliodinium bromide, Endoborneol, Tricyclene, 2-cyclohexene-1-one, sobornyl acetate, Caryophyllene oxide, Caryophyllene diepoxide are some other important isolated compounds from this plant.

Pharmacological effects

Antimicrobial:

When the antimicrobial effect of Desmostachya bipinnata was investigated, it was discovered that -Sitosterol-D-glucopyranoside was the bioactive compound with the best antimicrobial activity (MIC 6-50 g/ml), and it works synergistically with most antibiotics, particularly ciprofloxacin. Time kill curves revealed that -Sitosterol-D-glucopyranoside eliminated the majority of bacteria within 5-10 hours.[8] The ethanolic extract of Desmostachya bipinnata rootstock was tested for antibacterial activity against Aeromonas hydrophila.

Bacillus cereus, Bacillus subtilis, Enterobacter aerogens, Escherichia coli, Klebsiela pneumoniae, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella typhimurium, Staphylococcus aureus, Streptococcus pyrogens, Vibrio fischeri, and Candida albicans are among the bacteria that have been isolated. K. pneumonia (16-25 mm), E. coli (12-22 mm), B. cereus (9-18mm), S. typhimurium (13-17mm), and P. vulgaris (10-13mm) were all inhibited by the ethanolic extract (15.652, 31.25, 62.5, 125.250, and 500 mg/ml).[9]

Desmostachya bipinnata ethanolic extract had antibacterial activity against Micrococcus luteus, Bacillus subtilis, Proteus merabiles, Pseudomonas aeruginosa, Salmonella typhi, Sarcina ventri cull, Staphylococcus aureus, Enterococcus faecalis, Escherichia coli, and Serratia marcesens. It was also antifungal against Candida tropicalis, Candida albicans, Aspergillus fumigates, Aspergillus flavus, and Pencillium chrysogenum.[10] The crude extract of Desmostachya bipinnata (64 g) demonstrated antibacterial activity against Escherichia coli (17mm), Klebsiella sp (15mm), and Staphylococcus aureus (16mm).[11]

Antiinflammatory, Analgesic and Antipyretic effects:

The antipyretic efficacy of Petroleum ether, benzene chloroform, ethanol, and aqueous extracts of Desmostachya bipinnata whole parts on yeast-induced pyrexia in albino rats was examined. A dose of 300 mg/kg body weight of petroleum ether, chloroform, ethanol, and aqueous extract of the whole parts of Desmostachya bipinnata induced a significant reduction in the elevated body temperature of rats, comparable to the effect of paracetamol and diclofenac sodium.

The anti-inflammatory activity was determined using a digital plethysmometer. An injection of 0.1 ml of 1% carrageenan suspension into the sub-plantar surface of the right hind limb caused inflammation in the hind paw of albino rats. Different Desmostachya bipinnata extracts (300 mg/kg, orally) reduced rat paw edema significantly (P 0.05). The ethanol extract inhibited the most (53.84%), while the usual medicine (Diclofenac sodium 100 mg/kg ip) inhibited the least (32.30%). The tail immersion method was employed to study the analgesic activity of petroleum ether, benzene, chloroform, ethanol, and aqueous extract of Desmostachya bipinnata whole parts. Almost all of the extracts demonstrated a substantial analgesic effect (P 0.05).[12]

The anti-inflammatory (carrageenan-induced paw oedema) and analgesic potential (hot plate method) of hydro-alcoholic extracts of Desmostachya bipinnata roots were investigated on an experimental model and compared to standard drugs (indomethacin for anti-inflammatory activity and analgin for analgesic activity). At the end of 3 hours in the carrageenan-induced rat paw edema test for acute inflammation, extracts of Desmostachya bipinnata at dosages of 200, 300, and 400

mg/kg body weight inhibited edema by 46%, 33.3%, and 62.5%, respectively. However, the extract's analgesic efficacy (300 mg/kg) was comparable to that of analgin at 150 mg/kg.[13]

Gastrointestinal effect:

Desmostachya bipinnata was examined for its antiulcerogenic effects in rats with ethanol-induced stomach injury. Three treatment groups received Desmostachya bipinnata ethanol extract at doses of 150, 250, and 300 mg/kg, while another two treatment groups received trycin and trycin-7-glucoside extracted from Desmostachya bipinnata ethanol extract in doses of 100 mg/kg.

The entire extract (200 and 300 mg/kg) and two isolated components (trycin and trycin-7-glucoside.100 mg/kg each) demonstrated highly excellent antiulcerogenic efficacy with curative ratios of 68.31, 70.54, 77.39, and 78.93%, respectively.

When the potential in vitro antihelicobacter activity of selected Egyptian plants was investigated, the methanolic extract of Desmostachya bipinnata (DEM) showed to be the most active, with a MIC of 40 g/ml. The ethyl acetate fraction of the DEM extract shown remarkable antihelicobacter activity after fractionation. A flavonoid compound having a MIC value of 62 g/ml was obtained after further fractionation and purification using TLC and column chromatography. The isolated chemical was identified spectroscopically as 4'-methoxy quercetin-7-O-glucoside.[14] The antidiarrheal efficacy of alcoholic and aqueous extracts of the roots of Desmostachya bipinnata against castor oil induced diarrhoea and the charcoal meal test was examined in rats at doses of 200 and 400 mg/kg body weight. The alcoholic extract, and to a lesser amount the aqueous extract, considerably reduced the weight of the faces and the propulsion of charcoal meal through the gastrointestinal tract. In rats, the hydroalcoholic extract of Desmostachya bipinnata whole plant exhibited no laxative activity. The results of laxative action demonstrated a small rise in feces production at the dose of 500 mg/kg, which was negligible when compared to the conventional medication sennosides (10mg/kg).

Anticancer effect:

Using the brine shrimp lethality test, four different concentrations of hydroalcoholic extract of Desmostachya bipinnata (10, 100, 500, and 1000 ppm) were tested for cytotoxicity in vivo. At 500 and 1000 ppm, the plant caused 17.4 and 42% death, respectively, with an LD50 value of 1215.929 ppm.[15] A new xanthenes (2,6-dihydroxy-7-methoxy-3H-xanthen-3-one) isolated from Desmostachya bipinnata methanolic extract inhibited signal transducer and activator of transcription 3-dependent luciferase activity in HCT-116 colon cancer cell line with IC50 value of 5M and low-density lipoprotein-oxidation with IC50 value of 27.2M.[16] Different concentrations of 70% methanolic extract of the roots of Desmostachya bipinnata were tested in vitro on human cervical cancer cell lines (HeLa), human laryngeal epithelial carcinoma cells (HEp-2) and NIH3T3 using 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide [MTT]. Desmostachya bipinnata methanolic extract had considerable in vitro anticancer activity at 400 g/ml and inhibited all cell lines in a concentration-dependent manner ranging from 25 to 400 g/ml.[17]

Diuretic and anti-urolithiasis:

In rats, the diuretic activity of a hydroalcoholic extract of Desmostachya bipinnata whole plant was investigated. As a positive control for diuretic action, frusemide (20 mg/kg) was used. When the effect of the hydroalcoholic extract was compared to that of the conventional frusemide (P 0.01), it demonstrated considerable diuretic activity, increasing urine output at 500 mg/kg (P 0.01). Furthermore, this extract has been shown to increase urinary electrolyte concentrations (Na+, K+, and Cl-).[18] Desmostachya bipinnata, alone and in combination with Brassica oleracea, inhibited experimentally-induced urolithiasis in rats by combining ethylene glycol (0.75% v/v) with ammonium chloride (1% w/v) in drinking water for ten days. Both plants' aqueous extracts were given to urolithiatic rats at a dose of 400 mg/kg for 10 days, separately and together. Daily oral extract treatments reduced the amount of calcium oxalate accumulated in the kidneys insignificantly, but they reversed all biochemical abnormalities compared to the control.[19]

Antioxidant effect:

The antioxidant properties of different concentrations of 70% methanolic extract of Desmostachya bipinnata roots were assessed using various models, including DPPH, nitric oxide, hydrogen peroxide, and hydroxyl radical scavenging activities. In all experimental methodologies, the extract demonstrated effective antioxidant activity. Desmostachya bipinnata was also a powerful hydrogen peroxide scavenger, with an IC 50 value of 127.07 6.44 g/ml vs 122.60 2.14 g/ml for conventional ascorbic acid.[20] In both in vitro and in vivo experiments, the antioxidant and DNA damage protective properties of Desmostachya bipinnata hydroalcoholic extract was studied. The extract demonstrated strong antioxidant activity in a dose-dependent manner in an H2O2 scavenging experiment, with an IC50 value of 264.18 3.47 g/ml, and prevented oxidative damage to DNA in the presence of a DNA damaging agent (Fenton's reagent) at a concentration of 50 g/ml. In addition, the presence of extract protected yeast cells against a DNA damaging chemical (Hydroxyurea) in a dose-dependent manner in a spot experiment. Furthermore, the presence of extract demonstrated considerable antioxidant activity in vivo by protecting yeast cells from oxidative stress (H2O2).[21]

Hepatoprotective effect:
The hepatoprotective effect of the polyphenolic fraction of Desmostachya bipinnata root on liver damage in female Sprague-Dawley rats was investigated. When ethanol-exposed BRL3A cells were treated with PFDB, the percentage viability increased in a dose-dependent manner. Both treatment groups exhibited a significant (P 0.05) protective effect by lowering serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase, alkaline phosphatase, triglycerides, cholesterol, urea, uric acid, bilirubin, and creatinin levels and improving protein levels in serum in a dose-dependent manner, which was comparable to the silymarin group.

Furthermore, PFDB inhibited antioxidant enzymes in tamoxifen-intoxicated rats in a concentration-dependent manner and significantly (P 0.05) decreased lipid peroxidation in liver tissue. Histopathological examinations confirmed the biochemical findings, which revealed a reduction in hepatocellular necrosis.[22] The hepatoprotective effect of dried powdered roots of Desmostachya bipinnata (100 and 200mg/kg, orally for 7 days) against paracetamol-induced liver damage in Wistar rats was investigated.

When compared to paracetamol-damaged rats, animals treated with aqueous extract of D. bippinata showed a considerable reduction in high levels of blood marker enzymes, MDA, LH, bilirubin, and a significant improvement in antioxidant enzymes. When compared to silymarin, Desmostachya bipinnata had good hepatoprotective and antioxidant activities.[23]

Antidiabetic effect:
The effect of a hydroalcoholic extract of Desmostachya bipinnata on glycemic status in non-diabetic rats was investigated. The results revealed that the hydroalcoholic extract had no influence on euglycemic levels and caused only minor, inconsequential changes. However, supplementing this extract with hypoglycemic (food deprivation or swim exercise induced) rats dramatically reduced the amount of hypoglycemia. Furthermore, this extract considerably reduced the degree of hyperglycemia generated by exogenous dextrose injection.[24] The anti-diabetic effect of an ethanolic extract of Desmostachya bipinnata whole plant (EDB) in rats with alloxan-induced diabetes was investigated. At 200 and 400mg/kg, the extract significantly (P 0.05) reduced blood glucose, cholesterol, TG, SGOT, SGPT, ALP, urea, uric acid, and creatinine.[25]

Respiratory effect:
Desmostachya bipinnata crude aqueous-methanolic extract inhibited carbachol (1 mM)-induced contraction in rabbit trachea but generated an atropine-sensitive accentuation of high K+-induced contraction at 0.003-0.3 mg/ml followed by inhibition at 1-5 mg/ml. On activity-directed fractionation, the inhibitory impact was focused on organic fractions and the stimulating effect was concentrated on watery fractions.[26]

Anti histaminic effect:
The contractile responses of guinea pig ileum to different Desmostachya bipinnata extracts were tested in response to histamine stimulation. All of the extracts were capable of contracting guinea pig ileum, with the alcoholic extract being the most effective. The results, which showed that the extracts had good anti-histaminic action, were verified by a histamine induced lethality test. When the extracts were provided prior to histamine injection in guinea pigs, histamine-induced mortality was avoided.[27]

Scientific reasons behind traditional indian practices:
D.bipinnata is a tropical grass revered in Vedic writings as a sacred substance that is claimed to purify offerings during such rites.

Darbha grass has been revered as a sacred plant since Vedic times, and according to early Buddhist sources, it was the material used by Buddha for his meditation seat when he obtained enlightenment under the Bodhi tree. The Rig Veda mentions this grass for use in sacred ceremonies as well as to create a seat for priests and gods.

Darbha is expressly mentioned by Lord Krishna in the Bhagavad Gita as a component of the ideal meditation seat.

It is thought to prevent energy generated during meditation from being discharged via our bodies (most notably through our legs and toes) into the earth.

Darbha has been shown in recent medical studies to block X-Ray radiation.

Hindus use darbha as a mat, ring on the right hand ring finger when chanting vedic mantras, conducting homa, and other religious rites. For death-related ceremonies, only a single-leaf Darbha ring is used; for auspicious and daily routine functions (such as Amavasya Tharpanam, Pithru Pooja, and so on), a three-leaf Dharbham ring (Pavitram) is used; and for prayers in a temple, a four-leaf Darbha ring is used. Darbha has the highest value in transmitting phonetic vibrations via its tip.

In India, priests soak this tip in water and sprinkle it over the house or temple to purify it.

Darbha is placed on all four corners of the fire during Homa to assist block all negative radiations.

During an eclipse, the wavelength and intensity of light radiations available on the earth's surface change. Blue and ultraviolet radiations, which are recognized for their natural disinfectant properties, are particularly scarce during an eclipse. This causes uncontrolled growth of microorganisms in food products during an eclipse, and

the food products are unfit for ingestion, so people throw grass in water and food items to prevent spoiling. As a result, it is utilized as a natural disinfectant on special occasions and also to protect against all negative energy.[28]

Fig. 7: Pavithra

Fig. 8: Darbai seat mat

The Kusha grass mat is another name for the Darbai seat mat. It is regarded as a sacred mat. It is commonly used by sages during prayers and meditation. Budhha, in reality, attained enlightenment while sitting on a darbai mat beneath a bodhi tree.

Darbai seat mat primarily provides comfort while sitting and aids in keeping our minds clear of the challenges that surround us.

Making process:
Darbai grass mat is composed entirely of natural Darbai grass and cotton. Color cotton is used to sew the mat's edges. Darbai grass has a calming effect on the body. Furthermore, it does not cause any allergies in your body.

Benefits:
♦ Darbai seat mat is regarded as holy material in spiritual circles. This mat is thought to repel negative energy. As a result, it can be utilized specifically during a solar/lunar eclipse. This darbai seat mat is directly related to the ground because it is entirely comprised of natural materials. It is mostly used for meditation. It is an eco-friendly and washable seat mat. You can use this mat for meditation to help you emit all bad spiritual energies while also sending forth uplifting vibes.

If you use the Dharbai seat mat, you will be protected from all forms of negative emotions and hazardous radiation. Furthermore, it aids in connecting with spiritual realms. Dharbai, in general, has healing powers and hence aids in keeping your body at normal temperatures. It also serves as a natural coolant. Dharbai seat mat is utilized to create asanas that are more relaxing. It is usually used to make prayers in puja rooms, so you may readily contact with devas.[29]

Toxicity and side effects:
Acute toxicity investigations of alcoholic and aqueous root extracts of this plant in female albino mice revealed that it was safe up to 2000 mg/Kg body weight.[30] The LD50 in rats was greater than 5 g/kg, and no deaths were seen in mice given alcohol extracts in dosages ranging from 0.1 to 5 g/kg body weight.[31]

Doses:
For persistent fever, boil 20-25 g root or blossoms in 500 ml water until the volume is reduced to 250 ml, then take 15-20 ml three times a day for three days. For sloppy motions: 10-15 g of flower are boiled in 250 ml of water until the volume is reduced to half, and the syrup is taken twice a day. For urine retention, boil 10-15 g of root until the water turns golden or yellowish in color, chill, and drink 1 glass of water; urine will pass within 10-20 minutes.[32]

Traditional uses:
The plant was utilized as livestock feed. Fever was treated with a decoction produced from leaves.[33] Root was used as an astringent, diuretic, galactogouge, litholytic, and for the treatment of dysentery, diarrhea, thirst, urinary calculi, dysuria, and other bladder illnesses, menorrhagia, and skin problems.[34] It was also used to treat wounds and stomach pain.[35]

CONCLUSION

D. bipinnata plant sections were subjected to pharmacognostical and preliminary phytochemical studies. The findings of these investigations should aid in correct identification, characterisation, and other important findings. A standard profile of D. bipinnata can be created using the identified characters. The results of exploratory phytochemical studies could help guide the separation and purification of lead chemicals responsible for traditional medicinal claims. Furthermore, the current review emphasizes the chemical ingredients, pharmacological activity, and therapeutic relevance of Desmostachya bipinnata as a promising herbal medication due to its safety and effectiveness.

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