Trichodesma zeylanicum: A reservoir plant with their pharmacological effects

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**ABSTRACT**
Trichodesma zeylanicum (Burm. f.) R. Br. was first published as Borago zeylanica Burm. f. by Burman (1768) from Australia, then transferred into genus Trichodesma to became Trichodesma zeylanicum (Burm. f.) R. Br. by Brown (1810). The purpose of this study was to assess the current state of research on the valuable medicinal plant Trichodesma Zeylanicum and to update existing knowledge. Trichodesma Zeylanicum, often known as Adhapushpi, is a member of the Boraginaceae family. It was traditionally used to treat a variety of diseases, including arthritis, fever, skin disease, arthralgia, and dysentery. Antioxidant, anti-inflammatory, analgesic, antipyretic, antibacterial, and anti-diabetic action has been documented for each portion of the plant. The pharmacognosy, phytochemistry, ethanopharmacology, and pharmacological properties of Trichodesma Zeylanicum are highlighted in this paper.

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**INTRODUCTION**
Medicinal plants have long been a part of human civilization, and they have the ability to treat a variety of diseases caused by a variety of circumstances. Many herbal remedies have been used in people for the treatment of various ailments and problems since ancient times. In Indian medicine, Trichodesma Zeylanicum is used to treat fever and eye and ear disorders. Emollient, anodyne, febrifuge, carminative, depurative, and pectoral, the plant is used to treat inflammation and joint diseases. The plant’s leaves are used to treat cancer. Trichodesma Zeylanicum can be found by the side of the road and in stony dry wastelands up to 1500 metres high in India. The taste of the plant is caustic and harsh. It’s a 50-centimeter-tall annual herb with hairs sprouting from tubercles that’s erect, spreading, branched, and branched. The leaves are stalkless, lance-shaped, 2-8cm long, pointy at the tip and heart-shaped at the tip, and have no stalk. The flowers are usually violet, pale blue, or purple in colour and appear singly in the axils of the leaves. The calyx is 1.3 cm long, hairy, and has pointed sepals. The petals are pointy and the corolla is pale blue with a 1.5cm diameter limb. The ellipsoid fruit is surrounded by the calyx. The nutlets are around 5mm in length (Kirtikar and Basu, 1935; Ali, 2008; Dutta, 1999) and have a rough inner surface (Chopra et al., 1956; Gupta et al., 2010).

**Vernacular Names**
Hindi – Dadhona
Kannada– Gay Maari
Telugu – PeddaGuvvagutti

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Marati – Jalashirasi
Sanskrit - Ambusirishika
English – Indian borage

**Scientific Classification**
- Kingdom: Plantae
- Phylum: Tracheophyta
- Class – Magnoliopsida
- Order: Boraginales
- Family: Boraginaceae
- Genus - Trichodesma
- Species - Trichodesma Zeylanicum

**Ethanopharmacology**
The tribal people of Adilabad district, Andhra Pradesh, did an ethanobotanical study on medicinal plants comprising 44 kinds of plants covering 43 genera and 33 families utilised for healing Rheumatoid Arthritis. Trichodesma Zeylanicum was one of the most important medicinal plants among those species, and its warmed root poultice proved beneficial when massaged on painful areas. The ethanobotanical use of Trichodesma Zeylanicum has been successfully demonstrated and is valuable for further research into autoimmune illnesses (Swamy and Reddi, 2016). An ethnobotanical survey was conducted in the Paliyar tribal settlements of Tamil Nadu's Theni district. There are 101 species of ethanobotanical plants, divided into 90 genera and 48 families. Externally, the leaf juice of Trichodesma Zeylanicum has been proven to help with earaches and wound healing. The tribal people exhibited a high level of ethanobotanical novelty and utility, according to the study (Ignacimuthu et al., 2008). The plants of the Thari desert were researched ethnobotanically, and 51 species were found to be spread across 28 families and 48 genera, with 48 genera being classified as having therapeutic applications by the Thari people. There were 21 species from the Boraginaceae and Amaranthaceae families that were proposed to have new uses and were not included in the Indo-Pak folk herbal medicine literature. The 51 medicinal plant species’ various sections were proven to be beneficial for 44 different diseases. 53% of the entire plant, 18% of the leaves, and 14% of the roots.10% of the fruits were beneficial to the ailments. In the treatment of influenza and cough, a decoction of the whole plant Trichodesma Zeylanicum has been reported to be effective (Qureshi and Bhatti, 2008).

**Pharmacognosy and Phytochemistry**
10% of the fruits were beneficial to the ailments. In the treatment of influenza and cough, a decoction of the whole plant Trichodesma Zeylanicum has been reported to be effective. The aerial portions and stems of Trichodesma Zeylanicum were examined for pharmacognostical and phytochemical characteristics. Surface preparation revealed trichomes, anisocytic stomata, anamocytic stomata, and wavy epidermal cells. Transverse sections of leaf collenchyme revealed vascular bundles, palisade cells, calcium oxalate prisms, and covering trichomes with bulbous bases in the upper and lower epidermis. Epidermal cells, parenchyma, fibres, xylem arteries, trichomes, and calcium oxalate crystals were visible in powder microscopy of the plant’s aerial sections. Fluorescence examination of the plant powder identified phenolic chemicals. Triterpenoids, phenolic substances, tannins, phytosterols, carbohydrates, fatty acids, fixed oil, and mucilage were found in phytochemical screening of the aerial portions (Lata et al., 2015).

To improve understanding for standardisation, the root, stem, and leaf of Trichodesma Zeylanicum were researched for morphological and anatomical features. A transverse section of the leaf revealed glandular and covering trichomes (unicerate), anamocytic and anisocytic stomata, phloem, xylem radiating arc, and pericyclic fibre. Starch grains, phloem, xylem, and oil globules were seen in the root (Saboo et al., 2012). Collenchymatous cells were visible in the cortex of the stem cells. The presence of xylem, phloem, and oil globules was discovered during anatomical examination of roots. Anisocytic stomata and unicerate covering trichomes were found. The research included macroscopic, quantitative, and cytomorphological examinations. The presence of vascular bundles and a thin layer of epidermal cells, as well as primary and secondary xylems with phloem, were discovered microscopically in the juvenile stem. The juvenile root microscopically revealed a thin layer of secondary phloem, secondary xylem, and xylem fibres. The plant has non glandular, unbranched unicellular trichomes, tracheids, vascular components, and starch grains visible under powder microscopy (Chidambaram and Aruna, 2013).

Phytosterols, tannins, sugars, flavonoids, protein, saponins, and free amino acids were discovered in the phytochemical analysis. It was tested for biosystematics of three boraginaceae species: Heliotropium indicum, Trichodesma Indicum, and Trichodesma zeylanicum. Leaf and inflorescence morphology, epidermal trichome, stomatal behaviour, stem anatomy and pollen grain features, hypodromous and brochidodromous venation of
their leaves, and hypodromous and brochidodromous venation of their leaves all differed amongst the three species. The leaves were discovered to be lanceolate to ovate, with a pale blue to white inflorescence. The inflorescence was 4.0 to 6.5 inches long. Different sorts of stomatal index can be found in all three species. Trichodesma zeylanicum and Trichodesma Indicum had anomocytic stomata of 16mm in length and 12mm in width, with a stomatal index of 34.88 and 44.68, respectively. Heliotropium indicum had anisocytic stomata that were 12mm long and 10mm wide, with a stomatal index of 32.65. Tricolpate pollen grains of various sizes were discovered in all three species’ unicellular glandular trichomes. The anatomic structures of all three species were comparable, however the hypodermal layers differed. Heliotropium indicum and Trichodesma Indicum morphological and anatomical traits were compared with Trichodesma zeylanicum and found to be identical in various characters, such as stomata, pollen grains, trichomes, stem morphology, and stomatal index. In twenty-two characters, Trichodesma Indicum and Trichodesma zeylanicum were shown to be identical. Heliotropium indicum shared only 25.80 percent of its DNA with Trichodesma Indicum and 29.03 percent with Trichodesma zeylanicum, according to the matching coefficient. Trichodesma Zeylanicum and Trichodesma zeylanicum have a 70.96 percent similarity, indicating that the two species belong to the same genus Trichodesma. Trichodesma Zeylanicum was discovered to be a beneficial herbal drug, and genetic variants were examined using DNA (RAPD) markers in different populations (Kumar and Kumar, 2016).

For the study, multiple populations of Trichodesma Zeylanicum were collected from various places, as well as in vitro regenerated plants. The genetic differences in micropropagated plants from zygotic embryos and all populations were examined. With an average of 6.05 amplified bands per primer, 20 primers produced 121 polymorphic bands out of 125 total bands (96.8% polymorphism). The results revealed that the species have a high level of genetic diversity (Verma et al., 2009).

The phytochemical and anatomical structure of Trichodesma Zeylanicum were investigated in order to determine the herbal drug’s botanical identity. Secondary metabolites such as alkaloids, saponins, flavonoids, steroidal compounds, tannins, and phenolic compounds were detected in the methanolic extracts, whereas alkaloids, flavonoids, tannins, saponins, and steroids were detected in the aqueous extract (Vanitha et al., 2015).

Trichodesma Zeylanicum yielded 23 substances from various chemical categories, which were identified and published. In the Ayurvedic system of medicine, it was originally used for diarrhoea, arthritis, arthralgia, dysentery, skin illness, as an antidiote, and to reduce Vata and Kapha. The antioxidant, antitussive, antiinflammatory, diuretic, antibacterial, antifungal, dermal toxicity, and metal chelating activity of the discovered compounds from extracts of various plant sections were described (Hem et al., 2015).

Anti Pyretic and Analgesic Activity

Biological processes Analgesic and antipyretic properties. The antipyretic and analgesic effects of ethanolic extract were investigated. The analgesic efficacy in mice was assessed using thermal and pain models. Aspirin was the standard medication. In mice, ethanolic extract dosages of 100, 200, and 400 mg/kg reduced acetic acid-induced aberrant constriction. The ethanolic extract demonstrated a significant increase in pain threshold to the heat stimulation at 400mg/kg. The 400mg/kg ethanolic extract strongly suppressed both phases of the formalin hyperalgesic mode, producing less impact in the first phase and more in the second. In rats, the rectal temperature was decreased for up to three hours after injection. The extract also decreased rectal temperature in yeast-induced pyrexia rats for up to 4 hours after injection, with efficacy comparable to that of a conventional medication. Chemical study of the extract yielded tannins, steroids, flavonoids, triterpenoids, and saponins. The findings suggested that extracts at various dose levels have analgesic and antipyretic properties (Perianayagam et al., 2011).

Antidiabetic Activity

The leaves were extracted using four solvents: hexane, acetone, methanol, and water, and their anti-diabetic efficacy was tested in an in vitro amylase assay and in type 2 diabetic rats induced with streptozotocin and nicotinamide in vivo. Yeast cells were used to test extract for in vitro-amylase activity and glucose absorption. By generating type 2 diabetes using streptozotocin – nicotinamide, the effect of four extracts at doses of 200 mg/kg and 400 mg/kg in rats was examined. Significant glucose absorption activity was seen in all four extracts. When compared to acarbose, the methanolic extract of the leaf had moderate anti-amylase action. With standard, methanolic extract effectively inhibited glucose absorption. In streptozotocin – nicotinamide induced type 2 diabetic rats, all four extracts significantly reduced blood glucose levels. Along with glibencamide, the methanolic extract reduced blood
glucose levels. Trichodesma Zeylanicum has been shown to have anti-diabetic properties in people with type 2 diabetes (Narendra et al., 2015b).

The antioxidant and antidiabetic activities of a hydroalcohol extract of Trichodesma Zeylanicum entire plant was tested in vitro. Total antioxidant capacity and reducing power of the extract were assessed using the 2, 2-Diphenyl 1-picryl hydrazyl assay (DPPH), Superoxide radical techniques, and Nitric oxide scavenging. The extract’s cytotoxic effect was determined using the MTT assay, and its in-vitro antiadipic activity was determined using the glucose uptake model in glucose-consuming mouse skeletal muscle cells (L-6 cells). With an IC50 value of > 1000mg/ml, Trichodesma Zeylanicum extract showed excellent antioxidant activity against the DPPH radical. The total antioxidant activity of the dried extract was determined to be 225.28 mg/gram, which is equivalent to Ascorbic acid. The rise in absorbance at 700nm was responsible for the higher reducing power of the samples. The drug extract inhibited growth by 500g/ml and showed average glucose uptake (P<0.05) with a percentage of glucose uptake of 91.03+10.12 over the control. Trichodesma Zeylanicum extract had high antioxidant activity as well as moderate antidiabetic effect (Dachani et al., 2012).

Anti Inflammatory Activity

In rats, a chloroform extract of Trichodesma Zeylanicum root was shown to have anti-inflammatory effect against edoema caused by carrageenan, dextran, histamine, and serotonin, as well as against the formation of granulation tissues caused by cotton pellets. The extract was tested for several types of inflammation and compared to dexamethasone, cyperoheptadine, and indomethacin. Using acute and chronic inflammatory models, chloroform extract showed considerable antiinflammatory efficacy at dosages of 50, 100, and 200mg/kg. When compared to normal values, the chloroform extract at 200mg/kg showed the greatest prevention of carrageenan-induced rat paw edoema. The chloroform extract of all three dosages suppressed dextran, histamine, and serotonin-induced rat paw oedema in a dose-dependent and substantial manner, which was comparable to the control group. At 100 and 200 mg/kg, chloroform extract reduced granuloma weight by 15.42 and 21.12 percent, respectively, but indomethacin and dexamethasone reduced it by 29.29 and 34.13 percent. The findings revealed that the extract has anti-inflammatory properties at various dose levels (Perianayagam et al., 2006).

In vitro enzyme assays and in vivo anti-inflammatory activities in rats were performed on 21 Trichodesma Zeylanicum leaves extracted with hexane, acetone, methanol, and water.5 – Lipoxigenase enzyme assay and carrageenan induced rat paw oedema in rats were used to assess anti-inflammatory efficacy in vitro and in vivo. When compared to the other three extracts, the methanolic extract of Trichodesma Zeylanicum had a lower IC50 (133.55g/ml). When compared to a reference medication, in vivo study of methanolic extract at 200 and 400 mg/kg body weight showed significant suppression of paw oedema of 55.61 percent and 71.43 percent (P0.01). In vitro and in vivo anti-inflammatory efficacy of extracts was confirmed (Narendra et al., 2015a). Aqueous and alcoholic extracts of Trichodesma Zeylanicum flowers were screened for phytochemicals and anti-inflammatory activity in vitro. Flavonoids, terpenoids, and steroids were discovered during the phytochemical analysis.

Anti-inflammatory efficacy was measured by the inhibition of hypotoncity-induced HRBC membrane lysis. The anti-inflammatory activity of an ethanolic extract of the flower was compared to that of the conventional medication indomethacin. The anti-inflammatory activity of the ethanolic extract was compared to that of the aqueous extract. An ethanolic extract of Trichodesma Zeylanicum flowers was tested for phytochemicals and anti-inflammatory potential. The inclusion of terpenoids, steroids, and flavonoids in the extract was found to be responsible for the membrane lysis action. The anti-inflammatory activity of ethanolic extract and aqueous extract of Trichodesma Zeylanicum was examined, and ethanolic extract was found to have stronger anti-inflammatory activity than the aqueous extract. It has been proven as an anti-inflammatory agent for further studies (Rajagopal et al., 2016).

The methanolic extract of Trichodesma Zeylanicum was tested for biosafety and anti-inflammatory efficacy. On newly hatched Brine shrimp larvae and a suspension of Human HRBCs, the membrane stabilising capacity was investigated. It’s been a while.

Antimicrobial Activity

The antibacterial activity of an ethanolic extract of Trichodesma Zeylanicum root was tested. To isolate the phytochemical substances from Trichodesma Zeylanicum root, it was extracted with ethanol and separated using chromatographic procedures, with spectroscopic approaches elucidating the structures of isolated chemicals. To test the antibacterial activity of ethanolic extracts and isolated chemicals from Trichodesma Zeylanicum roots, the disc diffu-
sion method was chosen. The antibacterial activity of the separated components and ethanolic extract was determined by finding the minimal inhibitory concentration and the minimal bactericidal or fungicidal concentration. The identified chemicals from the ethanol extract of Trichodesma Zeylanicum were n-tetradecanlyllaurate, n-decanlyllaurate, stigmast-5-en-3β-ol-21(24)-olide, nepentacos-9-one, n-non acosanypalmitate, n-dotriacont-9 one-13-ene, lanast-5-en-3β. The antibacterial activity of the ethanolic extract and isolated components was variable. suspension. The antibacterial activity of an ethanolic extract of Trichodesma Zeylanicum root was tested. To isolate the phytochemical substances from Trichodesma Zeylanicum root, it was extracted with ethanol and separated using chromatographic procedures, with spectroscopic approaches elucidating the structures of isolated chemicals. To test the antibacterial activity of ethanolic extracts and isolated chemicals from Trichodesma Zeylanicum roots, the disc diffusion method was chosen. The antibacterial activity of the separated components and ethanolic extract was determined by finding the minimal inhibitory concentration and the minimal bactericidal or fungicidal concentration. The identified chemicals from the ethanol extract of Trichodesma Zeylanicum were n-tetradecanlyllaurate, n-decanlyllaurate, stigmast-5-en-3β-ol-21(24)-olide, nepentacos-9-one, n-non acosanypalmitate, n-dotriacont-9 one-13-ene, lanast-5-en-3β. The antibacterial activity of the ethanolic extract and isolated components was variable suspension (Perianayagam et al., 2012).

The phytochemical contents of Trichodesma Zeylanicum leaves were identified using petroleum ether, ethyl acetate, and ethanol extracts, as well as a cold maceration method using distilled water. Alkaloids, glycosides, proteins, flavonoids, steroids, terpenoids, and carbohydrates are some of the compounds found in plants. Antimicrobial activity was tested against Escherichia coli, Staphylococcus aureus, Coagulase-negative staphylococci, Pseudomonas aeruginosa, and Klebsiella pneumonia, Bacillus subtilis, and Streptococcus pyogenes. The extract was effective against Bacillus subtilis at a concentration of 100g/ml, and the zone of inhibition was observed to be larger (15mm). Alkaloids, flavonoids, tannins, and reducing sugars were discovered in preliminary phytochemical screening. Methanolic extract yielded 20 distinct chemicals, which were validated by GC-MS analysis. The findings supported the plant’s historic use (Saboo et al., 2013).

Petroleum ether, chloroform, ethanol, and water extracts of aerial portions of Trichodesma Zeylanicum and Trichodesma sedgwickianum were tested for antimicrobial activity against five gramme positive and gramme negative bacteria and fungi. The extracts’ inhibitory zone was found to be between 12 and 29mm in diameter. The lowest inhibitory concentration was discovered to be between 5 and 0.625 mg/ml. Both species’ ethanolic extracts were found to be more potent against gramme positive bacteria such as S. aureus and B. subtilis, while their aqueous extracts had a strong inhibitory impact against gramme negative bacteria such as E. coli and other organisms. The extract contained steroids, b-sitosterol, phenolics, catechin, and gallic acid, according to phytochemical analysis. Both plants have been shown to be antibacterial and chemotherapeutic agents, with a wide range of activity (Khan et al., 2007).

Insecticidal and Herbicidal Activity

Ethanolic extracts of the whole plant of Trichodesma Zeylanicum, corns, leaves, and berries of Sauromatumguttatum, and roots of Aconitum leaf were tested for phytotoxic and insecticidal activity. All of the extracts, with the exception of Aconitum leaf, had herbicidal efficacy against Lemna minor. At 500g/ml, the extracts fully suppressed plant development and had effective insecticidal activity, with the highest mortality seen in Sauromatumguttatum berries against Bruchuspisorum and Trichodesma Zeylanicum against Rhizoperthadominica. The results indicated that the extracts have insecticidal and herbicidal properties (Anusha et al., 2014a).

Antioxidant Activity

The antioxidant activity of Trichodesma Zeylanicum leaves was investigated using increasing polarity solvents such as hexane, ethyl acetate, and methanol. The phosphomolybdenum assay, DPPH assay, metal chelating assay, and Hydroxyl Radical Scavenging assay were used to test the extracts for antioxidant activity. Tannins, flavonoids, and terpenoids were found in the ethyl acetate fraction. It has been observed that the ethyl acetate fraction
of leaves possesses antioxidant potential, although anti proliferative and anticancer activity has yet to be discovered (Devi et al., 2013). Flavonoids, alkaloids, and total phenols were measured in Cleome viscosa and Trichodesma Zeylanicum leaf, fruit, and root extracts. All of the chemical ingredients were visible in the plants. Standard procedures were used to determine the enzymatic and nonenzymatic antioxidant components. Cleome viscosa leaves lack alkaloids, while Trichodesma Zeylanicum leaves lack flavonoids. Catalase activity was increased in Trichodesma Zeylanicum leaves and Cleome viscosa fruits. The fruits and roots of Trichodesma Zeylanicum and Cleome viscosa demonstrated greatest activity of peroxidase and glutathione-Transferase. The results of the investigation revealed the antioxidant activity from the root, leaf and fruit of both the plants and contain significant non-enzymatic activity (Srikanth et al., 2002).

**Antitussive Activity**

On methanolic extract of whole plant of Trichodesma Zeylanicum, it was tested for Sulphur oxide produced cough reflex in swiss albino mice. When compared to control groups and the conventional medication codeine phosphate, the methanolic extract of Trichodesma Zeylanicum exhibited significant suppression in cough frequency for all test doses. The action of the drug lasted for 90 minutes after it was taken orally. The findings backed up the plant’s long-standing use in the treatment of cough (Mangai and Ravi, 2013).

**Corrosion Inhibition Effect**

The effect of alkaloid extract of Trichodesma Zeylanicum on corrosion inhibition was measured using the weight loss method on C38 steel in 1MHC1 solution at various temperatures and compared to imidazole compounds. When compared to organic inhibitors, the alkaloid extract of the plant demonstrated superior inhibition. At a concentration of 75 mg/L at 30°C, the inhibition efficiency was found to be 94.5 percent. The ability of alkaloidal extract to reduce corrosion has been demonstrated (Anusha et al., 2014b).

**Metal Chelating Activity**

Binding of ions employed in iron excretion forms metal chelator complexes, and synthetic chelators have a strong ability to bind metal ions. At normal quantities, metals play a crucial role in the body, but at greater doses, they have toxic and severe consequences. The use of a chelating agent to minimise metal toxicity in organisms is the best treatment. Dinis et al. used Dinis et al. to determine the chelating efficacy of ferrous ions from Trichodesma Zeylanicum extracts at various concentrations of the extract by adding 0.05ml of 2mM FeCl and initiating Ferrozine (5mM). At 560nm, the absorbance was measured with a spectrophotometer. Binding of ferrous ions from Trichodesma Zeylanicum extracts inhibited the production of hydroxyl radicals. It is clear that the Trichodesma Zeylanicum ethyl acetate extract has high metal chelating activity. Chelating compounds, which act as secondary antioxidants and stabilise the oxidised form of metal, lowered the redox potential (Lata et al., 2014).

**Diuretic Activity**

Using the Lipschitz model, the diuretic efficacy of methanolic and aqueous extracts of aerial portions of Trichodesma Zeylanicum was assessed. The extract’s diuretic impact was assessed by measuring urine volume. The extract had effective diuretic efficacy at a dose of 300mg/kg, with a Lipschitz value of 1.25 when compared to the standard. The potassium content in the urine was higher in the aqueous extract, while the sodium concentration was higher in the methanolic extract. The results showed that the methanolic extract had a diuretic effect similar to K+ sparing diuretics. The diuretic effect was clearly attributed to the phytoconstituents found in Trichodesma Zeylanicum (Priya and Senthilkumar, 2014).

**Hepatotoxicity Study**

The acute and subacute hepatotoxicity of Trichodesma Zeylanicum aqueous methanolic extract of entire plant in mice was investigated. The aqueous methanolic extract was tested for acute and subacute toxicity over the course of one day and fifteen days. The extract’s LD50 was found to be over 4000mg/kg, and subacute administration resulted in no change in liver weight and no significant changes in Aspartate amino transferase (AST), Alkaline phosphatase (ALP), Alanine amino transferase (ALT), bilirubin, albumin, protein, and globulin levels. Under histological examination, the highest dose caused necrosis and severe vacuolation. The aqueous methanolic extract was found to cause dose-related hepatotoxicity and mild liver function impairment (Perveen et al., 2016).

**Antimitotic and Antiproliferative Activity**

The aerial portions were extracted using petroleum ether, chloroform, ethanol, and water in order to determine their antimitotic and antiproliferative properties. The antioxidant activity of all four extracts was tested in vitro using radical inhibition systems such as 2, 2’ diphenyl 1 picrylhydrazyl, 2, 2’ azino bis (3 ethylbenzothiazoline 6 sulphonic acid) and 2, 2’ azino bis (3 ethylbenzothiazoline 6...
sulphonic acid). The extracts were also tested in vitro for antimitotic and antiproliferative activities in Allium cepa root using a yeast model and five human cell lines (MCF 7, HOP 62, MOLT 4, HCT 15 and PRO). SCH and SEE had mitotic indexes of 12.01 ± 1.34 mg/mL and 12.99 ± 0.25 mg/mL, respectively. In the antiproliferative assay, the IC50 values for SCH and SEE were found to be 30.14–35.36 mg/mL, respectively. When compared to the conventional methotrexate, vincristine, and adriamycin, both SCH and SEE extracts showed considerable antimitotic and antiproliferative action. The following are some of the extracts: At a dose of 30g/ML, SEE showed significant inhibition against MCF 7 and MOLT 4 cell lines. Extracts were found to include β sitosterol, gallic acid, and catechin, according to phytochemical analysis. The findings suggest that Trichodesma Zeylanicum could be a useful medicine for the treatment of a range of cancers, and the traditional use has been verified (Saboo et al., 2014).

Micropropagation

The physiological relevance of cytokinin and its combination of auxins for micropropagation and in vitro flowering of Trichodesma Zeylanicum was studied using shoot tip explants. Murashige and Skoog (MS) medium supplemented with benzylaminopurine (BAP) (4.44mM) and naphthalene acetic acid had the largest number of shoots and shoot length (2.69mM). The influence of sucrose content on in vitro floral development was investigated for plantlets cultivated in MS medium enriched with gibberellic acid and BAP. The MS medium enriched with gibberellic acid, BAP, and sucrose was more effective in achieving the highest percentage of floral growth. The production of root and adventitious branches was attributed to MS media containing indole-3-butyric acid. The regenerated plantlets have an 86 percent survival rate and are phenotypically normal (Mahesh and Jeyachandran, 2013).

The research was successful in explaining in vitro flowering and to regenerate a cross pollinated species of Trichodesma Zeylanicum, in vitro procedures were used. Zygotic embryos grown on MS (Murashige and Skoog) medium supplemented with kinetin, BA (N6-benzyl Aminopurine), or NAA (naphthalene acetic acid) produced callus and adventitious shoots, whereas those grown on MS medium supplemented with 2,4-D (2,4-dichlorophenoxyacetic acid) did not. On subculture, the nodal pieces produced axillary shoots that were suitable for further propagation proliferation. Rhizogenesis occurred in 60 percent micro shoots treated with IBA (indole-3-butyric acid) pulse. The regenerated plants successfully acclimatised and started flowering in green house maintained at 30 ± 2ºC temperature and 70 percent RH (Khan et al., 2007).

CONCLUSION

The current review includes a pharmacognostical analysis, diagnostic features, and microscopical features that could be beneficial in future research. The quantitative measurements used to identify distinct portions of the plant could be useful in identifying the plant material. The existence of potential phytochemicals was reported by phytochemical screening, physicochemical analysis, and histological examinations, which would be relevant for future research. The plant’s pharmacological activity provides insight into the current state of plant research. As a result, the plant can be researched further to see if it can be employed as an effective medicinal agent for a variety of diseases and problems. Because this knowledge is the foundation for the creation of novel disease-specific treatment methods.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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