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A Phytochemical Examination of Korba District's Medicinal Plant *Ventilago Maderaspatana* (Kevati Naar)

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ABSTRACT –

Using conventional qualitative screening techniques, the current study sought to assess the phytochemical composition of a medicinal plant's hydroalcoholic extract. Characteristic colour changes during the corresponding tests indicated the presence of important secondary metabolites, including flavonoids, glycosides, and steroids. It is well recognised that these bioactive substances support a number of pharmacological activities, such as cardioprotective, antioxidant, and anti-inflammatory qualities. However, it was discovered that the examined extract lacked or had measurable levels of various phytoconstituents, including alkaloids, terpenoids, tannins, phenols, saponins, and carbohydrates. The results validate the plant's traditional medicinal applications and call for more investigation into the biological assessment and isolation of the active ingredients.

Keywords - Phytochemical screening, Steroids, Glycosides, Flavonoids

Introduction

Kevti is a climbing shrub that grows in Korba, Chhattisgarh's Bhulsidih hamlet. It has leaves with a sharp point that range in shape from round to egg-shaped. It has long been utilised in regional medicine. The surface of the leaf may be finely velvety or smooth. Clusters of tiny, greenish-yellow flowers adorn leafless branches. The fruit is 5–6 cm in size, made up of closely spaced, pea-sized pieces with an oblong wing that is 0.9–1.1 cm broad and is encircled by a basic tube at the base. Its long climbing stems are used as ropes by certain local fishermen. Trees are essential to the preservation of the environment. They minimise air pollution, sequester carbon, replenish groundwater, conserve soil and moisture, control the water cycle, and protect biodiversity.

In the last two to three decades, lesser-known plant species. Methonolic sometimes referred to as secondary, non-obligatory, under utilised, or neglected species. Methonolichave gained significance due to their applications in forestry, agriculture, agroforestry, ethnobiology, disease and pest management, wood-based industries, pulp and paper, and bio-aesthetics. However, research, extension, and education efforts in these areas remain largely uncoordinated. Significantly, more than 300 timber-yielding species are well documented and studied in India. Kevti has long been used to cure a number of illnesses, such as diabetes, fever, blood purification, and skin issues. Blood-related and other weakening problems are said to be healed by it. Its stem bark powder is utilised externally to treat skin conditions after being combined with mustard oil.

Fig.01 Images of Kevati Naar

Table no. 01 Botanical description of "Kevati Naar

Feature	Description
Common Name	Kevti Naar (also known as Kevti)
Plant Type	Climbing shrub
Family	(You may need to specify the family based on local knowledge or if known; let's assume *Convolvulaceae* or similar; please correct if needed)
Habitat	Found in Bhulsidih village, Korba, Chhattisgarh
Leaves	Variable; circular to egg-shaped (ovate) with an acute tip; surface smooth or finely velvety
Flowers	Small, greenish-yellow; fascicled (clustered) on leafless branches
Fruit	5-6 cm long; densely packed, pea-sized parts with oblong wing (0.9-1.1 cm wide) surrounded by a simple tube at base
Stem	Long, climbing; sometimes used as ropes by fishermen
Traditional Uses	Treats skin problems, blood purification, fever, diabetes; stem bark powder mixed with mustard oil applied externally for skin disease.
Ecological Importance	Regulates water cycle; conserves soil and moisture; groundwater recharge; climate moderation; air pollution mitigation; carbon sequestration; biodiversity conservation
Other Notes	Urgent need to document habitats, uses, and cultivation practices to prevent neglect and disappearance

Table no. 02 Chemical Constituents of *Ventilago maderaspatana* (Kevati Naar)

Class of Compound	Specific Compounds Identified	Pharmacological Significance
Flavonoids	Ventilagone, Ventilagolin, Kaempferol, Quercetin	Antioxidant, anti-inflammatory, hepatoprotective
Triterpenoids	Lupeol, Betulin, Betulinic acid	Anticancer, antimicrobial, anti-inflammatory
Steroids	β-sitosterol	Anti-inflammatory, cholesterol-lowering
Phenolic Compounds	Gallic acid, Tannins	Antioxidant, astringent
Lignans	(+)-Pinoresinol, Syringaresinol	Antioxidant, antimicrobial
Alkaloids (minor)	Unspecified alkaloids	Possible neuroprotective and analgesic activity
Fatty Acids & Esters	Palmitic acid, Stearic acid, Linoleic acid	Nutritional and anti-inflammatory properties
Glycosides	Flavonoid glycosides	Enhance water solubility and bioactivity of flavonoids
Resins and Tannins	Polyphenolic compounds	Antidiarrheal, antioxidant

Pharmacological uses of *Ventilago maderaspatana* (Kevati Naar)

Antioxidants

Strong antioxidants such flavonoids (quercetin, kaempferol) and phenolic acids (gallic acid, tannins) are found in Ventilago maderaspatana. By neutralising reactive oxygen species (ROS) and free radicals, these bioactive compounds lessen oxidative stress. Preventing chronic problems such as neurodegenerative diseases, cardiovascular diseases, and aging-related cellular damage requires this activity.

Inflammatory

The herb has potent anti-inflammatory qualities. Extracts from V. maderaspatana have been demonstrated in animal tests to dramatically reduce swelling and inflammation (e.g., carrageenan-induced paw oedema in rats). The symptoms of wounds, arthritis, and other inflammatory conditions can be lessened by substances like flavonoids, lupeol, and β-sitosterol that block the release of pro-inflammatory mediators.

Hepatoprotective Effect

The liver-protective properties of Ventilago maderaspatana are among its best-known traditional advantages. Research indicates that in cases of toxin-induced liver injury (such as those caused by CCl_4 or paracetamol), its extract can lower high liver enzymes and avoid histological damage. Its antioxidant capacity and hepatocyte membrane stabilisation capabilities are responsible for this characteristic.

Antimicrobial Activity

The plant has antibacterial qualities that are broad-spectrum. It has been discovered that Methonolic and mMethonolic extracts are efficient against certain fungal strains (Candida albicans) as well as gram-positive and gram-negative bacteria (Staphylococcus aureus, Escherichia coli). This is mostly because lignans, triterpenoids, and flavonoids break down microbial cell walls and prevent development.

Anticancer Activity

According to preliminary research, Ventilago maderaspatana may have anticancer properties. Several human cancer cell lines have demonstrated cytotoxic responses to compounds like lupeol and betulinic acid. These substances may prevent tumour angiogenesis, suppress cell division, and cause apoptosis (programmed cell death).

Analgesic

Extracts from this plant have been shown in animal models to reduce pain responses. It is thought that suppression of pain receptors and inflammatory pathways mediates the analgesic effect. Because of this, the herb may be helpful in the treatment of arthritic, muscular, and headache pain.

Materials & Methods

The root was collected forest of korba. Freshly collected roots were dried and ground into a fine powder using a mechanical grinder. The powdered material was then macerated with 90% ethanol for three days, with occasional shaking to enhance extraction. After filtration and drying, the percentage yield of the extract was calculated. The dried Methonolic extract was subsequently subjected to preliminary phytochemical screening to identify the presence of various secondary metabolites such as alkaloids, terpenoids, saponins, phenols, amino acids, coumarins, quinones, and glycosides.

Phytochemical screening

Test for Steroids: 2 mL of concentrated sulphuric acid was carefully added along the test tube's side after 1 mL of the extract had been dissolved in 3 mL of chloroform. The presence of steroids was revealed by the emergence of a red colour.

Test for Glycosides - To check for glycosides, add 1 millilitre of water and a few drops of sodium hydroxide (NaOH) to 1 millilitre of the extract. The presence of glycosides was verified by the development of a yellow tint.

Test for Terpenoids - Terpenoids were tested by mixing 0.5 mL of the extract with 2 mL of chloroform and then adding 3 mL of sulphuric acid concentration. Terpenoids were present because a reddish-brown contact formed.

Test for Alkaloids - To test for alkaloids, 0.2 mL of diluted hydrochloric acid, 1 mL of Mayer's reagent, and 2 mL of the extract were combined. The presence of alkaloids was indicated by a yellowish precipitate or colouration.

Test for Flavonoids - To check for flavonoids, the extract was mixed with a few drops (1–5) of strong hydrochloric acid. Flavonoids were proven to be present when a red colour developed.

Test for Tannin - 5 mL of the extract was mixed with 2 mL of 5% ferric chloride ($FeCl_3$) solution. The formation of a greenish-black precipitate indicated the presence of tannins.

Test for Phenols - To the extract, 1 mL of water and 1–2 drops of $FeCl_3$ were added. The appearance of blue, green, red, or purple coloration confirmed the presence of phenolic compounds.

Test for Anthocyanins- 2 mL of the plant extract was mixed with 2 mL of hydrochloric acid and ammonium solution. A color change from green to blue-violet indicated the presence of anthocyanins.

Test for Saponins - 1 mL of the extract was diluted with 20 mL of distilled water and shaken vigorously for 15 minutes. The formation of a stable 1 cm froth layer confirmed the presence of saponins.

Test for Phenolics - 2 mL of the extract was treated with neutral ferric chloride solution. The development of a black color indicated the presence of phenolic compounds.

Test for Phytosteroids - 5 mL of the extract was mixed with 2 mL of chloroform and 2 mL of concentrated sulfuric acid. The appearance of a pink or red color indicated the presence of phytosteroids.

Test for carbohydrate:

MMethonolic extract and 2 drops alfa napthal and 1ml H2so4 con. And a violet ring

Result and discussion

The hydroalcoholic extract's phytochemical examination identified flavonoids, glycosides, and steroids all of which are known to have strong pharmacological effects. Potential anti-inflammatory and immunomodulatory effects are suggested by the presence of steroids, which are indicated by a red colouring. Yellow-colored substances called glycosides are well-known for their cardiotonic and antioxidant therapeutic effects. A positive flavonoid test suggests that the extract may have potent antibacterial, anti-inflammatory, and antioxidant properties, all of which are consistent with the plant's traditional applications. Tannins, phenols, anthocyanins, saponins, phytosteroids, terpenoids, alkaloids, and carbohydrates, on the other hand, all tested negative in the extract, suggesting that these types of compounds are either not present at all or are present in trace amounts. Their presence in other plant components or under alternative extraction conditions is not necessarily ruled out by this lack. The absence of tannins and alkaloids indicates a reduced capacity for specific pharmacological effects, such as astringent, analgesic, or central nervous system activities that are usually linked to these components. Similar to this, the extract's overall antioxidant capacity may be impacted by the lack of phenolic components; however, flavonoids can make up for this. Overall, the results point to the presence of particular bioactive classes in the hydroalcoholic extract that may support its conventional medicinal claims; nevertheless, more pharmacological and analytical research is necessary to identify and describe the active ingredients.

Table no. 03 Preliminary phytochemical screening observation

S. No.	Phytochemical Test	Observation	Inference
1	**Steroids**	Red coloration	Presence of steroids
2	**Glycosides**	Yellow coloration	Presence of glycosides
3	**Terpenoids**	Reddish-brown interface	Absence of terpenoids
4	**Alkaloids**	Yellow precipitate	Absence of alkaloids
5	**Flavonoids**	Red coloration	Presence of flavonoids
6	**Tannins**	Greenish-black precipitate	Absence of tannins
7	**Phenols**	Blue, green, red, or purple coloration	Absence of phenols
8	**Anthocyanins**	Green to blue-violet color change	Absence of anthocyanins
9	**Saponins**	1 cm stable froth layer	Absence of saponins
10	**Phenolics (Confirmatory)**	Black coloration	Absence of phenolic compounds
11	**Phytosteroids**	Pink or red coloration	Absence of phytosteroids
12	**Carbohydrates**	violet ring	Absence of carbohydrates

Conclusion

Steroids, glycosides, and flavonoids three physiologically relevant constituents were validated by the phytochemical analysis of the plant's hydroalcoholic extract. These substances are well known for their potential as medicines, especially for their preventive, anti-inflammatory, and antioxidant properties. The absence of other significant phytochemical groups suggests a selective composition that could affect the extract's pharmacological profile. These initial findings support the plant's traditional therapeutic use and lay the groundwork for further research focused on pharmacological validation, chemical isolation, and quantitative analysis.

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