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Phytochemical Analysis of Cissus Repanda-Vahl: an Uncommon Medicinal Plant

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ABSTRACT

Cissus repanda-Vahl is a medicinal plant belonging to family-Vitaceae. Traditionally it is being used for cuts, wounds, bone fractures, boils and piles. This plant is wide in distribution from rare uncommon in Vidarbha region of Maharashtra. The present study focused on the phytochemical analysis (qualitative and quantitative) of Cissus repanda-Vahl leaf & root, quantitative analysis by UV visible double beam spectrophotometer. The plant is rich in phytochemical composition and its medicinal properties right is the attribute of these phytochemical.

Keyword : ***- Cissus repanda-Vahl, phytochemical analysis, UV visible double beam spectrophotometer***

1. INTRODUCTION :

Cissus repanda-Vahl medicinal plant belongs to "Vitaceae" family, commonly known as "Panivel" in Hindi. It is folkloar medicinal herb, reputed for the healing properties of its root, leaves, flowers & stem. Cissus repanda-Vahl is medicinal plant important distributed from Kuman to Arunachal Pradesh, Tripura, Assam, Bihar, Madhya Pradesh, Gujarat and Western Ghats up to 1350m and Maharashtra. However its distribution in Maharashtra specially Vidarbha is rare/uncommon.Root is long , tuberous with smooth surface elongated 15-20 cm in diameter color extremely brown. The present study deals with the phytochemical analysis & quantification major phytochemical component in the leaves & root of this plant. Root and leaf powder used in case of bone fracture, cuts, boils wounds. It also used for piles, asthma, digestive, troubles, cough and loss of appetite. Stem and root yield stronger fiber. Young shoot are used in Curries. It also helps to prevent the human body from different dietary diseases and keeps the health in good condition.

2. MATERIAL AND METHODS

- **Collection and identification:** This plant is collected from Akola dist. especially from village Mazod. Collected plant is identified by its flora and keys (Akola region).

Fig -1 Cissus rependa vahl plant

2.1 Preparation of leaf and root extract:

1. Aqueous extract: Plant material (10 g) was crushed in distilled water (40 ml) for a preparation of aqueous extract. The extract was separated using sterile muslin cloth and filter through Whatmann filter paper no. 02.
2. Ethanol Extraction: *Cissus rependa* -Vahl (10 g) were grounded into fine powder using a stainless-steel grinder, deep in 100% ethanol (40ml) for two days. The ethanol fraction was separated using sterile muslin cloth and filter through sterile whatmann's filter paper no. 02.
3. Chloroform extraction; for preparation of chloroform extract grounded plant sample (10 g) was added in chloroform (40 ml) in each case and left for two days at room temp. The extract were separated using muslin cloth and filter through whatmann's filter paper no. 02.

3. PHOTOCHEMICAL ANALYSIS:

3.1 Qualitative phytochemical analysis

- Detection of tannin (gelatin test) To the extract 1% gelatin solution containing NaCl was added formation white precipitated indicate the presence of tannin.
- Detection of alkaloids:

1. Mayer's test: Filter were treated with Mayer reagent formation yellow color precipitated indicate the presence of alkaloid
2. Hager's test: Filters were treated with Hager's reagent (saturated picric acid solution) presence of alkaloid confirmed by the formation of yellow color precipitated.

3.2 Detection of carbohydrate:

1. Benedict's test: Filtrates were treated with Benedict's reagent and heated gently. Orange red precipitated indicate the presence of reducing sugar.
2. Fehling test: To 0.5 ml plant extract, 1 ml of water and 5 to 8 drops of feeling solution was added and heated over water bath brick red precipitated indicate the presence of carbohydrate.

3.3 Detection of flavonoid:

1. Alkaline reagent test: Extract was treated with few drops of NaCl solution formation of intense yellow color, which become colorless on addition of dilute acids indicates the presence of flavonoid.
2. Lead acitate test: Extract was treated with few drops of lead acitate solution formation of yellow color precipitated indicates the presence of flavonoid.

3.4 Detection of phenols:

1. Ferric chloride test: Extract was treated with 3 to 4 drops of ferric chloride solution formation of greenish yellow color or bluish **black color precipitated indicates the presence of phenols.**

3.5 Detection of protein and amino acids:

1. Xanthoprotic test: Extract was treated with few drops of concentrated nitric acid formation of yellow color indicates the presence of protein.
2. Ninhydrin test: To the extracts of 0.25% w/v ninhydrine reagent was added and boiled for 2 mints. Formation of blue color indicates presence of amino acid

3.6 Detection of phytosterols:

1. Salkowski's test: Extract treated with chloroform and filtered. The filtrates were treated with few drop[s of concentrated sulphuric acid, shaken and allow to stand. Appearance of golden yellow color precipitated indicates the triterpenes.

- Detection of volatile oil: Two ml of extract was shaken with 0.1ml dilute NaOH and quantity of dil.HCL. A white precipitate is formed if volatile is present.

- Detection of mucilage: One ml extract with water add rethenium red solution pink color is formed means presence of mucilage.
- Detection of saponin: Saponin were detect using forth test.1gm of the sample was weighed into a conical flask in which 10ml distilled water was added and boil for 5 mints. The mixture was filtered and 2.5 ml of filtrate was added to 10 ml distilled water in a test tube. The test tube was tapered and shaken vigorously for about 30 sec. It was then allow standing for half an hour. Froth indicate the presence of Saponin

3.7 Quantitative analysis:

Estimation of total Flavonoid: Take 0.25 mg crude extract in test tube and add distilled water 1.25 ml and 0.75 ml sodium nitrate .Then after 6 min. dark is observed. Then add 10% CaCl2 0.300µl also add 0.5 ml 5% NaOH with 0.275 ml distilled water. And the absorbance after 2hr spectrophotometer at 765 nm

Estimation of total phenol by Folin –Ciocalteu reagent: 1mg crude extracts with 1ml methanol and then adds 1.5 ml 10% Folin-Ciocalteu reagent and 1.5 ml sodium bicarbonate and the absorbance after 2hr spectrophotometer at 765 nm.

3.8 Estimation of total fatty acid: 100µg material adds in 100µl Double distilled water and absorbance after 2hr spectrophotometer at 765 nm.

4. OBSERVATION:

4.1 Qualitative Analysis:

The plant was observed to be rich in phytochemical composition. Most of the phytochemical hence extractable in ethanol extract.(Table.1).In confirmed that's leaf extract content Alkaloid, Flavonoid, Phenol, Carbohydrate, Protein, Amino acid, Phytosterol, Tannin & Saponin.

However volatile oil, terpenoid oil are absent in leaf extract (table no. 1) the plant was observed to be rich in phytochemical composition most of the phytochemical hence extractable in ethanol extract (table 2) In confirmed that root extract contains alkaloid, tannin, phenol, saponin, mucilage, protein Phytosterol, and flavonoid.
However terpenoid, amino acid, carbohydrate are absent in root extract

Fig 2. Observation result for phytochemical analysis

5.`Result:

Table5.1: Phytochemical analysis of *Cissus rependa*- vahl plant of Leaf
(Qualitative Test)

DETECTION OF TEST	CHLOROFORM	ETHYL ALCOHOL	Aq. WATER
ALKALOID			
1. MAYER	+	+	+
2. HAGERS	-	-	+
FLAVONOID			
1. ALKALINE REAGENT	-	+	-
2. LEAD ACETATE	+	+	+
PHENOL	+	+	+
CARBOHYDRATE BENEDICT'S TEST	+	+	+
PROTIEN AND AMINO ACID			
1. NINHYDRIN TEST	-	-	+
2. XANTHOPROTIC TEST	-	+	+
PHYTOSTEROL	-	-	+
VOLATILE OIL	-	-	-
TRIPANOID	-	-	-
TANNIN (GELATIN) TEST	-	+	+
SAPONIN	-	+	+

Table5.2: Photochemical analysis of *Cissus rependa*- vahl plant of root
(Qualitative Test)

DTECTION OF TEST	CHLOROFORM	ETHYL ALCOHOL	Aq. WATER
ALKALOID	+	+	+
TANNIN	-	+	-
PHENOL	+	+	+
SAPONIN	+	-	+
MUCILAGE	+	+	+
PROTEIN	+	-	-
AMINO ACID	-	-	-
PHYTOSTEROL	+	+	+
FLAVONOID	-	+	-
CARBOHYDRATE	-	-	-
TERPENOID	-	-	-

5.1 Quantitative analysis:

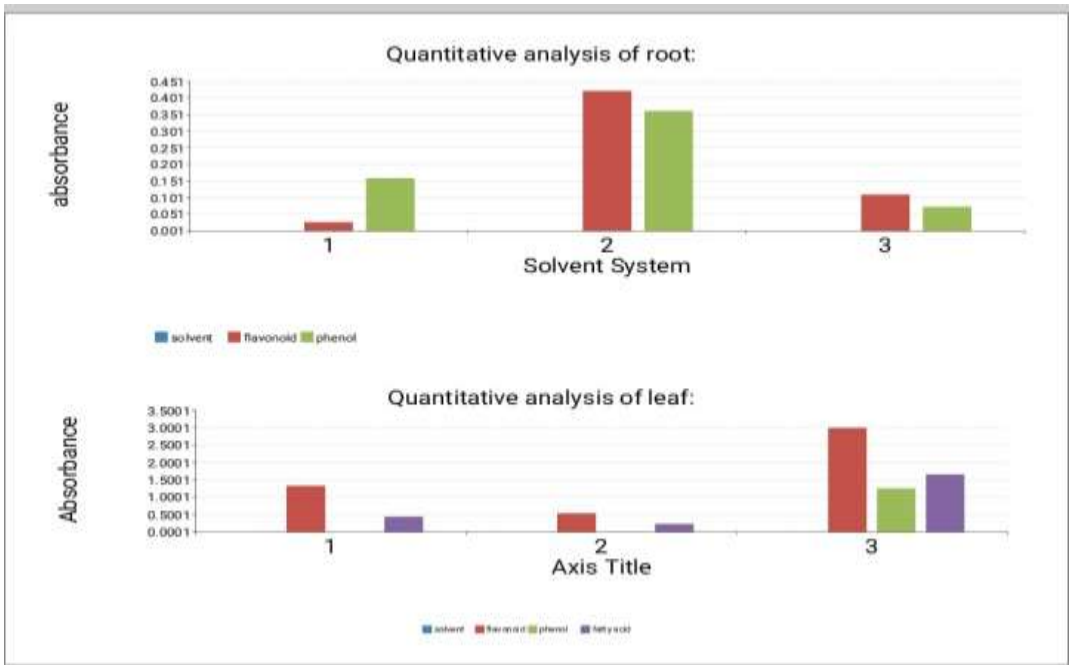
The plant was observed to be rich in quantitative phytochemical composition. Most of the quantitative phytochemical hence extractable in chloroform, ethanol, aq. Water extract (Table 1) and (Graph 1). It confirms that leaf extract content flavonoid, phenol, fatty acid. The plant was observed to be rich in quantitative phytochemical composition. Most of the quantitative phytochemical hence extractable in chloroform, ethanol, aq. Water extract in (Table 2) and (Graph 2). It confirms that root extract content flavonoid, phenol.

Table 1: Quantitative analysis of leaf:

SOLVENT	FLAVONOID	PHENOL	FATTY ACID
CHLOROFORM	1.3339	0.0002	0.4401
ETHYL ALCOHOL	0.5354	0.0039	0.2300
Aq. WATER	3.000	1.2582	1.6551

Table 2: Quantitative analysis of root:

Solvent	Flavonoid	Phenol
chloroform	0.275	0.593
Ethyl Alcohol	0.4225	0.3624
Aq.Water	0.1101	0.0732



6.`CONCLUSIONS

The preliminary phytochemistry was done as given by Prashant Tiwari et. Al(2011) and Joseph D et. Al (2011) it showed presence of alkaloids, flavonoid, phenols, carbohydrate protein Phytosterol, tannin, saponin, mucilage. The quantitative analysis of phytochemical was done by Harbon, J.B. (1983) method.The presence of phytochemical in leaf and root of plant is mentioned in table no. 1 and 2. This phytochemical may responsible for the various medicinal properties of this plant. The specific quantity of phytochemical might be useful for curing a diseases

Suggestion: Our personal opinion is that Vidarbha region farmer cultivates this plant in our edges of the farm because these are various benefits as economical, commercial and medicinal uses. This plant is commercial for supply pharmaceutical industries and other purposes.

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Guided by Dr. S. P. Rothe Former HOD and Professor department of Botany, Shri Shivaji College, Akola

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