

Pharmacognostical and Preliminary Phytochemical Screening of *Vitisvinifera* Leaves

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Abstract: *Vitisvinifera* L. (vitaceae) is a good sources of phytochemicals and are suitable raw materials for the production of antioxidant/antiageingdietary supplements. The present work emphasise to assess the pharmacognostical evaluation as: organoleptic features, proximate composition, phytochemical screening of leaves of flame red grape leaf. The results showed that grape leaf content was fibers 25.20%, total lipids 8.40%, proteins 10.0%, ash value 1.58%, carbohydrates 25.37%, LOD 1.40% and moisture 10.75%, respectively. Phytochemical analysis of flame red grape leaf ethanolic extract (EE) and chloroform extract (CE) showing the presence resveratrol (stillbens) of anthocyanins, coumarin, steroids, terpenoids, anthocyanins, emodins, glycosides (Anthraquinones&cardinolides), flavonoids and phenols is significantly present in EE as compared to CE. Tannins is present in high amount while coumarin is absent in chloroform extract. Results reflect that ethanolic extract have good pharmacognostical profile as compared to chloroform due presence of flavonoids, anthraquinones, saponins, carbohydrates, phenol and terpenoids. .

Keywords: *Vitisvinifera*, Flame red, Phytochemical screening, Ethanolic, anthraquinones, Resveratrol.

1. INTRODUCTION

Medicinal vegetation have curative properties because of the existence of various complex chemical substances of various composition, which are found as secondary plant metabolites in one or more parts of those plant life. Herbal products and their derivatives represent greater than 50 % of the medicine inside the global [1]. Plants are referred to as a large supply of herbal phytochemicals which are contained of organic activities [2]. The pharmacological effectiveness to be determined in alkaloids, terpenoids, flavonoids, glycosides, corticosteroids, oils and others. *Vitisvinifera* L. (Flame red) is belongs from Vitaceae family, worldwide production of it is done for both industrial processing and fresh consumption. Grapes had pharmacological activities like anti-inflammatory, antidiabetic, antioxidant, anti-aging, anti-cataract, antibacterial, antifungal, anti-acne, anti-obesity, antispasmodic, spasmolytic, anti-virus, wound-healing [3].

It contain large amounts of phytochemicals including anthocyanins and resveratrol, which offer health benefits [4]. Grapes are one of the major dietary sources of anthocyanins, which are

responsible for the colouring [5]. Grape leaves also contain hydroxybenzoic acid (quinic acid, gallic acid, vanilic acid, and syringic acid), hydroxycinnamic acid (caftaric acid, caffeic acid, and fertaric acid), coumarin, dihydrochalcon [3,6].

V. vinifera leaves contains various medicinal values due to its various biological activities including hepatoprotective, spasmolytic, hypoglycemic and vasorelaxant effects, as well as, antibacterial, antifungal, anti-inflammatory, antinociceptive, antiviral and particularly antioxidant properties [7, 8]. Hence, this study emphasized to evaluate the pharmacognostical and phytochemical evaluation of *Vitisvinifera* (Flame red).

1.1. Material and Methods:

The flame red *Vitisvinifera* leaves were taken from a nursery in Bahadurgarh, Haryana, India. Afterwards, the leaves were processed in the laboratory. After collection, they were air-dried at ambient temperature for eight weeks before being frozen and stored at -20°C until the extraction procedure began. Dr. Sunita Garg, Chief Scientist at the Regional Herbarium and Museum of CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR), New Delhi, authenticated the gathered leaves using the

Preparation of extracts from grape leaf

The *Vitisvinifera* leaves were wash and dried & kept at -20 degrees Celsius before being thoroughly powdered in a mill and pestle. Weighing approximately at around 15 grammes, the powdered plant material was then placed into a Soxhlet unit. Ethanol and chloroform separately used as solvent was gently added to the Soxhlet apparatus's round-bottom flask as the extraction solvent. It took 8 hours to complete the extraction process, which was stopped when the solvent in the Soxhlet equipment lost its colour. After that the sample is transferred into the rotatory vacuum evaporator with 40 degrees Celsius temperature until the extract were viscous and stored these into refrigerator till further use.

Preliminary phytochemical analysis

Preliminary phytochemical analysis were performed on *V. vinifera* L. [9, 10]. Different tests were formed to find the presence of secondary metabolite components. These are as follows:

Flavonoids: Take a fraction of the leaf extract EE & CE (2-3ml) and some drops of sodium hydroxide solution put into a test tube. Formation of enormous yellow colour which being colourless on addition of few drops of dilute HCl showing the presence of flavonoids [11].

Steroids: Take 1ml of test sample and dissolved in 10 ml of chloroform and equal volume of concentrated sulphuric acid was added by sides of the test tube. The upper layer turns red and sulphuric acid layer showed yellow with green fluorescence. This indicated the presence of steroids.

Terpenoids: Take 2ml of test sample, mixed it with 2ml of acetic anhydride and concentrated H₂SO₄. The formations of blue green ring indicate the presence of terpenoids.

Tannins: Take 2ml of test sample, mixed it with drops of 1% lead acetate, and the yellowish precipitate indicated the presence of tannins.

Saponins: Take 5ml of test sample, mixed it with 20ml of distilled water and then agitated in a graduated cylinder for 15 minutes. Formation of foam indicates the presence of Saponins.

Anthocyanins: Take 2ml of test sample, mixed it with 2ml of 2N HCl and ammonia. The appearance of pink-red which turns to blue-violet indicates the presence of anthocyanins.

Glycosides: Take 2ml glacial acetic acid, one drop of 5% FeCl₃ and conc. H₂SO₄ were mixed into 5ml extract, the appearance of brown ring indicates the presence of glycosides.

Emodins: Two ml of NH₄OH and 3 ml of Benzene were added to the extract. Appearance of red colour indicates the presence of emodins.

Alkaloids: To the acidic solution, Mayer's reagent (Potassium mercuric iodide solution) was added. Cream coloured precipitate indicates the presence of alkaloids.

Phenol: Half ml of FeCl₃ solution was added into 2 ml of test solution, formation of an intense color indicates the presence of phenols [12].

Anthocyanins (Sodium hydroxide test): Take 2ml of extract mix it with 1 ml of 2N NaOH and heat for 5 minutes at 100oC. Formation of bluish green colour indicates the presence of anthocyanin.

Anthraquinones (Borntranger's test): To the extract 2-3 drops of dilute HCl were added. Then the mixture was boiled for 2 minutes (hydrolysis of glycosides). Then the mixture was filtered and cooled. The filtrate was extracted with chloroform. The chloroform layer was separated and shaken vigorously with 10% ammonium hydroxide. Immediate appearance of rose pink or cherry red colour in aqueous layer confirms the presence of anthraquinones [13].

2. RESULTS AND DISCUSSION

2.1. Organoleptic characters

The organoleptic characters such as color, odor, taste, texture and shape for *V. vinifera* were observed by traditional and standard methods. The results were depicted in **Table 1**.

Physical parameters were showing analysis of *V. vinifera* leaf in **Table 2**. The above results showed that the presence of alkaloids, flavonoids, carbohydrates, saponins, tannins triterpenoids, steroids, Resveratrol, Anthocyanins, Coumarins were present in grape leaf ethanolic extract while sterols was present in chloroform extract only. Emad [14] reported, few phytoconstituents like flavonoids, steroids, tannins present in significant amount in grape leaf.

Table 1- Organoleptic features of *Vitisvinifera*(Flame red)

Sr. no.	Morphological Features	Inference
1	Colour	Dark, neutral, toad green
2	Odor	Musty aroma
3	Taste	Mild tangy
4	Texture	Circular ovate in outline, 5-25 cm broad, with long petioles.
5	Shape	Cordate, or heart-shaped, with multiple lobes

Table 2 - Physical proximate analysis of *V. vinifera* leaf

Sr. no.	Parameters	<i>V. vinifera</i> leaf (Value)
1.	Ash value	1.58 ±0.11
2.	Loss on drying	1.40±0.45
3.	Moisture content	10.75 ± 0.19
4	Carbohydrates	25.37 ± 2.7
5	Fibre	25.20 ± 2. 24
6	Protein	10.00 ± 0.1
7	Total lipids	08.40 ± 0.2

2.2. Preliminary photochemical analysis

Preliminary phytochemical tests were accomplished on both extracts (EE, CE) of *V. vinifera* leaf. The results confirm the presence flavonoids, terpenoids, alkaloids, carbohydrate,

Table 3 - Preliminary Phytochemical screening tests for constituents of grape leaves in Ethanol extract and Chloroform extract.

Sr.no.	Constituents	Ethanol Extract	Chloroform Extract
1	Alkaloids	+	-
2	Resveratrol	+++	+
3	Anthocyanins	+++	+
4	Coumarins	++	-
5	Flavonoids	+++	+
6	Glycosides	++	+
7	Anthraquinones	++	+
8	Phenols	++	+
9	Saponins	+	-
10	Steroids	+	+
11	Tannins	+++	+
12	Terpenoids	++	+
13	Sterols	-	+

(+++), (++) , (+) and (-) refer to high, moderate, low and absent amount respectively.

3. CONCLUSION

Among the various solvents used in this study, the ethanol extract (EE) of flame red grape leaf has been found to possess good antioxidant activity, total phenolic compounds, Anthocyanins and flavonoids content. The test sample of extract are also abundant in various phytochemical components and phenolic compounds which attract many food supplement formulation and prevent from oxidative stress. So that the *Vitisvinifera* leaf (Flame red grape) can also represent an amazing source of healthful compounds, could be beneficial in the prevention of ailments.

4. CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

