

Pharmacognostic evaluations of *Vitis vinifera* L.

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Abstract

Grape Fruits contain a broad spectrum of nutrients, and many of which have antioxidant properties. Phenolic substances, vitamin A, vitamin C and minerals that are present in fruits displayed high antioxidant activity. These properties have been associated with the decreased risk of certain degenerative diseases. Grapes are known as the “Queen of fruits” contains a wide array of phenolic substances, has been reported to possess substantial anti-inflammatory properties. Resveratrol (trans-3, 4', 5-trihydroxystilbene), a natural polyphenolic, non-flavonoid antioxidant, is a phytoalexin found in grapes have been documented for various health benefits, such as anti-inflammatory, antioxidant, antitumour and immunomodulatory activities. In the present study pharmacognostic standardization of *Vitis vinifera* is done.

Keywords: *Vitis vinifera*, grapes, TLC, physicochemical, anatomical, microbial limits

Introduction

Grapes come to us out of the abyss of antiquity. Their ancient origin and widespread popularity is established by the archaeological finds of fossilized leaves, stem pieces and seeds discovered from Miocene and Tertiary deposits of continental Europe, England, Iceland and North America. The seeds found in the remains of the Swiss lake-dwellings of the Bronze Age and entombed with the mummies in Egypt closely resemble the seeds of, perhaps, the most extensively cultivated species of today. Details of grape and wine production are mentioned in the records of Egyptian hieroglyphics, dating 2400 B.C. In Greece, grape-wine was common consumable liquor in the time of Homer (c. 700 B.C.). In the Bible, a reference has been made to the vineyard planted by Noah. In India, grapes have been mentioned along with many other plants by Charaka and Sushruta in their early medical treatises in the first century A.D. Grapes, both fresh and dried, have varied uses in Ayurvedic and Unani system of medicine. Fresh grapes are considered laxative, stomachic, diuretic, demulcent and cooling; raisins are also demulcent, laxative, cooling and expectorant. Grapes are used in the preparation of various medicinal preparations. The juice of the unripe berries is used as an astringent in throat affections. The leaves are astringent and are sometimes used in diarrhoea. The sap of the young branches is reported to be used for skin diseases and ophthalmia. In India, grapes are grown on a commercial scale in two comparatively different climatic areas, viz. in the States of Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu, etc A large, deciduous climber, climbing by means of intermittent, leaf-opposed, long, often bifid tendrils, cultivated in many parts of India. Stems up to 35 m. long, but in cultivation usually much reduced by pruning; leaves orbicular-cordate, 5-15 cm., more or less deeply, palmately-3-, 5- or 7-lobed, irregularly toothed, glabrescent above, often grey-tomentose beneath, thin, membranous; flowers green, in large, leaf-opposed, rather dense, panicles (of cymes); the peduncle sometimes bears an unbranched tendril below the flowers; berries very variable in size, ovoid to globose, greenish,

purplish or bluish black, edible, generally sweet; seeds 2, pearshaped, with a discoidal tubercle at the back ^[1].

A detailed pharmacognostic analysis was carried out to further Authenticate and classify the plant, setting pharmacopoeial standards for the plant.

Materials and Methods

Voucher specimen: The plant materials were collected and Identity was confirmed with the voucher specimen using ^[2].

Physico-chemical values: such as the percentage of total ash, acid-insoluble ash, and water and alcohol-soluble extractives were calculated as per the Ayurvedic Pharmacopoeia of India, ^[3].

TLC fingerprinting: profile carried as per ^[4].

For the Anatomical studies, transverse sections (TS) ^[5]. A standard guideline for total microbial Limit count was provided by WHO ^[6].

Results and Discussions

Pharmacognosy

Table 1: Pharmacognosy features

Physicochemical Constants			Organoleptic Characters	
Parametrs	Values	Limit	Parametrs	Values
TA	2.43	NMT 3%	Taste	Sweet
AIA	0.26	NMT 0.2%	Color	Brownish
ASE	22.8%	NLT 25%	Odour	Characteristic
WSE	74.5%	NLT 70%	Texture	Smooth

TA-Total Ash; AIA-Acid Insoluble Ash; ASE-Alcohol Soluble Extractive; WSE - Water Soluble Extractive; NMT-not more than; NLT-not less than; Limit as prescribed by Ayurvedic Pharmacopoeia of India.

Physico-chemical parameters assist to find genuine plant material and Inspect for adulteration such as salts, silica or

improper handling of raw materials. Organoleptic properties are distinct (table 1)

Table 2: TLC Profile

TLC Finger Printing Profile						
Under Visible Light						
Rf Values	-	-	-	-	-	-
Sprayed with 10% H ₂ SO ₄						
Rf Values	-	-	-	-	-	-
Sprayed with Anisaldehyde						
Rf Values	0.1	0.25	-	-	-	-
Under Short UV (254 nm)						
Rf Values	0.07	-	-	-	-	-
Under Long UV (366 nm)						
Rf Values	-	-	-	-	-	-

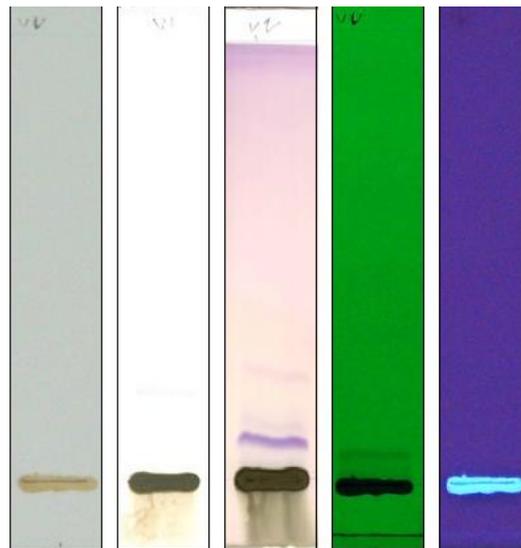


Fig 1: TLC Chromatograms

Vitis vinifera showed no band under visible light, no bands when sprayed with 10% H₂SO₄ and 2 bands when sprayed with Anisaldehyde. Further, 1, 0 bands were observed under short and long UV light respectively. The results are

qualitative TLC finger print profile of plant under study (table 2, fig 1)

Anatomical Characters

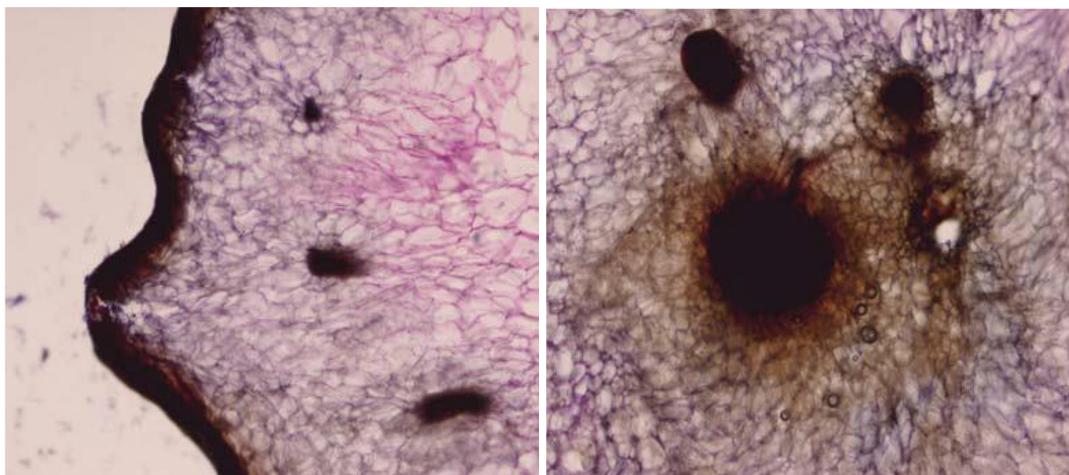


Fig 2: Anatomical Characters of *Vitis vinifera*

Single layer epidermal cells with brown contents mesocarp

pulpy, made up of thin-walled irregular cells contains

prismatic crystals of calcium oxalate, Some fibro vascular bundles also present in this region, Metaxylem towards the epidermal region and protoxylem towards the center. Phloem cells surrounded vascular bundles (fig 2).

Microbial Limit Test

Total Aerobic Bacterial Count (TABC): 3.0×10^3

Total Yeast and Mould Count (TYMC): 0.4×10^3

(Microbial contamination limit for raw herbs - TABC: $<10^7$, TYMC: $<10^5$)

All criteria were within the limits specified by the WHO Guidelines and Indian Herbal Pharmacopeia.

Conclusion

The macroscopic guidelines and physico-chemical parameters are crucial requirements for authentication and identification of medicinal herbs. Physicochemical values will help to validate the sample of the plant. The TLC profile will behave as a fingerprint profile for the plant. Organoleptic, anatomical assessments are distinct to the plant. The microbial limit of the raw material was in accordance with the standards laid down.

References

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