COMPARATIVE ANALYSIS OF BIOACTIVE COMPOUNDS IN DRY BLACK AND GREEN GRAPES VITIS VINIFERA (L.) BY GC-MS

Abstract

The study indented to examine the therapeutic potentials of V. vinifera through GC/MS characterization. The ethanolic extracts of Black and Green dry grapes were undergone qualitative analysis. The consequences of qualitative phytochemical analysis of black and green grapes extracts confirmed the occurrence of alkaloids, flavonoids, glycosides, saponins, tannins, carbohydrates, phytosterol, and triterpenoids, whereas flavonoids were absent in green grapes. The black dry grape possessed Antioxidant, hypocholesterolemic, Antiandrogenic, hemolytic, Alpha reductase inhibitor, Anti-inflammatory, Antimicrobial, and anti-cancer compounds. The black grapes have a special steroid compound namely Pregn-5-en-20-one, 3,16-bis[(trimethylsilyl)oxy]-, (3beta,16alpha) possessed Uterine endothelium activity. Similarly, the green dry grape showed fifteen bioactive compounds that possessed Anti-inflammatory, Antimicrobial, anti-cancer, Hepatoprotective and Diuretic, Anti leukemia activity, Anti cataract hypolipidemic properties, and anti-larvicidal activity. In addition, male sex hormone compounds, namely Testosterone and Androst-4-en-3-one, 17-hydroxy-, (17.beta.)-. The study shows that both green and black grapes possessed different bioactive especially omega fatty acids found in green grapes. These findings are essential and light up the position of dry grapes as a future supplement that could prevent detrimental outcomes. in this take look at, it turned

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into counseled that the consumption of purposeful food is beneficial in the prevention of numerous illnesses.

Keywords: V. vinifera, GCMS, Bioactive compounds, Antioxidant, Anticancer

I. INTRODUCTION

Grapes, (*Vitis Vinifera)* is an character from the Vitaceae has rich polyphenolic mixes, such as catechin, epicatechin, gallic acid, procyanidins and anthocyanin also has excessive vitamin E, linoleic acid, flavonoids and phenolic procyanidins which had more medicinal properties like hemorrhages, iron deficiency, skin problems, syphilis, bronchial asthma, jaundice, bronchitis, antidiabetic cardioprotective, hepatoprotective, anti-carcinogenic, anti-microbial, Vaso-relaxation, protection towards membrane oxidation, inhibit platelet aggregation, anti-viral activity, and anti cancers (Mohanad Jawad Kadhim et al.,2017; Chedea et al., 2010). Therefore, to investigated bioactive compounds evaluation of Dry black and green grapes *Vitis Vinifera* (L.).

II. MATERIALS AND METHODS

1. **Collection of Sample:** The dry black and green grapes (*Vitis Vinifera*) were purchased from PPDS at Thanjavur. The samples had been color dried for 15 days and ground into quality powder for further studies.

2. **Preparation of Extract:** The aqueous extract was prepared using 0 g of grape powder, boiled in 200mL of distilled water and then heated at 60-70°C to get a concentrated solution. The filtrate was used for qualitative analysis for the identification of diverse plant constituents through the Harborne method (1973) and GCMS study and the spectrum of the compared with NIST library.

III. RESULT AND DISCUSSION

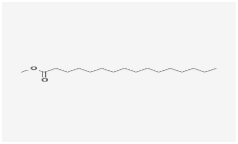
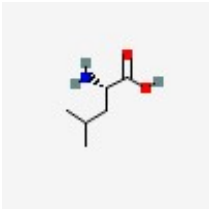
1. **Qualitative Analysis:** The end result of qualitative phytochemical analysis of the chosen fruit extracts exposed the presence of alkaloids, flavonoids, glycosides, carbohydrates, saponins, tannins, phytosterol, and triterpenoids in black grapes; whereas flavonoids had been absent in green grapes.

2. **GC-MS Analysis of Black and Green Grapes (*Vitis Vinifera)*:** Diverse bioactive compounds, inside the dry black and green Viti's vinifera extracts, had been identified thru GC-MS analysis. The identity of some of the important phytoconstituents become primarily based on the peak place, retention time, and molecular weight and their pharmacological activity have been primary pharmaceutically vital compounds from the GC fractions of decided on samples. various compounds found in aqueous extracts of grape peel and seed have been indexed with their pharmacological activity (table 2 &3) to represent the chromatogram of aqueous extracts of decided on *Vitis Vinifera* .

   The Diterpenoids compound particularly 2-Pentadecanone, 6,10,14-trimethyl changed into found in black grapes. in addition to that eleven-Octadecenoic acid, methyl ester, 9,12-Octadecadienoic acid (Z,Z)-, methyl ester, Hexadecanoic acid, methyl ester and Tridecanoic acid, 12-methyl-, methyl ester changed into the present which confirmed Antioxidant, hypocholesterolemic, Antiandrogenic, hemolytic, Alpha reductase inhibitor, Anti inflammatory, Antimicrobial and Anticancer hobby. The inexperienced grapes have a unique steroid compound specifically Pregn-5-en-20-one, 3,16- bis[(trimethylsilyl)oxy]-, (3beta,16alpha) possessed Uterine endothelium activity (Table 1).

Further, the green dry grape confirmed fifteen bioactive compounds specifically Gamma.-Sitosterol, nine,19-Cyclolanost-24-en-3-ol, Lanosterol, Lup-20(29)-en-3-one, Ferrocene, [(hexadecyloxy)carbonyl, 9,19-Cycloergost-24(28)-en-3-ol and Friedelan-3-one have antiinflammatory, Anti microbial, Anti most cancers, Hepato protecting and Diuretic, Anti leukemia interest, Anti cataract pastime, hypolipidemic property and anti larvicidal activity. in addition , male intercourse hormone compounds were additionally gift, namely Testosterone and Androst-4-en-3-one, 17-hydroxy-, (17.beta.)-. The a look suggests that both inexperienced and black grapes possessed one-of-a-kind bioactive especially omega fatty acids had been located in green grapes, male intercourse stimulating hormones had been present in inexperienced grapes, in which because the black grape possessed uterine enhance compound (Table 2).

Table 1: Compounds identified in Black Grapes

Name of the compound	Structure	Biological Activity
Tridecanoic acid, 12-methyl-, methyl ester		Antifungal and antibacterial activities.
Phenol, 3-isopropoxy-5-methyl-		No activity reported
2-Pentadecanone, 6,10,14-trimethyl		Antimicrobial
Hexadecanoic acid, methyl ester		Antioxidant, hypocholesterolemic, Antiandrogenic, hemolytic, Alpha reductase inhibitor
9,12-Octadecadienoic acid (Z, Z)-, methyl ester		Anticancer
11-Octadecenoic acid, methyl ester		Hypercholesterolemic, Dermatitigenic, Anti-inflammatory
l-Leucine, N-(trifluoroacetyl)-, tetradecyl ester		preventing muscle loss

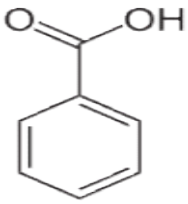
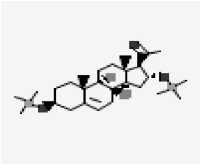
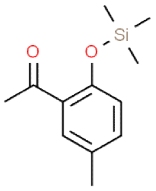
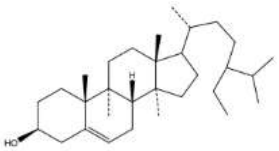
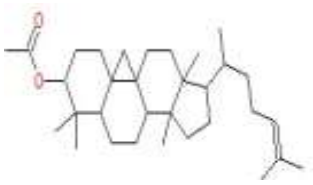
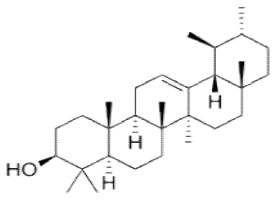
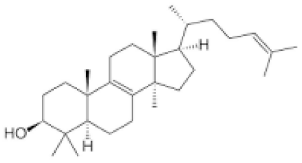
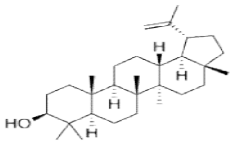
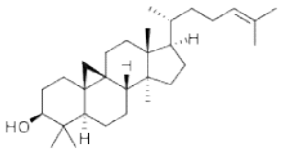
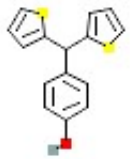
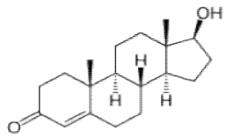
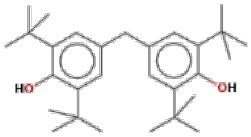
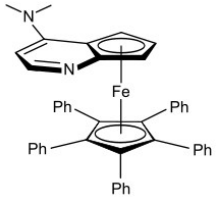
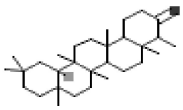
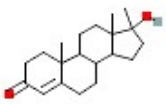
Benzoic acid, 2-(1-isopropyl)-		Antimicrobial activity
Pregn-5-en-20-one, 3,16-bis[(trimethylsilyl)oxy]-, (3beta,16alpha)		Uterine endothelium *activity*
5-Methyl-2-trimethylsilyloxy-acetophenone		Antioxidant and antimicrobial

Table 2: Compounds Identified in Green Grapes

Name of the Compound	Structure	Biological Activity
Gamma.-Sitosterol		hypolipidemic property
9,19-Cyclolanost-24-en-3-ol		Anti-mosquito and larvicidal
alpha.-Amyrin		Antimicrobial and anti-inflammatory activity
Lanosterol		prevent cataracts

Lup-20(29)-en-3-one		Anti leukemia activity
9,19-Cyclolanost-23-ene-3,25-diol,		Antibacterial activity
Phenol, 4-(2-thienylmethyl)-		No activity reported
Testosterone		Sex hormone
Phenol, 4,4'-methylenebis[2,6-bis 1,1-dimethyl ethyl)-		No activity reported
Ferrocene, [(hexadecyloxy)carbonyl		Anticancer
9,19-Cycloergost-24(28)-en-3-ol,		Anti-inflammatory, Antimicrobial, Anti-cancer, Hepatoprotective, and Diuretic
Friedelan-3-one		Antimicrobial
Androst-4-en-3-one, 17-hydroxy-, (17.beta.)-		Regulation of spermatogenesis

IV. CONCLUSION

The results of the qualitative phytochemical evaluation of black grape extract confirmed the occurrence of alkaloids, flavonoids, glycosides, saponins, tannins, carbohydrates, phytosterol and triterpenoids, wherein as flavonoids become absent in green grapes. The black grapes having a unique steroid compound possessed Uterine endothelium action. Further the green dry grape showed male sex hormone compounds, specifically Testosterone and Androst-four-en-three-one, 17-hydroxy-, (17.beta.)-. The actual mechanism of identified compounds to be clarified in diverse diseases using community pharmacology to increase the Nutraceutics for a sustainable healthy life.

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