



Phytochemical investigation of Fruits and Seeds of Grape (*Vitis vinifera* L.) grown in Iraq

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ABSTRACT

Objective: Grape plant (*Vitis vinifera* L.) is one of the most food and economically important plant, belong to vitaceae family. Fruits and seeds have different active compounds such as flavonoids and phenolic compounds, there are no studies in Iraq about fruits and a seed of this plant, therefore this study was conducted to investigation the active compounds in fruits and seeds. Material and methods: The fruits were collected from sulaymanyah region of north of Iraq, after cleaned and dried under room temperature. Fruits and seeds were extracted by ethanol 70% by used soxhlet apparatus. Results and Discussion: The results of this study were referred to the grape seeds were contained Saponin, tannins, alkaloids, flavonoids and terpenoids, while the fruits of this plant were contained coumarins and flavonoids. Conclusion. This plant have pharmacological activity beside nutritional importance because have seeds and fruits different active compounds.

Keywords: Grape, *Vitis vinifera* L., phytochemical.

INTRODUCTION

Grape plant (*Vitis vinifera* L.) is one of the most food and economically important plant; belong to vitaceae family¹. The fruits of this plant were used in production grape juice, wine and other food products^{2,3}. The plant is distributed and cultivate in all temperature regions where sufficient rain, warm and dry summers as well as relatively mild winters are normal climatic patterns^{4,5}. The qualities of grape products are characterized by their metabolic composition. Flavonoids represent a wide spread and common grape of natural polyphenol produced by the phenyl propanoid pathway^{6,7}. Grapes flavonoids are primary located in the epidermal layer of the berry skin and the seeds⁸. Grape seeds are rich in fiber 40%, lipid 16%, protein 11% and complex phenols 7%^{9,10}. Also grape seeds are rich in monomeric phenolic compounds like catechin and epicatechin -3-o-gallate^{11,12}. Catechin is usually the most important individual flavonol both grape skin and seeds. The consumption of grape derived dietary flavonoids in the form of grape extracts and grape seeds powder has been shown to effectively suppress oxidative stress and prevent oxidative damage¹³⁻¹⁵. Therefore the aim of this study was conducted to detection of the main active compounds in fruits and seeds of grape plant grown in sulaymanyah as a north region of Iraq.



Figure: a- Grape fruits b- Grape seeds

MATERIALS AND METHODS

In this research the grape fruits were collected from sulaymanyahmarket, the fruits were cleaned and separated then dried under room temperature. The 50 g of dried seeds of grape plant were placed into thimble the soxhlet extraction process using ethanol 70% as extraction solvent, 350 ml of solvent is poured into the round bottom extraction flask and placed on the heating mantle. After this, the thimble containing the sample was placed into the extraction chamber, lastly the condenser was placed on the top of the extraction flask and all these parts were fixed vertically. The extraction was carried out for 4 hr. after the extraction process, the weight of round bottom extraction flask containing solvent and extracted crude were weighted. The sample was calculated as percentage of extraction.

Phytochemical screening

Saponins

Saponin compounds were detected by using the 2.5 ml of the extract was added to 10 ml of sterile distilled water in the test tube, then Stoppard and shaken vigorously about 30 second, then allowed to stand half an hour.

Tannins

Tow a portion of the extract diluted with 3-4 drops of 10% ferric chloride solution is added. A blue color is referring to Gallic tannins and green color refers to catecholic tannins.

Alkaloids

Extracts were dissolved individually in dilute hydrochloric acid and filtered.

Wagners test: Filtrates were treated with Wagners reagent (iodine in potassium iodide) formation of brown/reddish precipitate indicates the presence of alkaloids.

Dragendroffs test: Filtrates were treated with Dragendroffs reagent (solution of potassium bismuth iodine) formation of red precipitate indicates the presence of alkaloids.

Terpenoids

4ml of extract was treated with 0.5ml of acetic anhydride and 0.5ml of chloroform. The concentrated solution of sulphuric acid was added slowly and red violate color refer for terpenoid.

RESULTS AND DISCUSSION

Phytochemical analysis of grape seeds and fruits extract

The results of this study were referred to the presence of phytochemical such as tannins, Saponin, alkaloid, terpenoid and flavonoids compounds were represented in seeds extract, while coumarin and flavonoid were represented in fruit extract (Table 1). This results were occurred the close correlation between anti-oxidant of dried seeds of grape plant and flavonoids. Also the conclusions of this study insure the consumption of flavonoid rich grape products may have a significant beneficial effect on brain and central nervous system. Further studies are needed to assess the active ingredients of *V. vinifera* in fruits and seeds compounds especially flavonoids. This study must involve the establishment of *in-vivo* cancer models and their treatment by this plant in Iraq crude extract or by their purified active compounds.

Table 1: Qualitative Phytochemical Analysis of the Extracts of seeds and fruits of grape plants.

Phytochemical test	Grape seeds	Grape fruits
Saponin	+	–
Tannins	++	–
Coumarins	–	++
Alkaloids	+	–
Flavonoids	+	+
Terpenoids	+	–

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