

# Phytochemical Analysis of Ethanolic Extract of Viscum Album Leaf in Iraq

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## Abstract

The study was carried out in the western desert area of Al-Anbar Governorate (Western of Iraq) to examine the qualitative and quantitative composition of the analysis of phytochemicals analysis and nutritional value of essential oil from the leaves of the Viscum album. The quantitative examination showed that tannins are  $2.05 \pm 0.09$  mg/100 g, alkaloid  $1.02 \pm 0.37$  mg/100 g, phenol  $3.25 \pm 0.75$  mg/100 g, flavonoid  $2.68 \pm 0.19$  mg/100 mg, saponin  $2.38 \pm 0.19$  mg/100. Whereas the Terpenoid was not present on the leaf.

**Keywords:** Viscum album Leaf extract, phytochemicals analysis and a soxhlet apparatus.

## 1. Introduction

Viscum album herb seems to be a hemi-parasitic plant which grows on trees like cinnamon, mango, guava, cola nut trees and many more is medically recognized for its nutrient quality such as starch, sugar, fat, carbon, energy density, and ash (Hk et al. 2018). This nutritional intake provides an important difference to animal and human safety. Viscum album leaves were known to be used as a therapeutic agent or used as a diuretic product for the treatment of some diseases, including asthma, schizophrenia, miscarriage or arthritis (Shah, Rehman, and Iqbal 2017). The purpose of this analysis was to classify the phytochemical components.

Clinically, Augustin et al. (2005) found that long-term administration of fermented mistletoe extracts appreciably reduced the modified tumor-related chance ratio. Considerable research on V. album have printed its pharmacological homes and mounted chemical components that are nicely identified for their antioxidant houses and hepatoprotective impact, specifically in leaves and twigs (Gray and Flatt 1999; Cebovic et al. 2003). Album leaves and twigs are a very wealthy vary of phytochemicals such as lectins, nitrogen antioxidants, phenolic compounds, sulfur compounds, monolignol glucosides, terpenes and different biologically lively compounds. (Deliorman et al. 2001; Yoon et al. 2001; Schumacher and Valentiner 2003).

## 2. Materials and methods

### Collection and preparation

Viscum album sample was taken from the western desert region of the governorate of Al-Anbar

(Western of Iraq). The plant content was classified by the Ministry of Agriculture State Plank for Seed Testing and Certification (S. B. S. T. C.). Over two weeks the leaves were dry air under sun. Following drying, then samples were smashed using pestle and mortar to produce powder. The sample was kept in container in powder form before testing were required.

### Extraction and Phytochemical Analysis

Weighed 15 g of the pattern in a soxhlet equipment and introduced to a round backside flask maintaining 250 ml of methanol and a pinch of anti-bumping granules, affixed to a retort stand positioned to a strength supply heating mantle. The cause of inserting the anti-bumping powders is to assist steer the methanol vapour to stop splitting or fracturing the methanol-containing round backside flask due to pressure. The soxhlet extractor is associated to a condenser with an inlet which permits water to drift into the system and outlet, permitting water to float out of the device. The inlet and outlet had been connected with rubber tubing to a water supply. The vapour that pours into the condenser helps refrigerate the tools and maintains the fuel from coming into the machine when the methanol is hot. Owing to the cooling have an effect on of the inlet and outlet in the condenser, the vapour dropped lower back into the round backside flask by using the soxhlet extractor's reflux handle, which used to be crammed with glass fabric. The extraction was once carried out when the extract which exceeded into the spherical backside flask by way of the soxhlet extractor's reflux arm was once clear. The methanol used to be removed, leaving the plant extract in the backside round tank. The amassed pattern used to be used to consider the phytochemical content material for in addition learn about (Parekh, Jadeja,

and Chanda 2005).

### Qualitative Phytochemicals Analysis

As previously, mentioned, crude extract was carried for qualitative analysis. Determining the presence of secondary metabolites. The specifics of the phytochemical screening procedures are as defined by Ushie and Adamu (Shah, Rehman, and Iqbal 2017).

#### Alkaloids Test

A test tube contain 1ml of the ethanol extract was measured, 2% of HCl (5.0ml) was handled by adding (5 drops) of Wagner's reagent and shake. Added a reddish-brown color and put for 10mins on a bath of steam. With the aid of whitman filter paper it was filtered. 1ml suggesting presence of alkaloids was detected in plant.

#### Saponins Test

Ethanolic extract (1 ml) was heated in the water bath with 5ml of purified water in a test tube for 5minutes. Although still hot it had been decanted. The filtrate was used during the test below.

#### Frothing Test

1ml of the filtrate has been mixed with 4ml of purified water and vigorously shook for healthy froth on stand. Within two minutes the steady froth was observed suggesting the existence of saponins.

#### Flavonoids Test

Ethanolic sample extract(1ml) was weighed in a test tube, 1ml of 10 per cent lead acetate was applied and shaking for 30seconds and held in place. Yellow precipitate development was considered to be a good outcome for flavonoid.

#### Test for Tannins

In a test tube, 1ml of ethanolic sample extract was weighed and 1ml of bromine water (5%) was added & shaken. Formatting a greenish to red precipitate has been reported as indecator for the presence of tannin.

#### Terpenoid Test

A test tube was used to measure 5ml of the ethanol sample extract, add 2ml of chloroform and carefully apply 2ml of concentrates of H<sub>2</sub>S<sub>2</sub>O<sub>4</sub> to the test tube in order to form a film. No reddish-brown coloration was produced at the interface, suggesting a Terpenoid absence.

#### Phenol Test

Each 1ml of ethanol sample extract was taken in a tube, 10 % of 1ml of ferric chloride of was applied and shook. A phenolic was created to be exhibiting a greenish brown coloration.

### Quantitative Phytochemical Analysis

Quantitative dedication of the detected secondary metabolites was once carried out to understand their percentages in the *S. macrophylla* leaves by means of the techniques described with the aid of (Kusi,

Shrestha, and Malla n.d.) with modification.

#### 2.12. Quantitative Alkaloids Analysis

The preparation of the leaves was dissolved in 96 percent ethanol. Tetraoxosulphate (vi) tetra (1:1) 1 ml (60 per cent) tetraoxosulphate (vi) acid (1:1) was applied to 5 ml of filtrate and permitted to stand for 5 minutes. The formaldehyde was then applied 5ml of 0.5% and permitted to stay for 3 hours. At the absorption of 565 nm the test was taken.

$$\text{Calculation for \% Alkaloid} = \frac{\text{Absorbance sample} \times \text{standard Concentration} \times 100\%}{\text{Absorbance STandard}}$$

#### Quantitative Flavonoids Analysis

The acid hydrolysis of the spectrophotometric system was used to test flavonoids on the leaves sample. The sample was combined with 5ml of dilute hydrochloric acid and cooked for 30 minutes with 0.5 g dried seeds, respectively. Cooling and drying the boiling concentrate. In addition to 5ml and 5 ml 1% ammonium, 1ml of filtrate was applied. It was then tested for absorption from 420 nm to 520 nm.

$$\text{Calculation for \% Phenols} = \frac{\text{Absorbance sample} \times \text{standard Concentration} \times 100\%}{\text{Standard}}$$

#### Quantitative Analysis of Tannins

Special spectrophotometric approach is used to calculate the amount of tannins. Weigh 0.5g of leaves to a plastic bottle; apply and mix for one-hour 50ml of purified water. The sample is rendered to label and poured into a 50 ml container. 5ml is then blended into the tube with 2ml 0.1 M HCl and 0.008 M K<sub>4</sub>Fe (CN)<sub>6</sub>.3H<sub>2</sub>O. Reference 5ML with a diluted sample. The absorbance is measured by a 395 nm wavelength spectrophotometer in 10 minutes.

$$\text{Calculation for \% Phenols} = \frac{\text{Absorbance sample} \times \text{standard Concentration} \times 100\%}{\text{Absorbance of standard}}$$

#### Quantitative Analysis of Saponins

5.0 g of dry samples is precisely determined by analytical top loading balance in a thimble. For a 3-hour extraction method, a 100 ml methanol was employed to acquire the lipid and pigment content of the sample, attached to the condenser and the circular bottom bottom flask of the educated weight. If the methanol had been removed, the flask and bottle weighed away from the Saponins following evaporation. The difference between the total weight and the original weight of the flask is the weight of the saponins. Calculation for % saponins =  $\frac{s-t \times 100\%}{w}$

#### Quantitative Analysis of Terpenoid

A test tube with a stopper weighed 1ml of ethanol sample extract and 10 minutes cooled 3ml of acetic anhydride softly applied to the test tube. After two drops of H<sub>2</sub>S<sub>2</sub>O<sub>4</sub> concentrate the color turned into gray. The 0.1 mg tablets were weighted with regular terpenes and removed in separating funnels with 5ml of methanol. A typical extract of 1 ml was measured in a test tube and treated as the sample shown above

and the color may grow in wavelength of 520 nm before measuring Uv-Vi's spectrophotometer.

Calculation for % Terpenoid =  $\frac{Abs\ sample \times std\ con\ c \times 100\%}{Abs\ std}$

### 3. Result and discussion

#### 4. Result

Phytochemical	Leaves
Tannins	2+
Alkaloids	1+
Phenols	3+
Flavonoids	2+
Terpenoid	ND
Saponins	2+

Note: ND-not detected

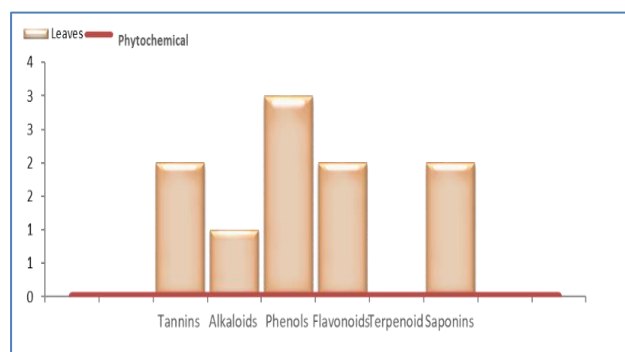


Figure 1: Quantitative Analysis of Tannins, Alkaloids, Phenols, Flavonoids, Terpenoid and Saponins.

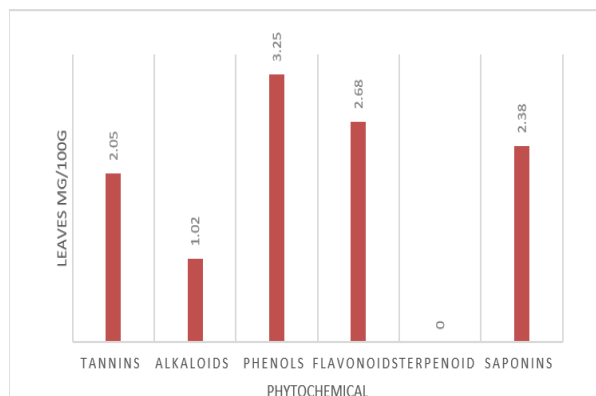


Figure 2: Quantitative Analysis of leaves (MG/100G) included Tannins, Alkaloids, Phenols, Flavonoids, Terpenoid and Saponins

Note: Result is mean of triplicate of samples

#### 5. Discussion

Table (1), Figure (1) provides the results of the quality phytochemical analysis of the *Viscum album* leaves. The findings indicate that in all samples besides terpenoids, all the phytochemicals examined were found. Table (2) Figure (2) shows the result of quantitative analysis in *Viscum album* leaves. The leaves of *Viscum album* contain phenols ( $3.25 \pm 0.75$  mg/100 g), flavonoids ( $2.68 \pm 0.19$  mg/100 g), saponins ( $2.38 \pm 0.19$  mg/100 g), and tannins ( $2.05 \pm 0.09$  mg/100 g). *Viscum album* leaves had low tannin, flavonoid and saponin concentrations (Kang 2016). The *Viscum album* leaf is regarded as a therapeutic component of the absorption of the human body. Extracts from stem bark with flavonoids

in the hexane, chloroform and ethyl acetate. The underlying ability of flavonoids to modify the response of the body to viruses and carcinogenic agents' allergens. The stomach barks of *Viscum album* leaf are a very useful therapeutic herb, since saponins have been found. They demonstrate antimicrobials, antioxidants, (Mcf- et al. 2016). Saponins, as food additives and medicinal goods, are enormously widely funded., *Viscum album* leaf has a therapeutic benefit because it is rich in medical and pharmaceutical saponins which are valuable because of its potential to smoke and create frothy results for the food industry (Activity et al. 2013), (Kenar 2018). The presence of terpenoids in the *Viscum album* leaf was observed, and can therefore be used in herbal medicines (Hk et al. 2018).

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