PRELIMINARY PHYTOCHEMICAL SCREENING OF THE TOTAL AND SUCCESSIVE EXTRACTS OF *TRIUMFETTA FLAVESCENS* HOCHST GROWING IN EGYPT

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ABSTRACT

The preliminary phytochemical screening of *Triumfetta Flavescens* revealed the presence of flavonoids, alkaloids, tannins, terpenoids and sterols, carbohydrates, saponins, glycosydes, protein and amino acids, cardiac glycosides, coumarins and resins and absence of anthraquinones.

The percentage yields of the successive extracts were also determined and showed that the highest percentage was in methanol fraction (8.36%) while the lowest one was in ethyl acetate fraction (0.92%).

Keywords: Phytochemical screening, Successive extraction, *Triumfetta flavescens*.

INTRODUCTION

The value of medicinal plants in drug discovery is known to us well and the human being used them for various purposes from the beginning of the human history (Farnsworth, 2008). Traditional folk remedies from plants have always guided scientists to search for new medications in order to maintain and promote healthy life for human and animals (Hosseinzadeh, 2015).

Triumfetta flavescens belongs to the family Tiliaceae. The genus *Triumfetta* includes about 200 species which are widespread all over the world. It's characterized by densely stellate-hair. Leaves alternate reducing in size up

inflorescence and Flowers often forming interrupted panicles (Halford, 1997). It is a perennial shrub 0.5–1.2m height, much-branched from the base with pale yellow flowers on both sides to greenish yellow above and whitish below (Boulos, 2000).

Triumfetta flavescens presents in Saudi Arabia, Sudan, Ethiopia, and south Egypt in Gebel Elba region. The number of species present in Egypt is two which are *Triumfetta flavescens* and *Triumfetta rhomboidea* (Täckholm, 1956).

The antimicrobial tests showed a mild activity against *Echerichia coli* and *Enterococcus hirae* (Mevy *et al.*, 2006).

Phytochemical screening is one of the techniques to identify new sources of therapeutically and industrially important compounds like alkaloids, flavonoids, phenolics, steroids, tannins, saponins etc. present in the plant extracts. These compounds can be derived from any part of the plants like bark, leaves, flowers, seeds. Knowledge of the chemical constituents of plants is desirable because such information will be of value for the synthesis of new bioactive compound/s for treating the specific disease.

MATERIALS AND METHODS

Plant Material: Aerial parts of *Triumfetta flavescens* were collected in January 2016 from Gebel Elba region south east Egypt. The plant was dried in the shade at room temperature until it became well dried. After drying, the plant materials were ground and kept in a well closed container for further investigation.

Preparation of the extracts:

a) Total extract: *Triumfetta flavescens* aerial parts (100 gm) was extracted with 70% ethanol for 12 hours using maceration. The extract was evaporated to dryness using rotary evaporator. The weight of the residual extract was estimated.

B) Successive extracts: Using soxhlet apparatus 50 gram *Triumfetta flavescens* aerial parts powder was extracted using petroleum ether, chloroform, ethyl acetate, methanol, methanol 50 % and water.

The extracts obtained using solvents were concentrated using rotary vacuum evaporator and then dried and percentage yield was determined.

Preliminary phytochemical Screening:

Preliminary phytochemical Screening was carried out on the total extract and the successive extracts as follow:

The total and successive extracts were subjected to preliminary screening for carbohydrates and/or glycosides (Harper, 1975) and (Balbaa *et al*., 1981), tannins (Balbaa *et al*., 1981), flavonoids (Shinoda, 1928), alkaloids (Woo *et al*., 1977), sterols and/or triterpenes (Brieskorn and Klinger-Hand, 1961), saponins (Wall *et al*., 1954), anthraquinones (Balbaa, 1986), proteins and/or amino acids and polypeptides (Plimmer, 1926) and (Coutts and Snail, 1966), cardiac glycosides (Balba, 1986), resins (Balbaa, 1986), coumarins (Farnsworth, 1966).

RESULTS AND DISSCUSSION

Preliminary phytochemical screening revealed the presence of alkaloids, flavonoids, tannins, triterpenoids and sterols, carbohydrates, saponins,

glycosides, protein and amino acids, cardiac glycosides, coumarins and resins and absence of anthraquinones as shown in table (1).

Table 1: Preliminary phytochemical screening of the total extract of *Triumfetta flavescens* aerial parts

Chemical Test	Result
Alkaloid	+ve
Flavonoid	+ve
Tannin	+ve
Triterpenoids and Sterols	+ve
Carbohydrates	+ve
Saponins	+ve
Glycosides	+ve
Protein & amino acids	+ve
Anthraquinone	-ve
Cardiac glycosides	+ve
Coumarins	+ve
Resin	+ve

The yield of successive extracts has shown in table (2) and revealed that highest yield percent was methanol fraction (8.36%) and the lowest concentration was ethyl acetate (0.922%).

Table 2: The yield percentage of total extract and different fractions of *Triumfetta flavescens* aerial parts.

Sample	Yield Percentage (%)
Petroleum ether	2.026
Chloroform	1.386
Ethyl acetate	0.922
Methanol	8.36،
Methanol 50%	6.364
Water	0.973

The phytochemical evaluation of various phytoconstituents in successive extracts of the aerial parts of *Triumfetta flavescens* were evaluated. Out of these extracts methanolic extract showed maximum number of plant constituents such as flavonoids, alkaloids, phenol, tannins, steroids, sterols, coumarins, carbohydrate, glycosides, protein and amino acids and saponins. The results are presented in table (3).

Table 3: Phytochemical screening of the successive extracts of aerial parts of *Triumfetta flavescens*.

Plant Constituent	Extracts					
	Petroleum Ether Extract	**Chlorofom Extract**	**Ethyl Acetate Extract**	**Methanol Extract**	**Methanol 50% Extract**	**Aqueous Extract**
1) Alkaloids	-ve	+ve	-ve	-ve	-ve	-ve
2) Flavonoids	-ve	-ve	+ve	+ve	+ve	+ve
3) Tannins	-ve	-ve	+ve	+ve	+ve	+ve
4) Triterpenoids& Sterols	+ve	-ve	-ve	-ve	-ve	-ve
5) Carbohydrates	-ve	-ve	-ve	+ve	+ve	-ve
6) Saponins	-ve	-ve	-ve	+ve	+ve	+ve
7) Glycosides	+ve	-ve	-ve	+ve	+ve	-ve
8) Protein& amino acids	+ve	+ve	+ve	+ve	+ve	+ve
9) Anthraquinone	-ve	-ve	-ve	-ve	-ve	-ve
10) Cardiac glycosides	-ve	-ve	-ve	+ve	+ve	-ve
11) Coumarins	-ve	+ve	+ve	+ve	+ve	+ve
12) Resins	+ve	+ve	-ve	-ve	-ve	-ve

+ve→Present -ve→Abscent

CONCLUSION

The results obtained in the present study indicates aerial parts of *Triumfetta flavescens* have the potential to act as a source of useful drugs because of presence of various phytochemical components such as carbohydrate, protein, lipids, phenols, flavonoids and tannin. The results are very much encouraging but scientific validation is necessary before being put into practice.

It is recommended to do further investigations on the phytochemical constituents and biological activity of this plant because it is rich in the active materials.

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مسح فيتوكيميائي أولي للمستخلص الكلي والمستخلصات التتابعيه لنبات تكاييت جبل النامي في مصر

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المستخلص

المسح الفيتوكيميائي الاولي لنبات تكاييت جبل أوضح وجود فلافونيدات، الكالويدات، التانينات، التربينات والستيرولات، الكربوهيدرات، صابونينات، جلوكوزيدات، بروتينات وأحماض أمينيه، جلوكوزيدات قلبيه، كومارينات و راتينجات. وخلو النبات من الأنثراكينونات.

تم حساب نسبه المستخلص الكلي والمستخلصات التتابعيه ووجد أن المستخلص الأكبر هو مستخلص الميثانول (٨،٣٦%) والأقل هو مستخلص الاثيل اسيتيت (٠،٩٢ %).

كلمات دالة: مسح الفيتوكيميائي اولي، مستخلصات تتابعية، تكاييت جبل