STUDY OF THE ACTIVE CONSTITUENTS AND THE BIOLOGICAL EFFECTS OF *TRIUMFETTA FLAVESCENS HOCHST*

Submitted By

Mai Mohmmed Ahmed Abdallah Abo Attia

B. Sc. of Pharmaceutical Science, Faculty of Pharmacy, Cairo University, 2011

A Thesis Submitted in Partial Fulfillment

Of

The Requirement for the Master Degree

In

Environmental Sciences

Department of Environmental Medical Sciences

Institute of Environmental Studies and Research

Ain Shams University

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APPROVAL SHEET

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Mai Mohamed

Cairo, 2018

Abstract

The current investigation includes a phytochemical and a biological evaluation of the flowering aerial parts of *Triumfetta flavescens* Hochst. Application of various chromatographic and spectral techniques resulted in the isolation and identification of five chemical compounds of the plant.These compounds are identified as quercetin 7-*O*-rhamnoside, kaempferol 3-*O*-(*p*-coumaroylglucoside)(tiliroside), 6,4-dihydroxy-3-propen chalcone, I3,II8-biapigenin, *β* sitosterol and stigmasterol**.** Amino acids, phenolics, free and combined Sugars, fatty acids and unsaponifiable matters were determined qualitatively and quantitatively. The LD_{50} of the plant 70% ethanol extract was determined and revealed that the plant is safe at dose up to 7000 mg/kg body weight.The 70% ethanol extract of the flowering aerial parts of the plant showed significant diuretic activity as well as a good *in vitro* antimicrobial and cytotoxic effects of plant.

Key words: *Triumfetta flavescens*, phenolics, carbohydrates; lipids; protein; biological activity.

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List of Abbreviations

^{13}C-NMR	Carbon-13 nuclear magnetic resonance.
^{1}H-NMR	Proton-1nuclear magnetic resonance.
C^{o}	Celsius.
CC	Column shromatography.
DMSO	Dimethyl sulphoxide.
g	Gram.
GC	Gas chromatography.
hrs	Hours.
HPLC	High pressure liquid chromatography.
Kg	Kilogram.
LD_{50}	The dose that killed 50% of treated animals.
MIC	Minimum inhibitory concentration.
mm	Millimeter.
n	Number.
P	Probability.
PC	Paper chromatography.
R_f	Retention factor.
RR_t	Relative retention time.
R_t	Retention time.
S.E.M	Standard error median.
TLC	Thin layer chromatography.
UV	Ultra-violet.

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Abstract

INTRODUCTION

Plants have been used for medicinal purposes since prehistoric period. Medicinal plants are of great importance to the health of individuals and communities. The medicinal value of these plants lies in some chemical substances that produce a definite physiological action on the human body. The most important of these bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds **(Jasiem, 2016).**

Although, the World Health Organization states that about 80% of the world inhabitants rely on traditional plant medicines for their primary health care **(Newman *et al.*, 2000)**, natural products, derivatives and analogues represent over 50% of all drugs in clinical use and about 25% are derived from higher plants **(Balandrin *et al*., 1993).**

Therefore, checking out of the pharmacological activities and the active agents from medicinal plants reported in traditional medicine is of interest as they may act also as templates for drug drivatization.

The studied plant, *Triumfetta flavescens* Hochst. Ex A. Rich is an aromatic, medicinal shrub belonging to the family Tiliaceae.

A botanical description is given of the family Tiliaceae whose species have a variety of habits, from trees to shrubs and perennial herbaceous plants. The family is represented by 50 genera and 450

species which are well distributed throughout tropical and subtropical regions, and less extensively in temperature regions **(Short and Cowie, 2011).**

The genus *Triumfetta* includes about 200 species which are widespread all over the world. Three genera of Tiliaceae are recorded in Egypt,*Triumfetta* is one of these, which included two species, *Triumfetta flavescens* and *Triumfetta rhomboidea* (**Tâckholm, 1974)**

Triumfetta flavescens presents in Saudi Arabia, Sudan, Ethiopia, and south Egypt in Gebel Elba region **(Elsafty, 2014)**

Triumfetta flavscens H. (Tiliaceae) commonly known as Rasha (in Saudi Arabia) is widely distributed in Saudi Arabia specially in Najed region **(AL-Yahya *et al*., 1990)**.

So, in the course of searching for a natural remedy, there is no enough data about *Triumfetta flavescens* and this lack of information encouraged the authoress to carry out the present study in order to explore a new plant which can be used as natural remedy.