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A systematic review on traditional uses of bioactive phytoconstituents of *Ficus sycomorus*

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Abstract
Ficus sycomorus, belonging to the family of moraceae, is an evergreen tree found in Nigeria and different pieces of the world. Higher plants have been utilized worldwide as regular medicine for long time to fix human diseases. The plant contains different gatherings of biologically active mixtures which are responsible for biological activities. In any case, a couple of such exploration studies have been led on the Omani Ficus species. Accordingly, the aim of this current review is to assess the current biochemical and pharmacological status of the Omani *Ficus sycomorus* species.

Keywords: *Ficus sycomorus*, phytochemistry, pharmacological properties, toxicity, biochemical studies

Introduction
Medicinal plants have been utilized extensively as a hotspot for various active constituents for treating human diseases and they, too, have high contain of therapeutic value [1]. The *in vitro* antibacterial or antifungal measure is the first aim to assess the importance of these plants since the antibiotic resistance has become a worldwide concern [2]. Phytochemical investigations of some *Ficus* species uncovered that phenolic compounds as their significant parts considering the gigantic potentially of plants as hotspots for antimicrobial medications regarding antifungal specialists, a systematic investigation was embraced to screen the antifungal activity of different *Ficus* species. *Ficus sycomorus* is otherwise called fig mulberry belonging to the family morceau is a semi deciduous tree that develops up to 20-21m tall, not exceeding 46m.

A) *Ficus sycomorus* near Segeneyti Eritrea

B) *Ficus sycomorus* in farmland

C) Flora of Malawi

Synonyms

All parts of *Ficus sycomorus* plant are medicinally important. The selected plant is a thick-branched wide-spreading tree. It is called as shade plant. The importance of the plant is mentioned several times in the Holy Bible.

Few synonyms available in India are as follows

- Sanskrit: - udumbarah
- Hindi: - gular
- Marathi: - umbraS
- Malayalam: - atti malbari maram
- Gujarati: - anjira setunum jhada
- Telugu: - atti malbari cettu
- Punjabi: - ajira de butte da rukha
- Tamil: - atti malapri mara

Few synonyms available globally are as follows

1 Sycamore fig
2 Genus *Ficus*
3 Mulberry fig
4 Sycamore
5 Fig tree
6 *Ficus*

Taxonomical classification

Domain: Eukaryota Kingdom: Plantae Subkingdom: viridaeplante Phylum: Tracheophyta Subphylum: Eurphyllophyte Infraphylum: Radiatopses Class: Magnoliopsida Subclass: Dilleniidae Superorder: Urticaeae Order: Urticales Family: Moraceae Tribe: Ficeae Genus: *Ficus* Species: *Ficus sycomorus*.

General distribution

Normally, *Ficus sycomorus* originates from the Middle East west to Cape Verde Islands and to South Africa, Namibia and the Comoro Islands [3]. It can be found in the following countries; Zambia and Zimbabwe, Syrian Arab Republic, Cote d'Ivo-ire, South Africa, Uganda, Swaziland, Djibouti, Egypt, Tanzania, Nigeria, Namibia, Angola, Sudan, Benin, Botswana, Burundi, Cameroon, Congo, Democratic Republic of Congo, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Israel, Kenya, Lesotho, Madagascar, Mozambique, Rwanda, Saudi Arabia, Senegal and Somalia [4]. It is exceptionally normal in the Northern regions of Nigeria, Maiduguri, Sahel, Sudan, and Guinea savanna [5]. It fills well in regions having all around drained loamy, earth and sandy soils. They develop absolute first and the fruits are extremely delicious with significant nutritive qualities. A few species are available in Oman and they are utilized as medicine through food supplements.

Traditional use

The selected plant species is used to treat different disorders. All plant parts of *Ficus sycomorus* are pharmacologically active and used in traditional and modern medicine to treat different disorders. Previous several studies showed that the plant has significant activity and it is used for the treatment of various ailments. The selected plant species are used as folk medicine by different traditional systems for the treatment of various sicknesses related to different systems like the CNS, ANS, cardiovascular system, fertility system etc [6]. Due to its significant pharmacological potency, the plant is used to treat different infections, GIT problems, various inflammations [7-8] diabetes [9] and cancer [10]. Nigerian people use the *Ficus* platyphylla species traditionally for the treatment of epilepsy [11]. their part, the Omanis use the selected plant species to treat various aliments like coughs, diarrhoea, skin infections, stomach disorders, liver diseases, epilepsy, tuberculosis, lactation disorders, helminthiasis, infertility and sterility [12].

Extraction

The leaves and fruits samples were washed with water to remove dust and other unwanted particles. Then the leaves and fruits were separated and dried under shade at ambient temperature for one week. The dried samples were ground into coarse powder and then extracted with methanol. The methanol was evaporated from the extract by using rotary evaporator and extract was dissolved in water.

It was transferred into a separatory funnel and extracted with various polarity of solvent with increasing pattern. All the mother solvents were evaporated and the prepared extracts were used for determinatio of different biochemical, pharmacological and toxicological analyses.

Biochemical studies

In excess of 130 bioactive mixtures have been isolated from different pieces of *Ficus* species since ancient times[13].The majority of the mixtures were isolated from the aerial and root parts by the scientist. The isolated mixtures are different kinds of terpenoids, flavonoids and phenolic derivatives [14]. The tetraterpenoids four six-rings and one five-ring betulinic acid, betulonic acid, lupeol were likewise isolated from the aerial pieces of one of the *Ficus* species. According to literature a large portion of the isolated mixtures from the aerial piece of *Ficus sycomorus* are high atomic weight compounds (86), triterpenoids (56), phenylpropanoids (13), flavonoids (8) and phenolic acids. (12) The quantity of isolated chemical mixtures is increasing enormously. In addition, the main metabolic mixtures, for example, flavonoids are isolated from the aerial pieces of the majority of the *Ficus* species. The majority of the isolated mixtures are removing a portion of different biological Activities like anticancer, antiviral, anti-oxidant, antimicrobial, Hepatoprotective and cardio tonic properties [15].

Pharmacological activities

1. Antimicrobial activity

A study on the etheric and acetonic leaf and stem-bark extracts of *Ficus sycomorus* were evaluated for their antibacterial activity using dis-diffusion method against 10 clinical bacterial isolates, Listeria monocytogenes Staphylococcus aureus, Bacillus cereus, Escher Salmonella

typh-imurium, Brucella melitensis, Proteus mirabilis, Pseudomonas aeruginosa and Klebsiella pneumonia. The study revealed that the etheric leaf and stem bark extracts showed no antibacterial activity against all isolates.

2. Antioxidant activity

The antioxidant activity of different polarity crude extracts was determined by well-established modified DPPH method. All the crude extracts showed significant antioxidant activity against DPPH free radical. The results also showed that the most polar crude extract showed the highest activity. The antioxidant activity tended to decrease as the polarity of crude extract decreased. The selected plant contains several active compounds and those are considered as polar compounds because they are isolated by the polar solvent. However, the polar crude extracts contain most of those polar compounds which is responsible for the antioxidant activity. According to literature, the percentage of total flavonoids and phenols compounds was very high in the polar crude extracts. Therefore, those phenolic and flavonoids compounds can accelerate to increase the activity of the polar crude extracts [16].

3. Hypotensive activity

Various parts including, leaves, stem and fresh unripe fruit of *Ficus sycomorus* were investigated for their blood pressure lowering effects in normotensive rabbits. Results revealed that intraperitoneal administration of the unripe fruit extract at 400 mg/kg produced more significant reduction in mean arterial blood pressure when compared to other doses of the extract. The unripe fruit extract was recommended to be used with caution because it produced remarkable arrhythmia [17].

4. Cytotoxic activity

The cytotoxic activity of the pre-arranged different polarity unrefined concentrates was determined by brine shrimp lethality technique [18]. In the experiment, artificial shrimp and BSL strategies were utilized to determine the cytotoxic activity. There were six different polarities of rough concentrates from the Omani *Ficus* species.

Among the six unrefined concentrates, the maximum toxicity was obtained in ethyl acetic acid derivation with a LC50 worth of 26.82 mg/ml and the minimum toxicity was in butanol with a LC50 worth of 463.44 mg/ml respectively, in comparison with the negative control DMSO. Again, the toxicity of the unrefined concentrates totally relied upon the quantity of toxic mixtures and concentration of the toxic mixtures. That implies that the quantity of toxic mixtures and the concentration of toxic mixtures was increased in the concentrate and the toxicity of the rough concentrates was increased. Not definite similar Toxic outcomes were obtained from different countries and Other *Ficus* species [19]. Since the gathered plant samples and the extraction strategies were not similar. In addition, the Environmental and soil conditions additionally are likewise different. Because of that, our experimental outcomes will in General differ from the others.

5. Neuroprotective activity

Unrefined flavonoid fraction from *Ficus sycomorus* stem bark was investigated for its anticonvulsant activities in mice and chicks using sub- cutaneous Pentylenetetrazol and maximal electroshock models. the fraction exhibited 20% protection at 10 mg/kg against writhed animals when contrasted with the norm, sodium valproate which exhibited 83% protection at 200 mg/kg [20] An examination by Foyet and colleagues on behavioral impairment and brain oxidative pressure induced by unpredictable chronic mild pressure in rodents uncovered that the watery methanol stem bark of *Ficus sycomorus* turned around the unsafe impacts of unpredict-capable chronic mild weight on state of mind and behaviors of rodents.

Conclusion

Ficus sycomorus is a plant with a few medicinal and culinary relevancies. A portion of its ethnomedicinal claims had been scientifically validated. This review assessed its ethno-botany, phytochemistry, pharmacological properties and toxicological impacts using electronic information bases. Its ethnomedicinal claims with validated pharmacological properties include; anti-diabetic, anti-microbial, anti-oxidant, hepatoprotective, neuroprotective, antidiarrheal and hypotensive activities. Most studies on F. sycomorus zeroed in on antimicrobial properties. Majority of *in vitro* and *in-vivo* studies were carried out using the stem bark. In excess of 130 different active and non- active chemical mixtures were isolated from the chose FS plant species. Likewise, the plant rough concentrates showed significant activity against CNS, ANS, cardiovascular framework, fertility framework, different infections, GIT issue, various inflammation, diabetics and malignant growth.

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