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Preliminary phytochemical analysis of *Ficus johanis* Subsp. *afghanistanica* from *Moraceae* family

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Abstract

The present research communication represents the preliminary phytochemical screening of the crude extract of leaves of *Ficus johanis* Boiss. Sub sp. *Afghanistanica* (Warb.) Browicz from *Moraceae* family exposed to find out the occurrence of various bioactive components. The specimen shows the occurrence of carbohydrates, phenolic compounds and tannins mostly.

Keywords: *Ficus johanis*, phytochemical, carbohydrate, phenolic

Introduction

The genus *Ficus* L. is the largest genus in the family *Moraceae*, with about 850 species of trees, shrubs, climbers and creepers occurring in tropics and subtropics regions of the world, especially in Indo-Malaysia to Australia, Africa and America (Berg and Corner 2005). In India, it is represented by 116 taxa (92 species and 24 infraspecific taxa), of which 10 are endemic (Chaudhary *et al.* 2012, Sudhakar *et al.* 2017, and Shaikh *et al.* 2021) [2, 10, 8].

Various *Ficus* species have been used as traditional medicines to cure diseases, such as, astringents carminatives, stomachic, vermicides, hypotensive, anthelmintic and anti-dysentery drugs (Trivedi *et al.* 1969) [11]. *Ficus* species, such as, *Ficus amplissima* (Karuppusamy *et al.* 2013) [6], *F. racemosa*, *F. glomerata*, *F. glumosa*, *F. carica*, *F. religiosa* and *F. benghalensis* (Haq Nawaz *et al.* 2019) [5] are known from ancient times as herbal medicines to treat various ailments in human beings. (Deepa, *et al.* 2018) [4].

On the basis of their available traditional information phytochemical and biomolecular analysis has been done in various *Ficus* species as *Ficus amplissima* (Karuppusamy *et al.* 2013) [6], *F. arnottiana*, *F. racemosa*, *F. glomerata*, *F. glumosa*, *F. carica*, *F. religiosa* and *F. benghalensis*, *F. hispida*, *F. microcarpa*, *F. sycomorus* (Haq Nawaz *et al.* 2019) [5] and *F. heterophylla* (Dhakite *et al.* 2020) [3] which evokes that these plant specimens shows several biological activities as anticancer, hepatoprotective, hypoglycaemic, antitumor, antioxidant, anthelmintic, analgesic, antimicrobial activity, anti-parasitic, hypolipidemic, anti-inflammatory, antibacterial, anti-ulcerogenic, mucoprotective, gastroprotective, antifungal, antiviral, antimalarial, and antiparasitic activities (Abdel-Hameed E-SS *et al.* 2014, Konyalioğlu *et al.* 2005 and Haq Nawaz *et al.* 2019) [1, 7, 5]. However, the antibacterial activity has been found to be more common in different species of *Ficus*. The relevant references concern with preliminary phytochemical studies on *Ficus johanis* Boiss. Sub sp. *afghanistanica* (Warb.) Browicz not found and hence this specimen is taken for the phytochemical investigation.

Morphological description of Plant specimen

Ficus johanis Boiss. Sub sp. *afghanistanica* (Warb.) Browicz., in Rechinger, Fl. Iranica 153: 11, t. 6. (1982). – *Ficus afghanistanica* Warb. in Urban & Graebn., Festschr. Aschers: 369 (1904). Vernacular name: Afghan fig (English).

Bushy shrubs on walls and fissures of rocks, up to 3 m tall, dioecious; bark reddish-brown to greyish-brown. Leafy twigs solid, cylindrical, Stipules terminal, ovatelanceolate. Leaves alternate, simple, lamina variable in shape and size, broadly ovate to orbicular, cordate to truncate at base, palmately deeply 3–5-lobed, coriaceous, puberulous to glabrescent, scabrous on both surfaces; petiole 3–7 cm long, Figs (receptacles) axillary, solitary, long pedunculate, gall and seed figs on separate plants, pyriform to subglobose or globose, 1–2 × 1.5–2 cm in diam., green, purple when ripe, puberulous to densely pubescent, rarely tomentose (Photo plate -1).



Photo plate 1: *Ficus johannis* Boiss. Sub sp. afghanistanica (Warb.) Browicz., in habitat

Materials and Methods

Sample Collection: - The leaves of *Ficus johannis* Boiss. Sub sp. afghanistanica (Warb.) Browicz., were collected in a separate sterile polythene bags from the Tumsar town (Bhandara district Maharashtra state, India Collected by J. V. Gadpayale), collected plant parts were examined and identified with the help of regional floras and Taxonomic experts.

Preparation of Solvent Extracts: The cleaned, healthy leaves are cut in to small sections and dried under shade for

three to four weeks. The dried material was ground into fine powder in an electric grinder. Powder so obtained was stored in desiccator's setup and used for extraction. It was extracted in soxhlet apparatus using various solvents according to their polarity as a methanol, ethanol and chloroform extract.

Phytochemical Evaluation: The extracts were subjected to find the occurrence of preliminary phytoconstituents present in it viz. carbohydrates, phenolic compounds and tannins mostly.

Table 1: Preliminary Phytochemical Screening of *Ficus johannis* Boiss. Sub sp. afghanistanica (Warb.) Browicz., as follows-

| Sr. no | Phyto constituents | Methanol Extract | Ethanol extract | Chloroform extract |
|--------|--------------------------------|------------------|-----------------|--------------------|
| 1 | Alkaloids | - | - | - |
| 2 | Carbohydrates | +++ | ++ | + |
| 3 | Glycosides | - | - | - |
| 4 | Flavonoids | - | - | - |
| 5 | Phytosterols | - | - | - |
| 6 | Fixed oils and Fats | ++ | + | + |
| 7 | Saponins | - | - | - |
| 8 | Phenolic compounds and Tannins | +++ | ++ | + |
| 9 | Lignins | - | - | - |
| 10 | Proteins and Free Amino Acids | - | - | - |
| 11 | Gums and Mucilage | - | - | - |

Results

All the extracts of leaves of *Ficus johannis* Boiss. Sub sp. afghanistanica (Warb.) Browicz in different solvents were subjected to preliminary phytochemical investigation. More number of phytoconstituents like carbohydrates, phenolic compounds and tannins was found to be present in Ethanolic extract while rest of the Phytoconstituents absent.

Conclusion

Phytochemicals found in the leaves of *Ficus johannis* Boiss. Sub sp. afghanistanica (Warb.) Browicz., indicates their potential for preparation of novel medicines due to the occurrence of phytoconstituents. Furthermore isolation, purification and characterization of the phytochemicals found in the studied specimen will make interesting findings.

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