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Active Constituent in Aqueous Extracts of *Ficus exasperata* Stem-bark Grown in Agro-economic Areas of Kwara-South Nigeria

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Introduction

- Phytochemicals from plants are known as constituent (Asif, 2015, Aderogba *et al*., 2019)

- Active constituent can be obtained from different organs of plants such as the seeds, roots, leaves, and flowers (Bordoh *et al*., 2020).

Introduction cont.

- *Ficus exasperata:* Family Moraceae (Umeh *et al*., 2014), Sandpaper tree in English language and Ewe Epin in Yoruba language (Ahmed *et al*., 2012; Adeyemi *et al*., 2015) (Figure 1).

- Medicinal values include anti-hypertensive (Ayinde *et al*., 2007) and antifungi (Akinkugbe *et al*., 2020). Similarly, agricultural relevance in management of insect pest has been repotted (Alamu, 2018). Phytochemical compounds includes tannins, Alkaloids (Akinkugbe *et al*., 2020).

- However, scientific report of active constituent in aqueous extract of *Ficus exasperata* stem-bark are very scanty..

Figure 1: *Ficus exasperata* plant in Kwara-South

Source: Adeniyi *et al*., 2024

Aim and Objectives of the Study

- The aim of this study is to isolate the major active constituent in the aqueous extract of *Ficus exasperata* leaf and stem-bark

- Objectives focused on:

1.The extraction of *Ficus exasperata* stem-bark and leaf using ethanol and water.

2. Antifungal screening of the crude extracts

3. The phytochemical investigation of the active compounds in crude extract (s) using GC-MS

Materials and Methods

- Collection of *Ficus exasperata* leaf and stem-bark (Figure 2). Voucher No: UILH/001/1577/2023

Figure 2: Agro-economic areas of Kwara-south, Nigeria

Source: Adeniyi *et al*., 2024

Materials and Methods cont.

- Extraction of pulverized plant materials were carried out at room temperature for 7 days.

- Filtration of extracts were carried out using filter paper, concentrated using rotary evaporator and then stored until further use. Aqueous stem-bark extract of *Ficus exasperata* (FStBAq) and aqueous leaf extract of *Ficus exasperata* (FlAq).

- Phytochemical crude extracts were investigated using standard methods (Abimbola *et al*., 2018) and GC-MS (Ghosh et al., 2017).

Materials and Method Cont.

- Soil-borne phytopathogenic fungi (*Fusarium Solani)* responsible for crop losses (Eloff et al., 2017). Fluconazole was used as positive control.

- The inhibitory effect of ethanol and aqueous extracts leaf and stem-bark of *Ficus exasperata* on the mycelial growth of the fungi was evaluated by the agar diffusion well method (Baskaran et al., 2012).

- Stock solutions of the extracts were prepared sterile distilled water at concentration between (10 – 50 mg/L) for the *Fusarium solani* bioassay study.

Result and Discussion

- The yields of the extracted phytochemicals in aqueous leaves and stem-bark extracts of *Ficus Exasperata* were 32.2 % and 21.97 %. This may be due to different plant parts (Ullah *et al*., 2017).

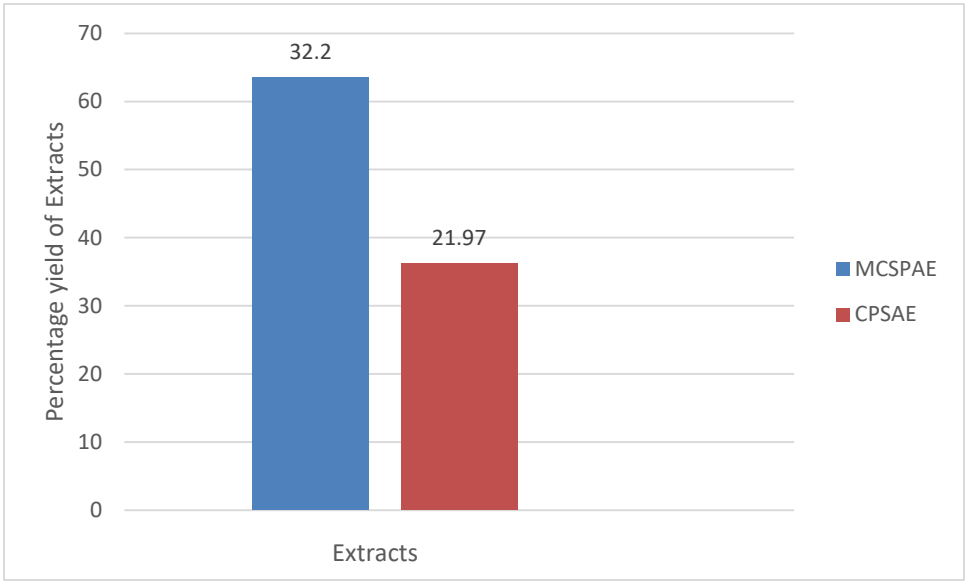

Figure 2. Percentage yield of FlAq and FStBAq

Results and Discussion Cont.

- In-vitro antifungal activity of plant extracts: A Interestingly, FStBAq, displayed significant inhibition of (15 mm) 76.51 % at 50 mg/ml against mycelial growth of *Fusarium solani* when compared with control (Fluconazole) (Figure 4)
- However, no visible zones of inhibition were observed in FLAq.

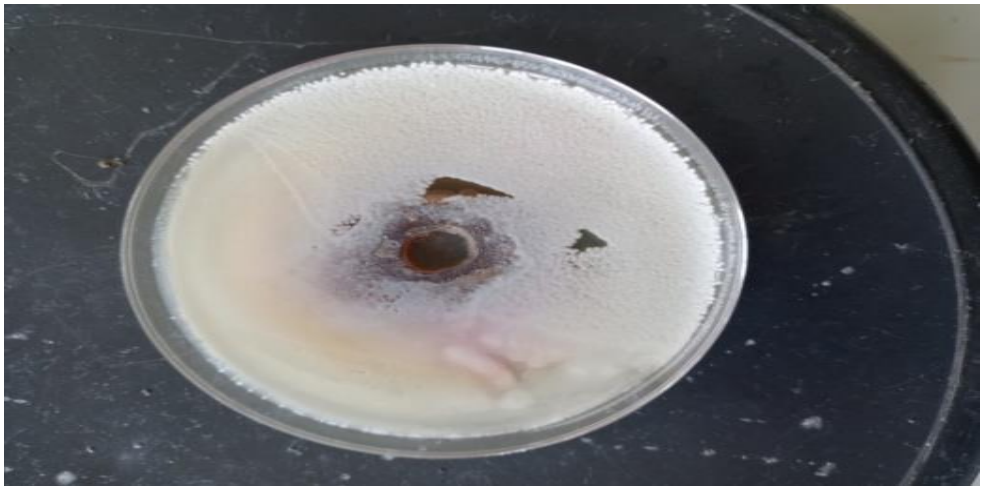

Figure 3: In-vitro antifungal activity aqueous stem-bark extract of *Ficus exasperata* (FStBAq)

Results and Discussion cont.

- Phytochemical investigation using standard methods
- and chromatographic

Analysis (Abimbola *et al*., 2018).

- Preliminary phytochemical screening

showed that FStBAq contained high level of saponins, flavonoids and alkaloids (Figure 4).
Similarly, total phenolic content and flavonoids obtained FStBAq were mg GAE 4.09/ 100 g and mg 0.04 QE / 100 g.

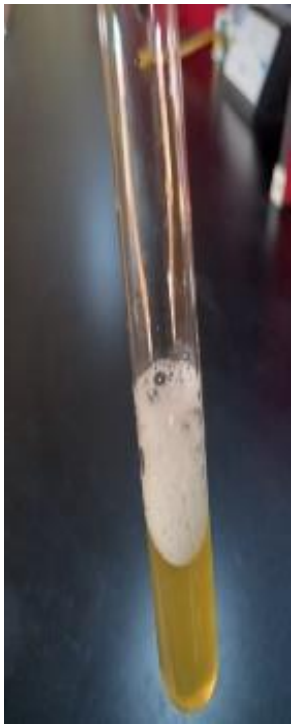

Figure 4: Saponins

- Moreover, the results of gas chromatography-mass spectroscopy (GC-MS) analysis revealed 18 different components in FStBAq with linoelaidic acid(21.81 %) a fatty acid in abundant followed by butanoic acid (15.25 %). an organic acid.

Conclusion

- Arasu et al. (2015), *Fusarium solani* is the causal agent of keratisis and invasive aspergiloisis in human.

- Rojo *et al*. (2007), diseases caused by *Fusarium solani* are a limiting factor in plant production, and yield quantity by causing the death of young and adult plants, with consequent economic losses.

- The invitro antifungal of activity may by due to secondary metabolite present in the FStBAq (Baskaran *et al*., 2012; Mekam *et al*., 2019). In addition to major active constituent linoelaidic acid (21.81 %) a fatty acid (Gosh *et al*., 2017).

- Therefore, aqueous extract from stem-bark of *Ficus exasperata* may be considered as a valuable source of promising pharmaceutically active constituents and antifungal-agents .

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