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Anti-*Candidal* activity of *Passiflora foetida* Linn. Leaves used in the treatment of vaginal infection

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Abstract
Candida species is one of the major fungus causing vaginal infection. It has increasingly deserved a special attention among the medical community. In spite of the presence of *Candida* species as a human commensal, alarming rates of local and systemic infections have been observed, varying from moderate to severe impact. The present work aims to investigate the anti-*candida* activity of pet. ether, chloroform, ethanol and aqueous extract of *Passiflora foetida* Linn. leaves. The results obtained were compared with standard anti-fungal drugs amphotericin B. Further studies need to be establish to deepen knowledge on this area, namely, focused on clinical trials to provide safer and more effective anti-fungal than the current ones.
Key-words: Anti-*Candida* activity, Vaginal infection, Fungal infection, *Passiflora foetida* Linn.

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Introduction

The disease and disorders related to women's are considered as women disorders or gynecological disorders. According to NICHD i.e., National institute of Child Health and Human development there are five types of major gynecological disorders associated with females, these include vulvodynia, vaginitis, pelvic floor disorders, pelvic pain and menstrual disorders. In India approximately every women suffers from gynecological disorders such as vaginal infection, menstrual troubles or any other associated disease. The percentage is more in rural women than urban women and the reason behind this is the life style, food habit and un-hygienic conditions in rural areas [1].

Passiflora foetida Linn., is annual vine climber grows 1-6 m tall with eye catcher beautiful flower, commonly known as passion flower. This plant is used for traditional purposes and there are numerous herbal products prepared from *Passiflora foetida* that are accepted in India, America, France, Brazil, Vietnam and European nations. In India, this plant is used for forming lotions for skin disease & for preparation of medicinal powder for digestive problems. In Brazil, this plant is used to formulate lotions for skin diseases with inflammation. In Vietnam, leaves are used for tea making for vanishing sleeping and nervous disorders [2].

During past few years plant derived extracts and their isolated phytochemicals are gaining importance and are also a new emerging area of research. In last two decades anti-*candida* effects in the category of anti-microbial is of great interest. *Candida*, a fungus is very often associated with the gynecological infections. In fact, *Candida* species have been implicated in an onset of mild and severe clinical conditions, although it was considered a commensal microorganism of healthy individuals. [3-5] The present study was designed to evaluate the

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Indian medicinal herb *Passiflora foetida* Linn. (Leaves) PFL widely used to treat the vaginal infection as mentioned in traditional system of medicine.

Material and Methods

Selection of plants/plant material

Passiflora foetida Linn. (Leaves) PFL used in the treatment of vaginal infection were selected based on the traditional claims as mentioned in folk-lore. The above mentioned herbs are widely used in traditional medicine for the treatment of gynecological disorders including vaginal infection but till date no any systematic investigation has been carried out to study the anti-candidal activity, therefore the present plant was selected.

Collection and authentication of plant/plant material

Passiflora foetida Linn. (Leaves) PFL was collected in the months of July-Oct' 2021 tfrom various sites of Vindhya region of Madhya Pradesh and identified & authenticated by Dr. S.N. Dwivedi, Retd. Professor and Head, Department of Botany, Janata PG College, A.P.S. University, Rewa, (M.P.) and was deposited in our Laboratory, Voucher specimen No. J/Bot/PFL-023.

Extraction of Plant material

250 gm of the air dried coarsely powdered leaves of *Passiflora foetida* Linn. (Leaves) PFL was placed in soxhlet apparatus and was extracted with petroleum ether, chloroform, ethanolic and water until the extraction was completed. After extraction, the filtrate was evaporated to get the extract. [6]

Anti-fungal (Anti-*Candida* activity) of extracts [7-8]

Fungal strain

Fungal strain i.e., *Candida albicans* (ATTC) was obtained from Index Medical College, Malwanchal University, Indore, (M.P.) was used for the present investigation.

Screening of Anti-*Candida* activity (Disc diffusion method)

Preparation of Disc

Disc of whatsmann filter paper of one quarter inch in diameter was prepared and the same was sterilized using autoclave.

Preparation of samples entrapped disc

The accurately weighed extracts were dissolved in methanol of different stock solutions (10, 20, 30, 40, 50 µg/ml**)** solutions were prepared. All the dilution prepared was applied to whatsmann filter paper disc using a micropipette. The disc were then dried and sterilized.

Preparation of culture plate

The sabouraund's agar and mueller Hinton agar media were prepared by dissolving media in 1000ml of distilled water and sterilized by autoclave at 121^{o}C for 1 hour. The media were cooled and poured in sterilized petri plate to solidified at room temperature.

Collection of fungal strains

The fungal strains (*Candida albicans*) were used as obtained from Index Medical College, Malwanchal University, Indore. The innoculum of strains were transferred to the recultured before staring the lab work.

Evaluation of Zone of inhibition

The re-cultured fungal strains were used for antifungal evaluation. The strains were streak on the Mueller Hinton media and the drug entrapped patches were placed. For negative control disc of distilled water and for positive control amphotericin B disc (10 µg) were used. The petri plates were kept in incubator for 24 hrs. After 24 hrs the petri-plates were checked for zone of

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inhibition. The zone of inhibition diameter was recorded with the help of zone reader scale. The zone of inhibition was calculated by subtracting diameter of sample or standard or control by diameter of disc. The more the zone of inhibition the more will be antifungal activity.

Statistical analysis

All the reading obtained were analyzed using one way analysis of variance i.e., ANOVA. Student t-test was used. The values are found to be statistically significant (*P<0.00, **P<0.01). All the values obtained are expressed as mean± standard error means (SEM).

Results and Discussion

It's interesting to look into the effectiveness of plant extracts in models of systemic and local infection that have been produced. A few of these imitate the actual circumstances of an infected organism while also achieving the direct effects of the extract. The effects of plant extracts on systemic infections and artificially induced vaginal infections have been studied by a number of academics. Plants include a variety of phytochemicals that have anti-microbial activities, including flavonoids, alkaloids, saponins, and terpenoids. Anti-*candida* activity of *Passiflora foetida* Linn. (Leaves) PFL were evaluated. The zone of inhibition of petroleum ether, chloroform, ethanolic and aqueous extract on *Candida albicans* were presented in table 1. Results indicate (Graph 1) that all the selected extracts have significant anti-*candida* activity when compared with standard drug amphotericin B. From the data obtained it was revealed that ethanolic and aqueous extract of have maximum and significant activity when compared with other two extract.

Table 1: Anti-*Candida* activity of *Passiflora foetida* Linn. (Leaves)

S/No.	Test/Extract	Zone of Inhibition (mm)
1.	Negative Control	4.82±0.23
2.	Positive Control	21.29±0.42**
3.	PEEPFL	7.24±0.02*
4.	CEPFL	8.62±0.21*
5.	EEPFL	18.24±0.03**
6.	AEPFL	19.89±0.28**

Note: All values are expressed as Mean (X) ±SEM, (n=3). One way ANOVA followed by student test, values are statistically significance *P<0.00, **P<0.01 when compared with control and standard.

Conclusion

From the results obtained it was concluded that the AEPFL have optimum anti-*candida activity* than EEPFL, whereas for other tested extract activity is least. Moreover detailed pharmacological screening and clinical approaches need to establish for the formulation of safe and effective drugs.

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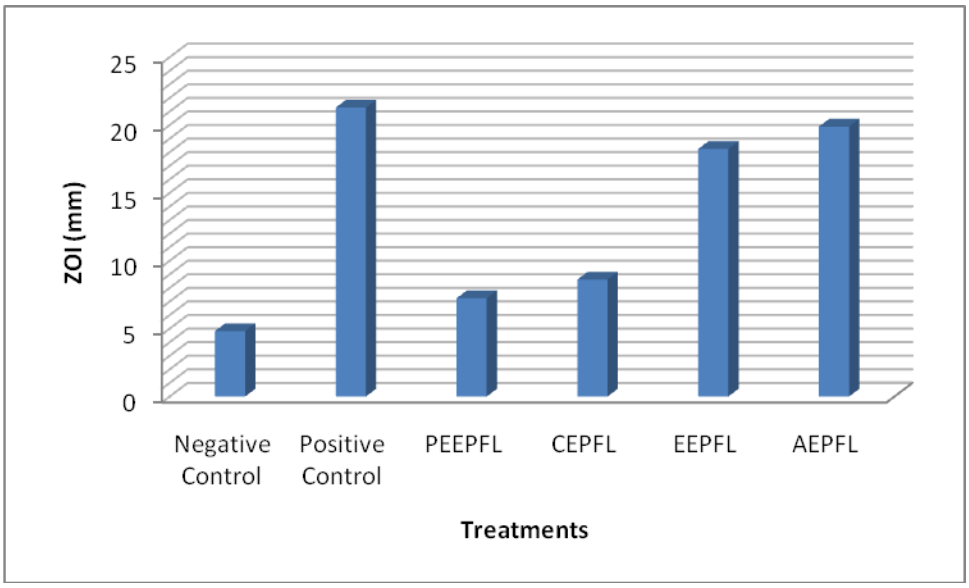

Graph 1: Anti-fungal (Anti-*Candida* activity) of extract

References

1. Lakshmi V. and Gupta RK. (2014). Ayurvedic preparations and gynaecological disorders. *International* Journal of Ayurveda & Alternative Medicine, 5(2):10-14.
2. Patil A. S., Paikrao H.M and Patil S.R. (2013). Passiflora foetida Linn: A complete morphological and phytopharmacological review. International Journal of Pharma and Bio Sciences, 4(1):285-296.
3. Palombo EA. (2011). Traditional medicinal plant extracts and natural products with activity against oral bacteria: potential application in the prevention and treatment of oral diseases, "Evidence-Based Complementary and Alternative Medicine, Article ID 680354, 15.
4. Sher A. (2009). Antimicrobial activity of natural products from medicinal plants, Gomal Journal of Medical Sciences, 2009, 7(1): 72–78.
5. Rubió L., Motilva MJ and Romero MP (2013). Recent advances in biologically active compounds in herbs and spices: a review of the most effective antioxidant and anti-inflammatory active principles," Critical Reviews in Food Science and Nutrition, 53(9): 943–953.
6. Harborne JB. *Phytochemical methods*, Chapman and Hall, 1984, Ist Edition, London.
7. Lopes G., Pinto E., Andrade PB and Valentão P. (2013). Antifungal activity of phlorotannins against dermatophytes and yeasts: approaches to the mechanism of action and influence on *Candida albicans* virulence factor. PLoS One, 8(8): Article ID e72203.
8. Baharuddin NS, Abdullah H and Wahab WNA. (2015). Anti-*candida* activity of Quercus infectoria gall extracts against *Candida* species. J Pharm Bioallied Sci., 7(1): 15-20.