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Antifungal Activity of Isolated Compound from the Leaves of *Passiflora Edulis* Sims

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Abstract
In the present study pure compound was isolated from the leaves of *Passiflora edulis* for finding potential antifungal activity. Which were compared with the total methanolic leaf extract and the standard Nystatin 100 units /disc. The invitro antifungal efficacy of the pure isolated compound was tested against Fungi viz., *Candida albicans (NCL 3102) and Aspergillus niger (NCL 105)* by disc diffusion method. The isolated pure compound showed significant activity against *Candida albicans and Aspergillus niger*.

Key words
Passiflora edulis, Nystatin, Isolated pure compound, Antifungal, Methanolic extract.

Introduction
Medicinal plants represent a rich source of antifungal agents[1]. Many of the plant materials used in traditional medicine are readily available in rural areas at relatively cheaper than modern medicine[2]. The effects of plant extracts on microorganisms have been studied by a very large number of researchers in different parts of the world [3,4]. Much work has been done on ethno medicinal plants in India[5,6]. Interest in a large number of traditional natural products has increased[7]. Fungi are significant destroyers of foodstuffs and grains during storage, rendering them unfit for human consumption by retarding their nutritive value and often by producing mycotoxins[8,9] Fungal infections remain a significant cause of morbidity and mortality despite advances in medicine and the emergence of new antifungal agents[10]. *Candida albicans*, the agent of candidiasis, is an increasingly important disease that has a worldwide distribution due to the fact that it is a frequent opportunistic pathogen in patients[11].

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Passiflora edulis Sims (passion fruit, purple granadilla) is wild species belonging to the family Passifloraceae. The plant is a shallow-rooted, woody, perennial, tendril climbers. The alternate, evergreen leaves, deeply 3-lobed when mature, are finely toothed, 3 to 8 in (7.5-20 cm) long, deep-green and glossy above, paler and dull beneath, and, like the young stems and tendrils, tinged with red or purple, especially in the yellow form. A single, fragrant flower, 2 to 3 in (5-7.5 cm) wide, is borne at each node on the new growth[12]. *Passiflora edulis* reported to possess cytotoxic, antioxidant activity,[13] anti-inflammatory activity,[14] comparative biological activity,[15] neuro pharmacological activity,[16] healing of colonic anastomosis in rats,[17] healing process of gastric suture[18] and antihypertensive[19] and it is safe herbal drug which contains the constituents like a new glycoside passiflorin, ionone-I, ionone-II, megastigma-5,8-dien-4-1, megastigma-5,8(Z)-diene-4-1, 4,4a-Epoxy-4, 4a-dihydroedulan, 3-hydroxyedulan, Edulan-I, Edulan-II, passifloric acid methyl ester.[20] The leaves are simple, 3 lobed, ovate, palmate, pinnate, length is 4 to 8 inches and colour is green.

Experimental

Plant Material

The fresh leaves of plant specimens were collected from Nilgri Hills in Cunoor and it was authenticated [No. BSI/SC/5/23/06-07/Tech.17] as *Passiflora edulis* Sims Family: Passifloraceae in Botanical Survey of India, Tamilnadu Agricultural University, Coimbatore. Tamilnadu, India.

Preparation of leaf extract

The dried leaf powder of *Passiflora edulis* were extracted with methanol by using Soxhlet apparatus for 48 hrs and it was concentrated by vacuum distillate. The Isolation was done by using the methanolic fraction and it was recrystallized with ethanol.

Antifungal activity

Antifungal activity for the crude methanolic extract of *Passiflora edulis* and its isolated compound were tested for the antifungal effect against fungal strains.[13-16] The inoculums for the experiment were prepared fresh in Sabouraud dextrose broth from preserved frozen slants. It was incubated at 37°C for 18-24 hours and used after standardization. Sabouraud dextrose plates were prepared marked and inoculated with fungi by Disc diffusion Technique.[17] The test microorganisms are *Candida albicans and Aspergillus niger w*ere obtained from National Chemical Laboratory (NCL) Pune and maintained by periodical sub culturing on Sabouraud dextrose medium for fungi. The effect produced by the crude methanolic extract 200µg/disc and isolated pure compound 20µg/disc was compared with the effect produced by the positive control [Reference standard Nystatin 100 units /disc (100 units = 17.81µg) [21]]. (Table No: 1)

Disc diffusion assay

The antifungal activity of *Passiflora edulis* total methanolic leaf extract and its isolated compound against microorganisms examined in the present study and their potency were assessed by the presence and absence of zone of inhibition. The percentage of zone of inhibition was calculated by using following formula.

$$(100 - CT_D - S_D / T_D) \times 100$$

CT_D – Calculated test dose;
S_D – Standard dose;
T_D – Test dose.

Results and Discussion

The results reveals that isolated compound of *Passiflora edulis* were significantly effective against fungi *Candida albicans and Aspergillus niger* when compared with total methanolic extract and standard Nystatin under similar condition. Whereas the total methanolic extract was sensible against fungi *Candida albicans and Aspergillus niger*.

Table: 1 Antifungal activity of total methanolic extract and isolated compound of the leaves of *Passiflora edulis*

S.No	Microorganisms	Zone of Inhibition in Mm and %					
		Samples					
		A	A5	STD	A%	A5%	STD%
01.	*Candida albicans (NCL 3102)*	15	20	35	3.82%	50.88%	100%
02.	*Aspergillus niger (NCL 105)*	16	16	32	4.45%	44.52%	100%

A - Total methanolic extract; **A5** - Isolated compound; **STD** - Standard Drug Nystatin.

Conclusion

In conclusion the isolated pure compound showed exceptional activity when compared with the total methanolic extract and standard Nystatin.

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