

In Vitro Study on the Antifungal Activity of Various Potencies of Graphites Against *Candida Albicans*

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ABSTRACT

This study evaluated the growth inhibitory activity of graphites in a *Candida* culture to demonstrate in vitro alterations in the fungus. A suspension of *Candida albicans* was inoculated into 2ml SDA broth and cultured at 37°C for 2 days. The antifungal activity was evaluated using a disc diffusion experiment. A sterile swab was used to swab the *Candida albicans* inoculum over Sabouraud Dextrose Agar medium. A volume of 200C and 1M graphite was loaded onto small paper discs soaked with SDA plates, and the diameter of inhibition zone 14 was used to measure antifungal activity. In order to access the anti fungal activity the positive control used in this study is itraconazole and as negative control we have used ethanol.

KEYWORDS: *Candida albicans*, graphites, Kirby bauer method

INTRODUCTON:

It is noted that 75% of all fungal infections in people are caused by the pathogenic, opportunistic fungus *Candida albicans*^[1]. In most cases, *Candida albicans* grows and survives as a commensal, yet a small change in the host defence system can turn *Candida albicans* into a pathogen. There are three kinds of candidiasis known to be, invasive candidiasis, vulvovaginal candidiasis, oropharageal candidiasis^[2]. One of the main causes of invasive disease in humans and a big factor in the high cost of healthcare globally is a new fungus pathogen known as *Candida albicans* that is medication resistant. Invasive candidiasis (IC) is a serious nosocomial infection that has high rates of morbidity and mortality in children who are recognizable^[3]. The development of medication resistance in the *Candida* species has led to an increase in long-term antifungal therapy failures in recent years. *Candida* can alter the structure of its cell wall or membrane, the drug's target molecule, or drug efflux carried out by an ATP-binding cassette to become resistant to antifungal medications^[4]. Numerous studies are conducted to analyzing the effectiveness of homoeopathic medicine against *Candida albicans*. Homoeopathy has become an advanced system of medicine for the past few decades .As Graphites is a well indicated medicines for fungal infection as denoted in homoeopathic Materia medica^[5].

AIM AND OBJECTIVES:

To study the antifungal effects of various potencies Graphites against *Candida albicans*.

To determine the zone of inhibition produced by Graphites in 200C and 1M on Candida albicans.

MATERIALS AND METHOD

Type of study:

Experimental in vitro study.

Method of Collection of Data (Including Sampling Procedures if any):

Conducting the study or obtaining data by disc diffusion method or Kirby-bauer testing method.

The drugs for conducting the study are Graphites in 200C & 1M.

G1- GRAPHITES 1M

G2-GRAPHITES 200C

Positive control – itraconazole

Negative control - ethanol

METHODOLOGY:

Method of antifungal assay:

Kirby bauer method : Candida albicans culture was prepared from a slant and suspended in Sabouraud Dextrose Agar broth. The inoculum was then placed in Sabouraud Dextrose Agar plates and sterilized using alcohol and heat. Graphites 200C and 1M, itraconazole, and ethanol were suspended in discs and placed in the plates. The plates were incubated for 72 hours to observe the zone of inhibition. The zone of inhibition was measured in millimeters and compared to a positive and negative control. If the medicine had antifungal activity, the fungus growth was inhibited in that plate.

OBSERVATION AND RESULT

Figure 1 :Anti Fungal Activity of homoeopathic medicine and control by Kirby-Bauer method in candida albicans.



TABLE 1 Antifungal activity of itraconazole, ethanol, graphites 1m and 200c

FUNGAL STRAIN	MEDICINE	ZONE OF INHIBITION
Candida albicans	itraconazole	17mm
	ethanol	7mm
	Graphites 200	10mm
	Graphites 1M	8mm

DISCUSSION:

Homoeopathy is a holistic approach to treating patients, focusing on the vital force, which is disrupted by noxious miasmatic forces. This leads to structural and functional changes, causing pathology and

symptoms. Homoeopathic medical science adopts a vitalistic-substantialistic perspective, focusing on the universe and medicine's realities. Hahnemann's Aphorism 81 suggests that psora, or infectious agents, are only responsible for secondary manifestations. Graphites 200C and 1M, a medication, has shown activity against fungi in an in vitro experiment. This study addresses concerns about the accuracy and effectiveness of homoeopathic medications and offers methods for drug standardization, supporting their use in treating infections.

CONCLUSION:

The findings of this Anti fungal study demonstrate homoeopathic medicine specific inhibitory action against candida albicans, supporting the idea of Evidence-Based Medicine. The homoeopathic medicines graphites 200C & 1M demonstrated the best antifungal with growth inhibitory action of 10mm and 8mm of inhibition zone and effective against candida albicans to treat various diseases like fungal infections.. With a zone of inhibition of 17mm, the antifungal drug itraconazole used to treat candidiasis has also demonstrated improved results.

REFERENCE:

1. Singh A, Verma R, Murari A, Agrawal A. Oral candidiasis: An overview. Journal of oral and maxillofacial pathology: JOMFP. 2014 Sep;18(Suppl 1):S81.
2. Martins N, Ferreira IC, Barros L, Silva S, Henriques M. Candidiasis: predisposing factors, prevention, diagnosis and alternative treatment. Mycopathologia. 2014 Jun;177:223-40.
3. Dabas PS. An approach to etiology, diagnosis and management of different types of candidiasis. Journal of Yeast and Fungal Research. 2013 Aug 31;4(6):63-74.
4. Mishra N, Prasad T, Sharma N, Payasi A, Prasad R, Gupta D, Singh R. Pathogenicity and drug resistance in Candida albicans and other yeast species. Acta microbiologica et immunologica Hungarica. 2007 Sep 1;54(3):201-35.
5. Boericke W. New manual of homoeopathic materia medica and repertory. B. Jain Publishers; 2002.