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 assess the antifungal 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 bauermethod: 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:**