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In vitro assessment of wheatgrass activity on *Candida albicans*

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Abstract
The yeast Candida can cause infections in people; the most common is *Candida albicans.* Candida normally lives on the skin and inside the body, in places such as the mouth, throat, gut, and vagina, without causing any problems.
But it has the ability to morph from a non-pathogenic yeast into a pathogenic fungus under unfavorable conditions or reduced immunity of people. Wheatgrass juice is a powerful substance that is said to help detox the body. It's rich in phytochemicals that can be used to help detoxify and combat disease naturally.
The present study was hence carried out to assess the role of wheat grass juice on *C.albicans* so as to use it as an alternative medicine. Antifungal Activity of wheat grass juice against *C.albicans* was tested using agar well diffusion method. After forty-eight hours of incubation period, the growth of *C.albicans* was found to be directly proportional to the graded concentration of wheat grass juice. The studies enlights positive utilization of wheatgrass juice for management of candida infections.

Keywords: assessment, wheatgrass, *Candida albicans*, activity

Introduction

Microorganisms referred as normal flora live on the human body including the yeast known as Candida. At normal levels, the fungus is not problematic, however in immune compromised individuals, under conditions when Candida begins to grow uncontrollably it can cause several different infections. The species *Candida albicans* is the most prevalent one & a cause of fungal infections in people. This yeast appears white when cultured on the plate. The basic culture media used for the growth of fungi like PDA or Sabouraud's Dextrose agar can be used for the growth of *Candida species*. The fungi are generally resistant to drugs and therefore fungal diseases are difficult to treat.
Natural substances have proved their role several times in curing diseases. Wheatgrass is the young grass of the wheat plant and is harvested is early when its nutrients and mineral contents are at its peak it is reported to contain a much higher level of vitamin C selenium Phosphorus chlorophyll it is considered as a complete food it is known to boost health and vitality in both humans and animals. (Rana *et al* 2011) [5]. The best way to enjoy all the health benefits of wheatgrass is in the form of fresh juice. Wheatgrass has a high content of bioflavonoids adding to its antimicrobial effect (padalia *et al*, 2010) [7].
Antifungal activity of wheatgrass juice has been tested before by a few research workers. For the confirmation of its beneficial role, in the treatment of the series of diseases caused by *C.albicans* an *In vitro* study of wheatgrass juice on *C.albicans* was carried out.

Materials and Methods

Wheat grass was first grown by sowing wheat grains in small pots and harvested in the morning at 10 am after 10 days. The wheatgrass was washed in tap water several times to remove the dust particles in them. This was then transferred to the laboratory aseptically and crushed to obtain it's juice (Desai,2005) [2].The wheat grass juice was then subjected to Graded concentrations *viz*;25,50,75&100 % and simultaneously isolation of *Candida albicans* was carried out on Candida medium(As per Hi-media manual 2003). Candida was confirmed by using Germ tube test (Haley, 1971) [4], followed by sub culturing on potato dextrose broth. Assessment of the inhibitory action on the fungal growth was carried out by using agar well diffusion method. Enriched broth culture of candida was seeded over PDA plate in which wells of 6mm diameter were made using a cork borer. The wells were filled with the graded concentrations of wheat grass juice. The plates were kept in refrigerator for diffusion of the liquid for 1hr and then incubated at 25°C for 48hrs.
The process was carried out in triplicates so as to reach a correct end point and the mean points were considered for the results.

Results and Discussion

Table 1: *In vitro* assessment of the wheatgrass juice (WGJ) efficacy against *Candida albicans.*

Sr.no	Concentration of WGJ(v/v)	Quantity of WGJ (ml)	Zone of inhibition(mm)	Possible S/R pattern
1.	Blank	---	No zone	--
2.	25%	0.1	10	S
3.	50%	0.1	18	S
4.	75%	0.1	26	S
5.	100%	0.1	35	S

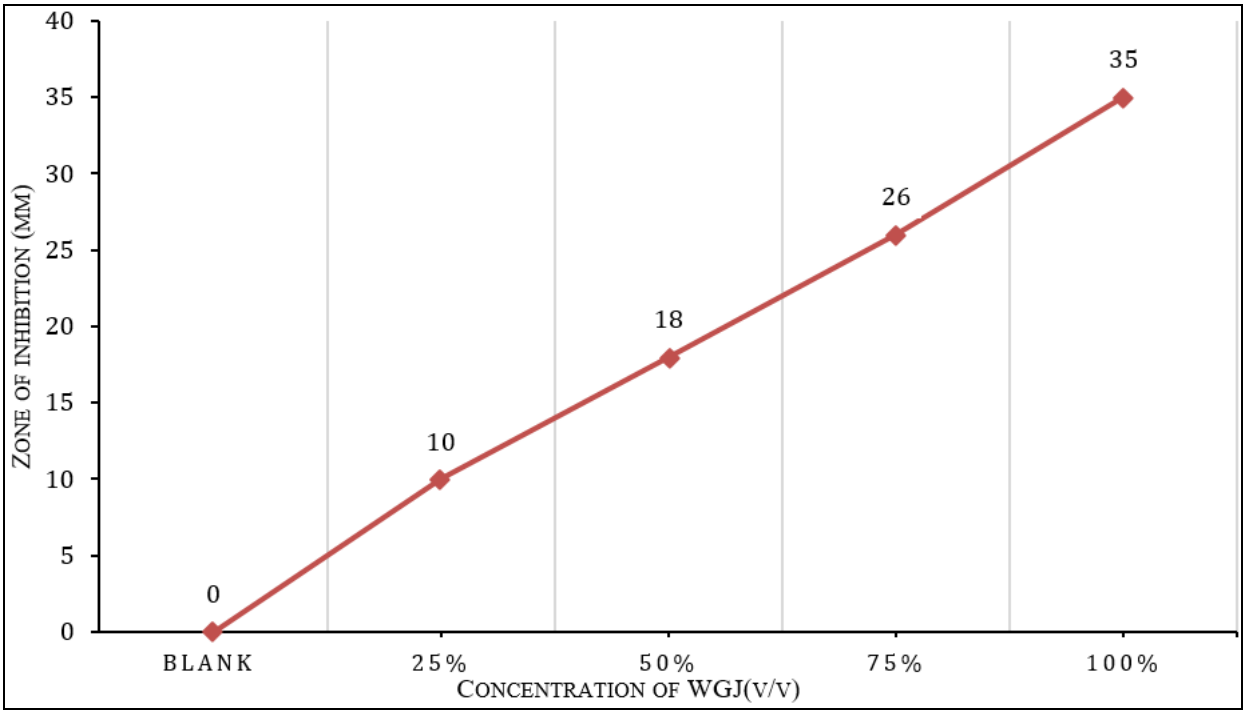

Fig 1

In the present work, antifungal activity of wheatgrass juice in graded concentration *viz*,25,50,75 &100percent (in triplicate manner)was studied considering *Candida albicans* as the test organism. *C.albicans* was isolated and seeded in potato dextrose agar and in-vitro antifungal activity of wheatgrass juice was determined by well diffusion method.

Our results in the present study were very encouraging as inhibitory action of WGJ against the test organism. It was observed that almost all the concentrations under study showed a zone of inhibition in the candida seeded plates.

It was observed that at 25% concentration of WGJ, zone of inhibition having 10 mm diameter was obtained which went on increasing with the increase in the concentration of WGJ. Where maximum concentration 100% showed a zone of inhibition of 35 mm. The results are given in the table above

The result not only indicates the in-vitro inhibition of *Candida species* but also the sensitivity was found to be directly proportional to the concentration of WGJ. The study en lights the possible utility of WGJ for the management of *Candida* infections. However, to set the WGJ in the therapeutic regime of *Candida* infections long term *in vivo* experimentation should be carried out. The results on the present study are in accordance with the experimental findings of Shirude *et al*., (2011) & the latest study regarding the antimicrobial activity and the antifungal potential of WGJ. The inhibitory effect of WGJ on *Candida* may be due to presence of inhibitory herbal moieties that might be acting on the developmental mechanism of the cell or may be due to the nutrient assimilation blockages for the *Candida* resulting ultimately in an inhibition.

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