



# ISOLATION OF *CANDIDA* SPP. FROM CANCER PATIENTS WHO SUFFERED ORAL CANDIDIASIS DUE TO IMMUNODEFICIENCY

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## Abstract

The study is concern on determine the type of *Candida* spp. In cancer patients that were infected with oral candidiasis due to immunodeficiency (weekend immune system) due to their submission to radiation and chemotherapy treatment. The result showed that the most common isolates were *C. albicans* 21 which represent 48.84% of cases, then followed by *C. tropicalis* 10 which represent 23.25%, while the less common isolate were for *C. parapsilosis* 1 which represent 2.32 %.

**Key words :** Cancer; immunodeficiency patients; *Candida*; oral candidiasis.

## Introduction

The genus comprises about 150 yeast species, the genus consists of a heterogeneous group of organisms, and more than 17 different *Candida* species are known to be aetiological agents of human infection; However, more than 90% of invasive infections are caused by *Candida albicans*, *C. glabrata*, *C. tropicalis*, *C. krusei* and *C. parapsilosis* (Papon *et al.*, 2013). *Candida* infections are one of the most common fungal infections in humans (Kumar *et al.*, 2011) Infecting the body's mucosa, skin, nails and internal organs is also a common opportunistic infection in immune-compromised patients (Makwana *et al.*, 2012). The occurrence of candidiasis caused by *Candida* sp. The proportion of immunocompromised, cancer and postoperative patients continues to increase (Kennedy *et al.*, 1987).

Diagnosis of invasive candidiasis is hard because of unspecific signs and symptoms, as well as the fact that these opportunistic yeasts reside primarily in humans 'mucosae (Ponton *et al.*, 2009). A person who has any kind of immunodeficiency is said to have been immunocompromised. In addition to normal infections that may affect anyone (Ghaffar *et al.*, 2010). Immunodeficiency is characterized as the failure of the immune system to protect against disease; It includes two types of primary immunodeficiency caused by genetic defects in the immune system. These defects are present at birth, but may appear later in life. And secondary immunodeficiency, *i.e.* loss of immune function

as a result of exposure to disease agents, environmental factors, immunosuppression (Ghaffar *et al.*, 2010)

## Materials and Methods

### Sample collection

During the period that confined between "November 2018 to May 2019", 43 specimens (oral swabs) were collected from 56 patients with different types of leukemia who diagnosed clinically by specialist doctors, oral swab specimens were cultured on plates with SDA medium, from 24-48 hrs, at temperature  $35 \pm 2^\circ\text{C}$ .

### Detection of *candida* spp.

The following identification tests were used to identify the *candida* spp :

### Growth test on Chromogenic agar

CHROM agar medium previously prepared was inoculated with the tested yeast colony growing on SDA

**Table 1:** The percentage of *Candida* isolates according to their species.

<i>Candida</i> spp.	Number of isolates	Percentage %
<i>C. albicans</i>	21 isolate	48.83 %
<i>C. tropicalis</i>	10 isolate	23.25 %
<i>C. krusei</i>	8 isolate	18.60 %
<i>C. glabrata</i>	2 isolate	4.65 %
<i>C. famata</i>	1 isolate	2.32 %
<i>C. parapsilosis</i>	1 isolate	2.32 %
Total	43	

medium for 24 hrs and incubated at 37°C for (24-48) hrs. Positive result was indicated by changing the color of colony depending on *candida* species, the result showing that *C. albicans* green color, *C. glabrata* light pink to creamy color, *C. krusei* appear as dark pinky color, while *C. tropicalis* as dark bluish.

**Identification by Vitek 2 system (Bio-merieux, France)**

The system consists of a cassette holder, reagent cards containing 64 wells each represents the substrate or medium for testing, plastic pipes well as the Densi Chek device.

**The working procedure as follows:**

- Suspension Preparation
- Inoculation of the card
- Card Sealing and Incubation
- Optical System
- Test results and analytical techniques
- Identification Levels

**Results**

All *Candida* species that were isolated from cancer patients were illustrated according to their percentage, the most common isolates were for *C. albicans* 48.83 % ranging to the less common for *C. parapsilosis* 2.32 %, (Fig. 1). From 56 patients who diagnosed with different types of cancer 56 samples were collected, 43 samples were positive, and 13 samples were negative. The number of *Candida* isolates was 43 which represent 76.78 % of the total cases. The most common isolates were *C. albiacns* 21 isolates which represent 48.83% of cases,

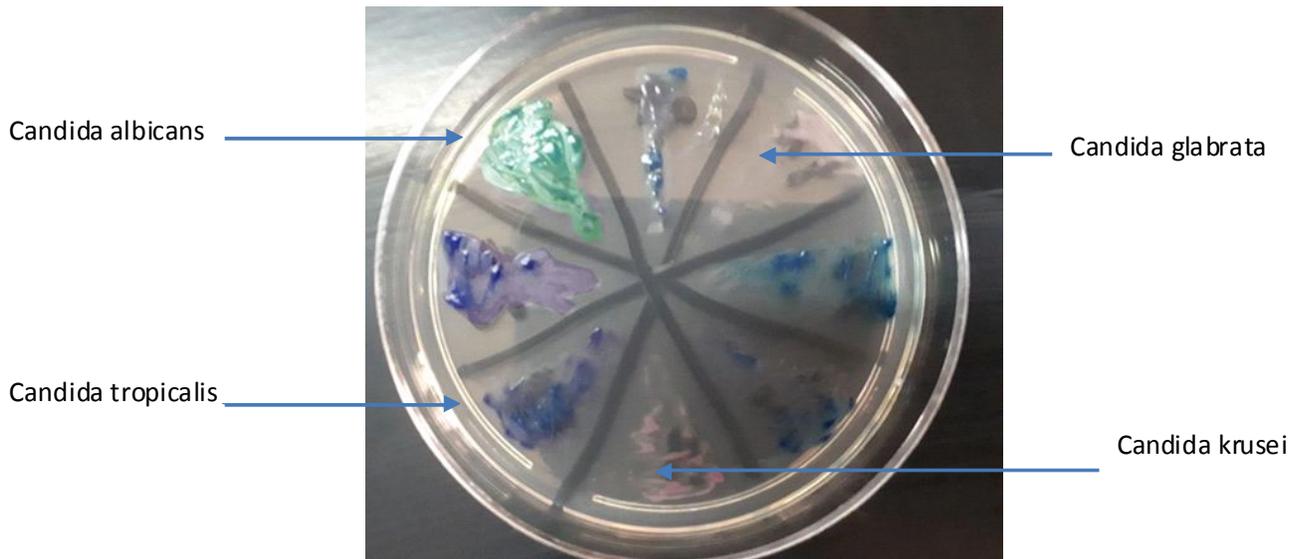
Isolate number	Identified species	Probability	Confidence
18	<i>C. albicans</i>	96 to 99	Excellent
3	<i>C. albicans</i>	93 to 95	Very good
8	<i>C. tropicalis</i>	96 to 99	Excellent
2	<i>C.tropicalis</i>	93 to 95	Very good
5	<i>C. krusei</i>	96 to 99	Excellent
3	<i>C.krusei</i>	93 to 95	Very good
2	<i>C.glabrata</i>	96 to 99	Excellent
1	<i>C.famata</i>	93 to 95	Very good
1	<i>C.parapsilosis</i>	Low from 85	Low discrimination

Among 56 yeast -like isolate , 1 isolate had low discrimination *C.parapsilosis*, clinical could be identified with high confidence (excellent ,very good).

then followed by *C. tropicalis* 10 isolates which represent 23.25 % (Fig.1)

**Discussion**

*Candida* infections are a major problem worldwide, especially among cancer patients (Afraseyabi *et al.*, 2011). *Candida* spp. is a member of a normal microbiota that may invade living tissues and cause oral candidiasis (Zaremba *et al.*, 2006). In this study, oral candidiasis was the most common disease in the study group; this was agreed with previous work (AL\_Abeid *et al.*, 2004). Those who have reported that fungal infections are more common in patients with hematological malignancy than in patients with solid tumors. There was agreement with (Fattah *et al.*, 2013). *Candida* may cause opportunistic infections in immunocompromised hosts, such as AIDS, leukemia and diabetes patients (Nejad *et al.*, 2011), *C.albicans* being the most common *Candida* species (21) isolates.



**Fig. 1:** *Candida* spp on chromogenic agar after incubation for (24-48)hrs and at 37°C.

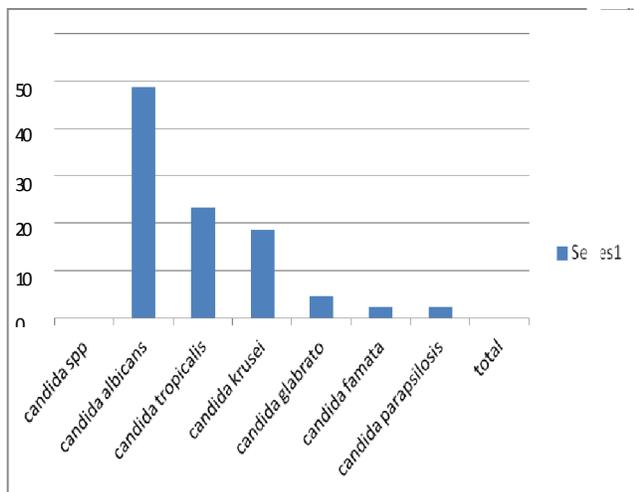


Fig. 1. Candida isolates in cancer patients.

### Conclusion

Oral candidiasis is a conspicuous complication in cancer patients in Baghdad Governorate. The percent of yeast was 54%, and the isolates are 43 as follows, *C. albicans*, *C. tropicalis*, *C. krusei*, *C. glabrata*, *C. famata*, and *C. parapsilosis*. The percent of immunocompromised patients was higher in males than females.

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