

## Geotricosis in Sergipe, 2005 – 2011

Geotricose em Sergipe, 2005 – 2011

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### Resumo

*Geotrichum* spp é uma levedura artrosporadas podem ser encontrados no solo, alimentos, pele de seres humanos e no estômago e trato intestinal. No entanto, em certas condições, este pode produzir lesões na boca, no estômago e intestino e vias respiratórias, sendo raros os casos de onicomicoses. Quatro pacientes com suspeita clínica de onicomicoses e tinea foram encaminhados ao LACEN/SE para a confirmação da lesão, microscopias direta e cultura do espécime clínico em Agar Sabouraud por 15 dias. Exame direto apresentou hifas hialinas e crescimento típico de *Geotrichum* spp. Confirmada após exames complementares. Utilizando a técnica de microdiluição Todas as linhagens apresentaram valores de CIM significativo, tendo, após análise estatística, o fuconazol, anfotericina B e nistatina apresentaram valores significativos.

**Palavras-chaves:** Geotricose. Micoses. Contagem de Colônia Microbiana.

### Abstract

*Geotrichum* is a yeast arthrospores can be found in soil, food, human skin and stomach and intestinal tract. However, under certain conditions, this can produce lesions in the mouth, stomach and intestine and airways are rare cases of onychomycosis. Four patients with clinical suspected of onychomycosis and tinea. They were referred to LACEN/SE for the confirmation of the mycose, direct microscopy and culture of clinical specimens in Sabouraud agar for 15 days. Direct examination showed hyaline hyphae and growth typical of *Geotrichum* spp. Confirmed after exams. Using the microdilution technique All strains showed MIC values significantly, and, after statistical analysis, the fuconazol, amphotericin B and nystatin were significantly correlated.

**Key words:** Geotrichosis. Mycoses. Colony Count, Microbial.

## INTRODUCTION

Geotricosis is a disease caused by the etiological agent *Geotrichum* spp, an omnipresent fungus that can be found in soil, human skin and in the gastrointestinal tract being a constituent of the normal microbiota<sup>1,2</sup>.

An increasing number of invasive infections by *Geotrichum* spp has been reported suggesting this agent to be an opportunist pathogen, appearing with frequent fatal result, particularly in persons with immunocellular deficiency 1. The clinical manifestations include meningitis, encephalitis, osteomyelitis, endocarditis and infections of the respiratory and gastrointestinal tracts<sup>1,2,3</sup>.

## CASES REPORT

On April 04, 2005, the client 51 years old, female sex, house-maid, white, married, resident in Aracaju-

Sergipe, presenting a whitish descaling lesion on all the blade with corneous mass of the left toenail.

On April 07, 2009, the patient 54 years old, a military officer, black, male sex, married, resident in Aracaju-Sergipe, presented skin descaling on the thigh with an erythematous little pruriginous lesion with defined, circinate border. Clinical suspicion of tinea.

On May 18, 2010, the patient 30 years old, female sex, mulatto, married, resident in Aracaju - Sergipe, presented whitish descaling lesion with dry corneous mass of the toenail.

The last case of the year, up to the moment, on June 15, 2010, the patient 54 years old, a tailor, female sex, mulatto, resident in Aracaju - Sergipe, presented a descaling lesion with dislocation of the inflamed and sore toenail. She keeps a cat at home.

Samples of the contaminated material were collected, in the following it was 30% KOH treated and taken to the direct microscopy, were the presence of yeast form cells and hyaline hiphas were evidenced. The remaining of the material was incubated in Agar Sabouraud and mycosel for 15 days at 25°C.

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**Table 1 :** Minimum inhibitory concentration ( $\mu\text{g/mL}$ ).

	ANB		FCZ		ICZ		NTN		VCZ	
	MIC	Range	MIC	Range	MIC	Range	MIC	Range	MIC	Range
48h	3,90a	0,24-3,90	15,63a	1,95-15,63	7,81a	0,24-7,81	3,90a	0,12-3,90	0,97a	0,97-3,90
72h	15,63b	0,97-31,2	31,25b	1,95-62,5	31,25b	0,48-250	15,63b	0,12-31,2	1,95b	1,95-31,2
7 days	31,25c	1,95-125	31,25b	1,95-125	31,25b	0,48-250	31,25c	0,12-125	3,90b	3,9-32

ANB – Amphotericin B, FCZ – Fluconazole, ICZ – Itraconazole, NTN – Nystatin and VCZ – Voriconazole. P value < 0,05. T-test (analysis of statistical difference) followed by Turkey test (to differentiate the cut-off point/letters a, b and c).

**Table 2:** Minimum inhibitory concentration (MIC 50% and MIC 90% -  $\mu\text{g/mL}$ ).

	ANB		FCZ		ICZ		NTN		VCZ	
	MIC 50	MIC 90	MIC 50	MIC 90	MIC 50	MIC 90	MIC 50	MIC 90	MIC 50	MIC 90
48h	3,90 <sup>a</sup>	7,81a	0,24a	0,48a	0,24a	0,48a	0,12a	0,24a	3,90a	7,81a
72h	7,81b	15,63b	15,63c	31,25b	71,81c	15,63c	3,90b	7,81c	7,81c	15,63b
7 days	15,63c	31,25c	31,25c	62,5c	15,63c	31,25c	7,81c	15,63c	15,63c	31,25c

## DISCUSSION

These case studies were approved by the ethics in research involving human subjects at the UFS in the number 004.0.107.000-06

After the incubation period of the material, laminas were prepared and methylene blue colored (blushed) for confirming and cultivation at 37°C on Sabouraud and Clitohexamide Agar. Samples were submitted to biochemical tests for identifying the pathogenic agent, including the absence of use of urea and lack of assimilation of lactose, cellobiose, inositol, raffinose e trealose. Based on the results carried out, the etiologic agent *Geotrichum* spp was found the originator of the above mentioned infections<sup>1,2,3</sup>.

After the isolation and identification, the strains were tested for susceptibility to antifungal agents using the CLSI protocol M-38A (2002) 4 on LMA/UFS. Tested the following antifungals: Fluconazole (FCZ), amphotericin B (ANB), voriconazole (Vcz), Itraconazole (ICZ) and nystatin (NTN). The range of minimum inhibitory concentration was 0.031 512ig/mL with the cutoff of 48h, 72h and 7 days.

For the statistical analysis of data was used Graphic Pad Prism software, p < 0.05 and t statistical tests performed to compare the antifungal tested and analyzed the endpoints followed by Turkey test to differentiate the results. There were statistical differences between the tested antifungals, endpoints adopted and MIC 50 and 90%.

For the MIC ( $\mu\text{g/mL}$ ) cutoff point, 7 days of analysis, the results showed statistically significant more for amphotericin B, nystatin, and voriconazole. As the highest minimum inhibitory concentration was 31.25

$\mu\text{g/mL}$  for amphotericin B, nystatin, fluconazole and itraconazole. With the exception of voriconazole showed that 3.90  $\mu\text{g/mL}$ . For these strains analyzed showed no statistical difference when comparing the following endpoints: 72 hours and 7 days of reading the following antifungals: fluconazole, itraconazole and voriconazole (Table 01).

Also the 7th day of reading microdilution showed statistically the minimum inhibitory concentration values more meaningful for both MIC 90% and MIC 50%. For MIC50% for fluconazole had the highest value 31.25  $\mu\text{g/mL}$  and was no statistical difference between the analyzed following amphotericin B and nystatin. As for fluconazole and itraconazole was no statistical difference between 0.24  $\mu\text{g/mL}$  (48 h) for the other 50% and MIC end points, in this case there was no statistical difference between 72 hours and 7 days of reading. And fluconazole having higher values. And voriconazole was no statistical difference between 3.90  $\mu\text{g/mL}$  and the remaining values where there was no statistical difference between them (Table 02).

For MIC 90% values were also the most significant fluconazole (62.5  $\mu\text{g/mL}$ ) followed by voriconazole, amphotericin B and itraconazole, 31.25  $\mu\text{g/mL}$ . There was a statistical difference between the endpoints of amphotericin B, fluconazole and voriconazole. As for itraconazole was no statistical difference between 48 hours and the other endpoints and nystatin from 0.24  $\mu\text{g/mL}$  and the rest of the endpoints.

In persons bearers of diabetes mellitus, in kidney transplanted patients<sup>5,6,7,8,9</sup>, so demonstrating the diversity of the pathogenicity and also an increasing

number of cases attributed to this etiologic agent<sup>3,6,7,8,10</sup>. The occurrence of this mycosis results from the most accurate methods, public health importance and closeness between the laboratory and clinical knowledge, so necessary for the medical mycology.

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