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Evaluation Of Differential Growth Conditions For The Fungus Basidiobolus (Zygomycota)

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Riddhima Pathak '22 – (Sponsor: Dr. Javier F. Tabima Restrepo)

Introduction

Basidiobolus is a genus of microscopic fungi that inhabits of amphibian and reptilian species, as well as in leaf litter or associated with insect cuticles.

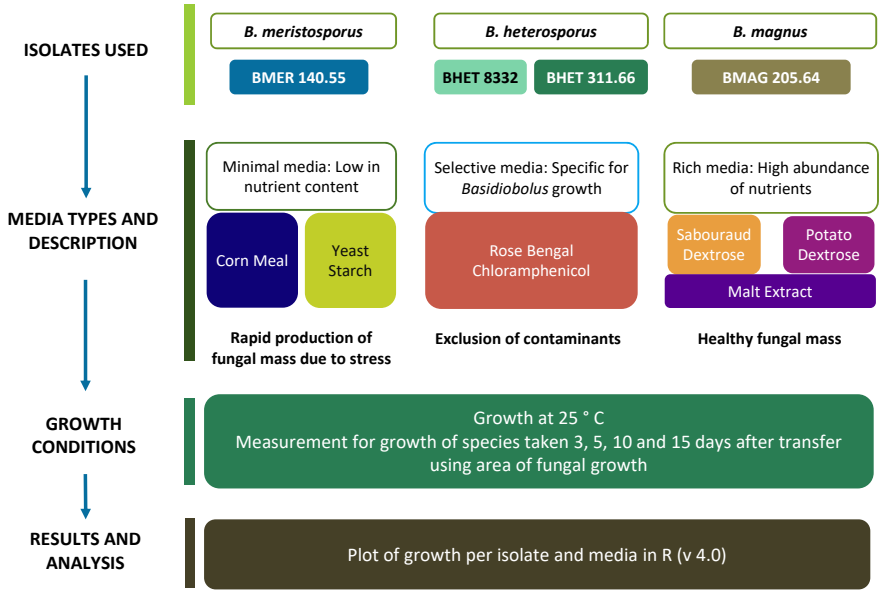
Not much known about this fungus biologically. Recent studies show that an unusually large number of genes with roles in secondary metabolism (antibiotics, terpenes or siderophore) and horizontal gene transfer from bacterial species can be found in the genome of the only three available genomes of *Basidiobolus*.

The goal of our research group is to increase the genomic knowledge of *Basidiobolus*. To do this, we focused on evaluating different methods of growth and isolation of this fungus.
Identifying the optimal growth conditions for this genus will allow us to grow healthier cultures and obtain more genomics resources for this genus, potentially identifying novel antibiotics and terpenoid compounds at long term.

Objectives

- To test six different methods of growth and isolation for *Basidiobolus* across different media.
- To identify the optimal growth conditions for *Basidiobolus* based in growth rate and type of media
- To determine if the type of media (low nutrient media, rich nutrient media and selective media) plays a role in the optimal growth of *Basidiobolus*

Methods



Results

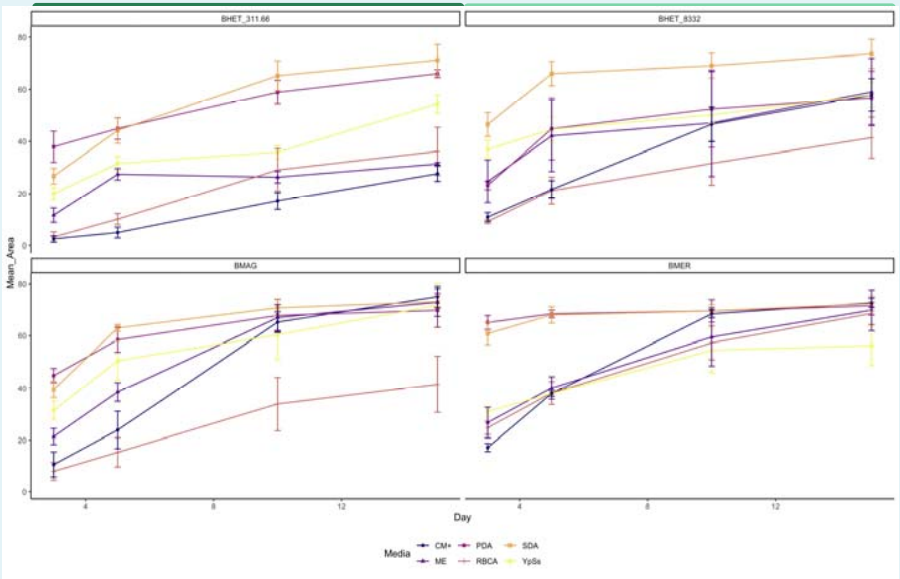


Figure 2. Growth of *Basidiobolus* spp. in different media conditions. Each point represents the mean area of fungal growth, while the bars represent the standard deviation of the area of fungal growth. Color of the media represents the color of the media type in the methods.

Table 1. Summary results for the growth assay of the four *Basidiobolus* isolates in six different media.

Media	Isolates	Growth
SDA	BMAG 205.64	Good
	BMER 140.55	Good
	BHET 311.66	Good
	BHET 8332	Good
PDA	BMAG 205.64	Good
	BMER 140.55	Good
	BHET 311.66	Good
	BHET. 8332	Moderate
YpSs	BMAG 205.64	Good
	BMER 140.55	Moderate
	BHET 311.66	Moderate
	BHET 8332	Moderate
ME	BMAG 205.64	Good
	BMER 140.55	Moderate
	BHET 311.66	Poor
	BHET 8332	Moderate
CM+	BMAG 205.64	Moderate
	BMER 140.55	Moderate
	BHET 311.66	Poor
	BHET 8332	Poor
RBCA	BMAG 205.64	Poor
	BMER 140.55	Moderate
	BHET 311.66	Poor
	BHET 8332	Poor

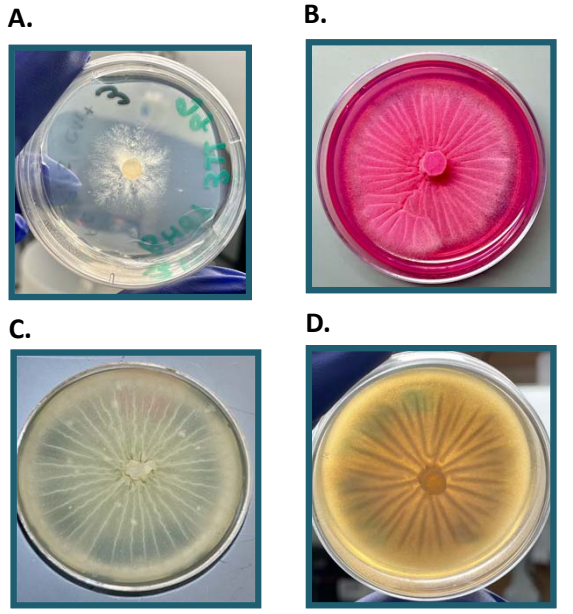


Figure 1. *Basidiobolus* spp. in different media. **A.** BHET 311.66 in CM+ media. **B.** BMER 140.55 in RBCA media **C.** BMAG 205.64 in SDA media. **D.** BHET 8332 in PDA media

Conclusions

- Rich media with high nutrients, such as SDA and PDA allow for larger growth of *Basidiobolus*, regardless of the species
- The selective media RBCA shows the least growth across most isolates, with the exception of BMER 140.55.
- BMAG and BMER display rapid healthy growths in most media, while BHET 311.66 and BHET 8332 display slow growth pace.
- *Basidiobolus* species will be grown and maintained in rich nutrient media for future extraction of nucleic acids for genome and transcriptomic sequencing

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