Rhodotorula mucilaginosa: a new player in vulvar infections

Cátia F. Caetano [1,2], Mariana Z. Fernandes [1,2], Carlos Gaspar [1,2,3], Ana S. Oliveira [1,2], Rita Palmeira de-Oliveira [1,2,3], José Martinez-de-Oliveira [1], Ana Palmeira-de-Oliveira [1,2,3], Joana Rolo [1,2(*)]

[1] CICS-UBI - Health Sciences Research Center, Faculty of Health Sciences, University of Beira Interior, Covilhã, Portugal

[2] Faculty of Health Sciences, University of Beira Interior, Covilhã, Portugal

[3] Labfit-HPRD: Health Products Research and Development Lda, Covilhã, Portugal

* joanarolo@fcsaude.ubi.pt

INTRODUCTION

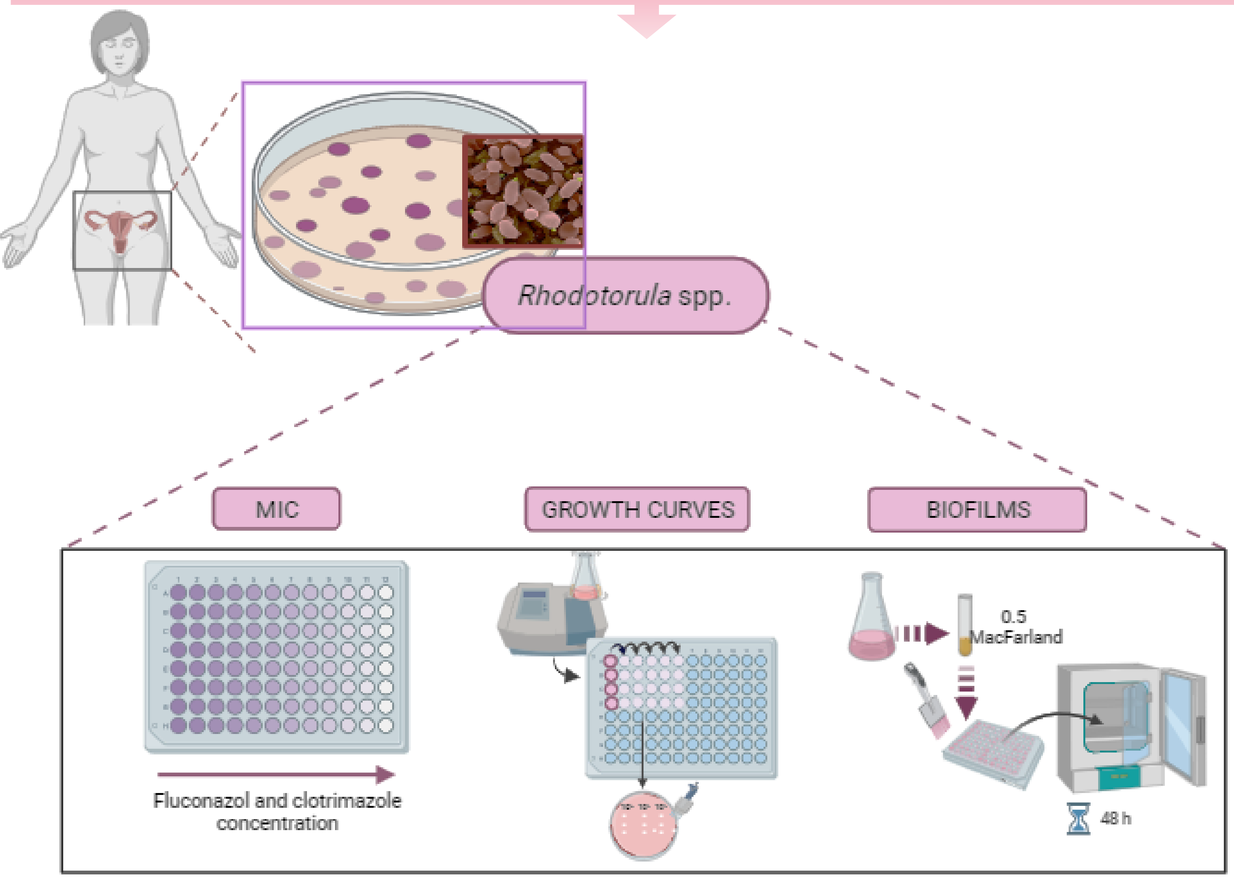
As a frequently occurring infectious disease mainly caused by *Candida albicans*, vulvovaginal candidosis (VVC) affects more than 100 million women worldwide every year [1].

Yeasts of the genus *Rhodotorula* are emerging yeast pathogens, being recently involved in skin and medical-device associated infections, particularly in immunocompromised hosts [2].

AIM

In this study we **aim** to assess the significance of the presence of *Rhodotorula* spp. in vulvar samples, as well as its ecological relationship with *Candida albicans.*

EXPERIMENTAL DESIGN



RESULTS

Table 1. The minimum inhibitory concentrations (MIC) of all isolates from the vagina and vulva to fluconazole (FLU) and clotrimazole (CLOT), as determined by broth microdilution.

Antifungal	Site	Isolates	MIC Range (µg/mL)	≤2	2–4	4-8	8-16	16-32	32-64	>64
Fluconazole	Vagina	0	-	-	-	-	-	-	-	-
	Vulva	30	32–>64	0%	0%	0%	0%	3.3%	6.7%	**90.0%**
Clotrimazole	Vagina	0	-	-	-	-	-	-	-	-
	vulva	30	≤2–>64	**70%**	0%	6.7%	0%	10.0%	3.3%	10.0%

***Rhodotorula* species - Biofilms (Biomass)**

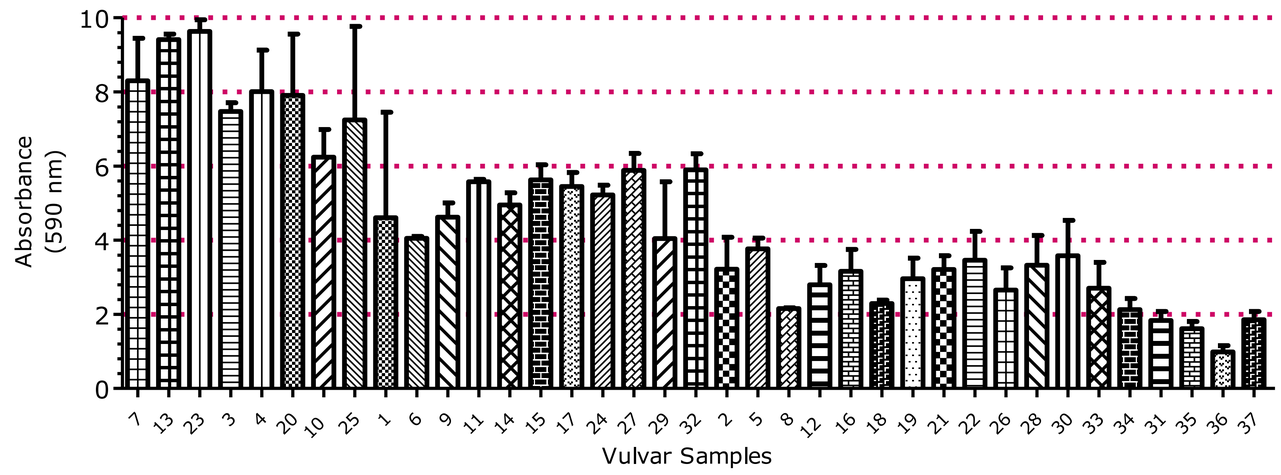


Figure 1. Graphical representation of biofilm formation (average and the respective standard errors) of the 37 vulvar samples.

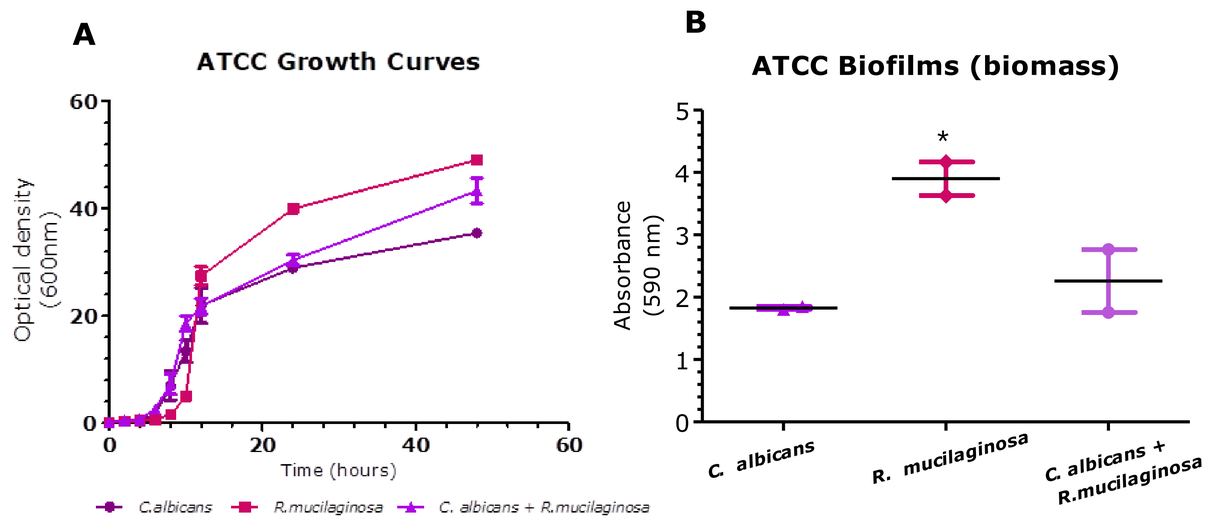


Figure 2. A) Graphical representation of the optical density vs. Time of the 48-h growth curve of the strains *C. albicans* ATCC10231*, R. mucilaginosa DSM 13621,* and the mixtures of the two yeasts; B) Graphic representation of biofilm formation (average and respective standard errors). One-way ANOVA test was performed, followed by the Dunnett test with a confidence level of 95%. Values of $p < 0.05$ were considered statistically significant (*)

CONCLUSION

- Antifungal susceptibility testing showed that the great majority of *Rhodotorula* spp. isolates were resistant to fluconazole (90%, MIC>64 µg/mL), but susceptible to clotrimazole (70%, MIC<2 µg/mL);
- All *Rhodotorula* spp. isolates were great biofilm formers. The growth curve of *C. albicans* was showed to be slower in the presence of *R. mucilaginosa,* and there was inhibition in the amount of biofilm biomass.
- Our results revealed that these two yeasts have antagonistic behaviours in co-culture.

[1]- Sobel JD. Vulvovaginal candidosis. Lancet. 2007;369(9577):1961-1971
[2]- García-Suárez J, Gómez-Herruz P, Cuadros Já & Burgaleta C. 2011. Epidemiology and outcome of Rhodotorulainfection in haematological patients. Mycoses 54: 318-324