

Evaluation of the anticandidal activity of polyphenol metabolites

Supervisors: Catarina Pimentel and Cláudia Nunes dos Santos

Duration: 10-12 months

Number of students: 1

Project Summary

Fungal infections range from superficial rashes, affecting mucosas, skin and nails, to life-threatening invasive infections (IFIs) in which fungi may enter the bloodstream and colonize any major internal organ [1]. IFIs caused by the yeast *Candida*, also named invasive candidiasis, represent the most common fungal disease among hospitalized patients receiving immunosuppressive or intensive antibacterial therapies [2]. The available antifungal drugs to fight invasive candidiasis are not completely effective, partly because of host toxicity, partly because of undesirable side effects and increasingly because of resistance emergence [3]. This scenario has worsened over the last decade, as no drug candidates exist due to the lack of investment in the development of novel antifungal agents [4]. Therefore, the urge to explore new strategies to fight invasive fungal infections is evident in this context.

Phenolic compounds, commonly referred to as polyphenols, are higher plants secondary metabolites, abundant in the Mediterranean Diet, and known to have anti-candida activity [5-7]. Throughout digestion, however, polyphenols suffer several chemical modifications and the bioavailable metabolites found in blood differ from the native compounds [8], leading us to question its efficacy in fighting invasive candidiasis. In this context, the main objectives of this project are:

- To compare the antifungal effect of native polyphenols with the corresponding blood bioavailable polyphenol metabolites on *Candida* spp,
- To evaluate if polyphenol metabolites may interact synergistically with different classes of antifungal drugs,
- To provide insights into the molecular basis of the antifungal activity of polyphenol metabolites.

References

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