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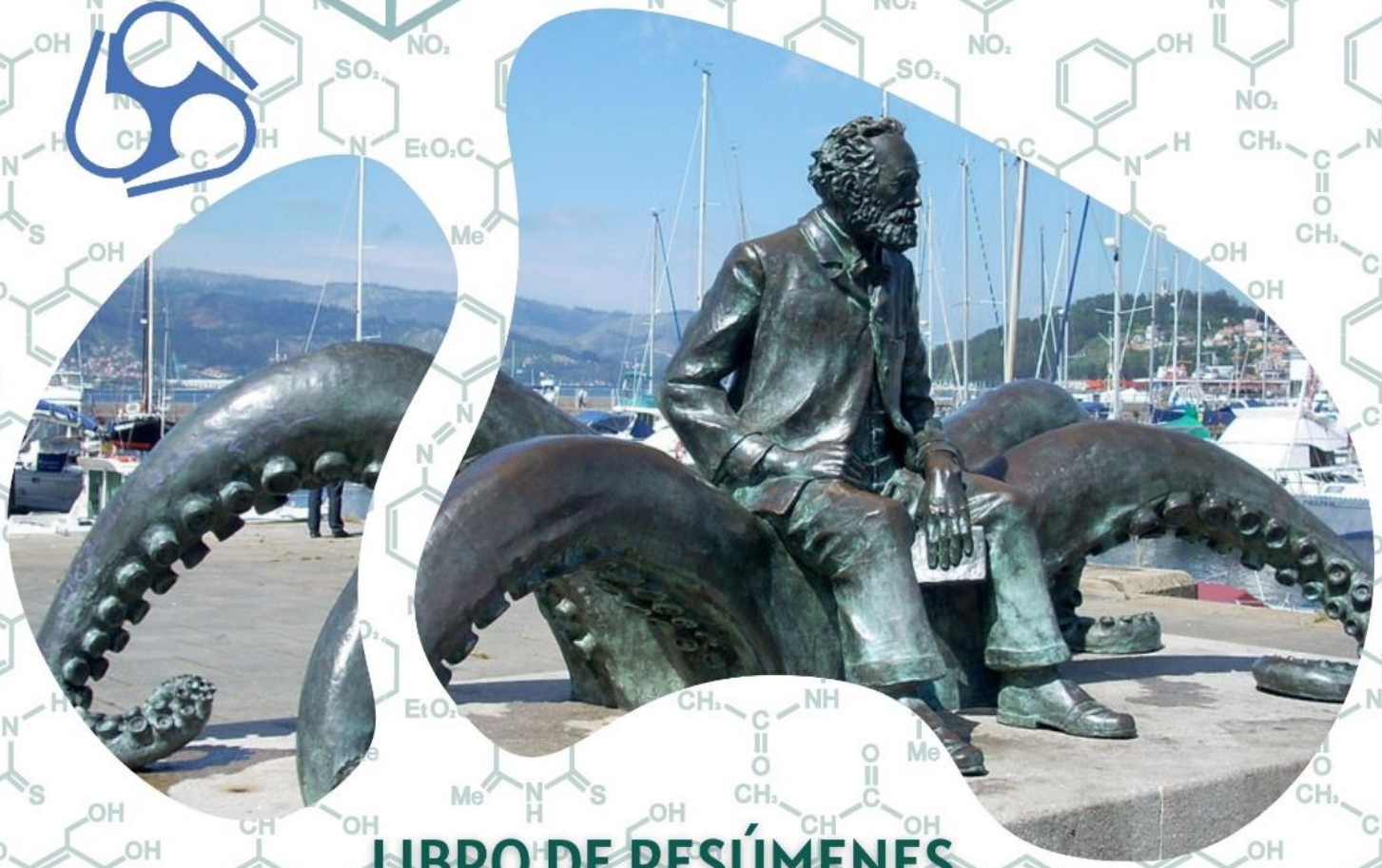

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Challenging invasive fungal infections: Development of innovative electrochemical nanogenosensors to detect *Candida spp.*

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Despite the considerable advances in the prevention and treatment of fungal infections, invasive fungus such as *Candida spp.,* continues to be one of the major causes of morbidity and mortality [1]. The Global Action Fund Infections reported that, annually, more than 300 million people are infected with fungal infection, from these, about 1.5 million ends up dying. *Candida albicans* is the most important fungal 66
opportunistic pathogen, it can cause superficial or invasive infections [1,2]. *Candida*, often, causes superficial infections, per example in skin or mucous membranes with simple and effective treatment, however, also can break to the bloodstream and disseminate to internal organs [3].

It has been observed among high-risk patients such as allogeneic stem-cell transplant recipients and with acute leukemia receiving high-dose chemotherapy [4]. These patients are at a heightened risk of developing infections due to the suppression of their immune system during the transplantation process. The diagnosis of systemic fungal infections persists as a problematic issue. Therefore, the development of more efficient, sensitive and specific methods for early diagnosis is need.

In this study, an easy, rapid, and accurate detection methods for fungal infections in patients undergoing hematopoietic stem cell transplantation (HSCT) was designed. To address this challenge, it was developed an electrochemical nanogenosensor for the detection of *Candida albicans*.This nanogenosensor was assembled in an innovative low-cost electrochemical paper based analytical devices (ePAD). A sandwich hybridization reaction was used to enhaced the sensitivity of the electrochemical signal.

Preliminary results demonstrated that using this nanogenosensors it was possible to detect Candida spp., in synthetic fungus sample. Despite these results, the optimization of the nanogenosensor in terms of quantifying *Candida albicans* is being carried out, which will be validated in future studies.The applicability in hospital environment relatively to sensitivity, accuracy, quickness response, challenges and opportunities will be discuss in future developments.

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