

Study of the antifungal potential of actinomycetes strains against the pathogen *Aspergillus fumigatus*

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Our society is facing the emergence of pathogenic bacteria and fungi resistant to available antimicrobials. WHO priority and critical pathogenic fungi include *Aspergillus fumigatus*, an azole-resistant fungus. *A. fumigatus* is a globally distributed ubiquitous environmental mould with high mortality rates in those with resistant infection [1]. To combat the problem, one of the keys is the discovery of new antimicrobials compounds, as well as the improvement of their production.

Through citizen science projects such as Tiny Earth [2] and other natural sources (compost, alkaline soils, trees, insects, etc.) we have isolated a few strains of actinomycetes, mainly from the genus *Streptomyces* [3-4] whose genome has been sequenced. These strains have a large genome in which a high number of biosynthetic gene clusters (BGCs) can be identified, thanks to bioinformatics programmes such as AntiSMASH v.6. [5]. This genomic mining together with genome annotation programs such as Prokka [6] and Rast allow us to search for genes of interest involved in antifungal compounds.

In addition to the *in silico* study, we have performed bioassays of some of the isolated *Streptomyces* strains against *A. fumigatus*. These assays have been performed using cultures of the isolated strains as well as extracts obtained from them. This enabled us to select the strain with the greatest antifungal potential for a more exhaustive study of its antifungal compounds in subsequent studies. Furthermore, we have performed dual cultures against plant pathogenic fungi of commercial interest to test the antifungal potential of our strains.

REFERENCES

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