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Resumen de Trabajos Libres

Biocontrol identification from resident on the epidermis of plants and amphibians against the plant pathogen *Botrytis cinerea*

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Introduction. *Botrytis cinerea* is an important fungal plant pathogen with a tremendous capacity to infect more than 500 plant species, mainly on fresh fruits and vegetables, leading to huge economic losses. Frequently, fungicides are used to control the *B. cinerea* infection; however, the potential damage to the environment and human health have led to worldwide policies to reduce their application[1]. Due to this, extensive studies have been carried out to develop control strategies against this plant pathogen; one of them is the identification of microorganisms able to inhibit fungal growth[2]. Here, we screen the microbiota isolated from the epidermis of plant leaves and amphibian skin to test its antifungal activity. The plant-resident microorganisms were isolated from a *B. cinerea*-resistance *Arabidopsis thaliana* mutant; while the amphibian library derives from samples collected from the skin of over 500 tropical frogs[3].

Methodology. *B. cinerea* was challenged with the plant and amphibian bacterial libraries under *in vitro* conditions. The confrontations were growth at 28 ºC during 7 and 14 days. After, fungal growth inhibition was determined by the mycelial arrest.

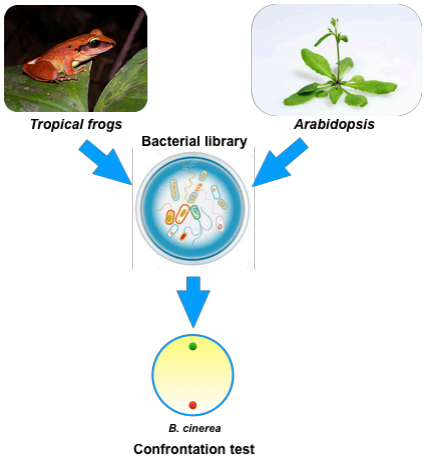

Figure 2. Diagram of the methodology of confrontation between Bacterial library-*B.cinerea*.

Results. We performed an *in vitro* growth inhibition test analyzing around 150 isolated bacteria against *B. cinerea*. Microorganisms with high antifungal activity were identified in both libraries, they belong to Bacilli, Gammaproteobacteria, and Actinobacterium classes.

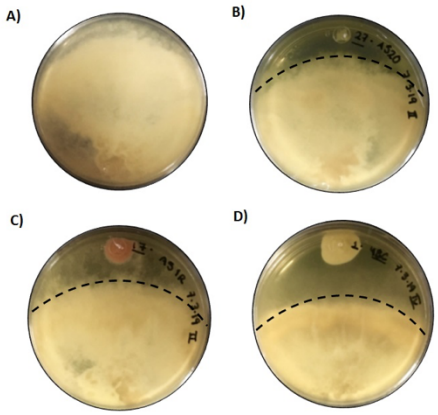

Figure 2. Confrontation between *B. cinerea* and bacterial libraries at 7 days. A) *B. cinerea* control. B-D) Inhibition growth of *B. cinerea* by confrontation with plant and amphibian bacterial.

Conclusions. It has been observed that bacterial resident in plant and amphibian epidermis has the potential to inhibit fungal growth. Currently, we are elucidating the bacterial molecular mechanism involved in its antifungal activity through high throughput genomic and biochemical approaches.

References

1. Jacometti M.A., Wratten S.D, Walter M (2010) Review: Alternatives to synthetic fungicides for *Botrytis cinerea* management in vineyards Austr. J. Grape Wine Res,16, 154-172.
2. Ferreira-Saab M., et al. (2018). Compounds Released by the Biocontrol Yeast *Hanseniaspora opuntiae* Protect Plants Against Corynespora cassiicola and Botrytis cinerea. Frontiers in microbiology, 9.
3. Rebollar E.A., *et al* (2018) The skin microbiome of the neotropical frog Craugastor fitzingeri: inferring potential bacterial-host-pathogen interactions from metagenomic data. *Frontiers in microbiology*, *9*, 466.