Poster

Isolation, study and characterization of novel antimicrobials drugs of natural origin

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ABSTRACT

Motivation: Currently, there is great concern due to the increasing number of bacteria resistant to conventional antibiotics[1]. Here we try to identify new antimicrobial compounds produced by clones of a metagenomic library from the natural park of "Los Alcornocales". In previous screens, clones C12A, V1A,V2A and V3A, showed antimicrobial activity against Micrococcus luteus and Staphylococcus aureus. In this work we attempted to purify the active compound produced by these clones.

Methods: The activity of cultures induced with arabinose and sodium salicylate [3], or filtered supernatants from these cultures, is assayed on a lawn of the target strains. After activity confirmation we proceed to fractionation with organic solvents and active fractions are subsequently analyzed by HPLC and NMR[2].

Results: Antimicrobial activity against M.luteus has been observed in the filtered supernantant of strains C12A at concentration 10X and 20X. The results of the separation of organic fractions shows that the activity may be due to the presence of catechol[4]. The antibiotic activity of clones V1A, V2A and V3A against M. luteus and S. aureus has been confirmed. In the case of V3A, the activity is only detected when cultures are grown in the presence of the inducers arabinose and sodium salicylate [3]. In the case of clones V1A and V2A the highest activity is obtained in the absence of the inducers and correlates with the production of a compound that turns the culture blue. With respect to supernatants of liquid cultures, we were only able to detect activity against M luteus in filtered supernatants of V3A concentrated 10x.

Conclusions: For C12A, the results suggest that the antimicrobial activity may be due to the presence of catechol in the filtered supernatant. In the case of clone V3A, we have obtained antimicrobial activity in the filtered supernatant of the cultures and we are currently scaling up the production condition for further fractionation. For clones V1A and V2A, we could detect detect antimicrobial activity when they are growing on the lawn of the target strain but filtered supernatants did not show activity. We are fine-tunning the culture conditions to obtain sufficient amount of the compound in the supernatants for further fractionation. The fact that the presence of antimicrobial activity correlates with the presence of a blue compound in the cultures suggests the possibility that such a compound is related to the activity.

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