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Bacterioma associated with stingless bee *Melipona scutellaris*: antiprotozoal activities and chemical profiling

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Symbiotic microorganisms have demonstrated the ability to biosynthesize compounds with high biological potential, generating great attention in several areas of research. It is known that social insects are exposed to various abiotic and biotic environmental pressures by increasing their susceptibility against natural enemies such as pathogens. Thus, these insects evolutionarily developed some mechanisms of defenses. One of them include the association with bacteria that produce antimicrobial compounds, which help the host in the defense against pathogens, mainly fungi. As part of a thematic project focused on the discovery of antimicrobial natural products from bacterial symbionts of insects [1], nineteen actinobacteria strains associated with the stingless bee *Melipona scutellaris* have been isolated from nurse bees and foraging bees [1]. Some (23) extracts of these symbiotic actinobacteria cultured in ISP-2 agar showed good activity against *Trypanosoma cruzi* and *Leishmania donovani* [2]. Our first screening showed that several EtOAc extracts of some strains were most active than MeOH extracts against *L. donovani*. On the contrary, the MeOH extracts of different strains showed better activity than EtOAc extracts against *T cruzi*. The most active strains were selected for further chemical and biological studies in the search of antiprotozoal compounds. Here we present the antiprotozoal activities of actinobacteria, as well as an outline of the chromatographic profiles and yields of extracts obtained from seventeen actinobacteria strains cultured under different conditions. First, strains were cultured in ISP-2 liquid and ISP-2-agar solid monoculture during 7 to 15 days, depending on the microorganism. EtOAc and MeOH extracts were obtained from solid culture, while EtOAc and *n*-BuOH extracts from liquid culture. Then, the EtOAc extracts and the different fractions of extracts MeOH and *n*-BuOH pre-fractionated by SPE were analyzed by HPLC-DAD-ELSD. The EtOAc extracts of diverse strains cultured in solid medium showed similar chromatographic profiles. On the other hand, extracts of different actinobacteria in liquid cultures presented different chemical profiles when this are compared with the extracts of solid cultures. In addition, the yields of EtOAc extracts were different depending of the cultured medium and strain, whereas the yields of MeOH extracts in solid medium were higher than the *n*-BuOH extracts in liquid medium. Therefore, our preliminary data show that the biosynthesis of metabolites is differently influenced by liquid and solid culturing conditions. In the next step, we are going to isolate and characterize the antiprotozoal compounds.

References

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