10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil

Section: 05

ACTINOBACTERIA FROM *TETRAGONISCA ANGUSTULA* MICROBIOME: A PROMISING SOURCE OF ANTIMICROBIAL COMPOUNDS.

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With the spotlight on growing antimicrobial resistance (AMR), research on natural products discovery from microorganisms represents a rich source of novel bioactive metabolites. In this context, social insects such as *Tetragonisca angustula* and their microbiomes emerge as a promising model for study, since stingless bees (tribe Meliponini, Hymenoptera) may establish symbiotic interactions with microorganisms that play important roles in the hive. In this study, actinobacteria isolated from *T. angustula* bees obtained from colonies maintained in the meliponary of the Department of Biology, Faculty of Philosophy, Sciences, and Letters on the Ribeirão Preto campus, University of São Paulo were tested in antagonism assays using the overlay soft agar method against several pathogens to evaluate their bioactive profiles. The isolates exhibited activity against *S. aureus* ATCC 3538, *C. albicans* ATCC 10231, *P. larvae* ATCC 9545 and *Beauveria bassiana*. Extracts from the most promising strains were obtained from both solid and liquid cultures and tested against the same pathogens in 10 mg/mL concentration. Several extracts revealed inhibitory potential and for each active strain, one extract was selected based on bioactivity and chemical profile obtained by HPLC-DAD-ELSD analysis. The selected extracts were fractionated through solid-phase extraction (SPE) using MeOH/H_2O, and both chemical profile and bioactivity of the fractions were evaluated. Fractions with promising activity are currently undergoing further bioassays and HPLC-MS/MS analysis. The results demonstrate that the microbiome of *T. angustula*, particularly the isolated actinobacterial strains, represents a promising source of bioactive compounds with antimicrobial activity. The 16S rRNA genes from the active strains were amplified and sequenced for identification and phylogenetic analysis. Among the 24 strains isolated, 39% exhibited inhibition activity against human and entomopathogenic pathogens, with the genus *Streptomyces* being most frequently associated with bioactivity. These findings suggest that actinobacteria, specially from *Streptomyces* genus, may play a defensive role in the hive, producing specialized metabolites against entomopathogens in the beehive.

Keywords: *Stingless bees, actinobacteria, microbiome, bioactive metabolites.*