

TITLE: DIVERSITY AND BIOPROSPECTION OF ENDOPHYTIC BACTERIA ASSOCIATED WITH PASSION FRUIT PLANTS (*Passiflora incarnata*)

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ABSTRACT: *Passiflora incarnata* has long been used in traditional popular medicine for the treatment of insomnia and anxiety, for analgesic, anti-spasmodic, anti-asthmatic, wormicidal and sedative purposes, and for the treatment of disorders such as dysmenorrhoea, epilepsy, neurosis and neuralgia. Because it is a plant that has many biological activities and due to the lack of studies about the endophytic microorganisms associated with this plant, this study was conducted to explore the endophytic bacterial diversity associated with *P. incarnata* and evaluate their antimicrobial potential against phytopathogens of passion fruits plants. 175 culturable bacterial endophytes were isolated from surface-sterilized leaves of *Passiflora incarnata* and molecularly characterized to 15 genera: *Acinetobacter*, *Arthrobacter*, *Bacillus*, *Brevundimonas*, *Chryseobacterium*, *Curtobacterium*, *Kitasatospora*, *Methylobacterium*, *Microbacterium*, *Paenibacillus*, *Pantoea*, *Paracoccus*, *Pseudomonas*, *Sphingomonas* and *Streptomyces*. The dominant genera include *Sphingomonas* (28.7%), *Methylobacterium* (14.3%) and *Curtobacterium* (11.5%). Among 175 isolated endophytic bacteria, 11 were selected based on their antimicrobial potential *in vitro* against six fungal (*Colletotrichum gloeosporioides*, *Rhizoctonia* sp., *Phytophthora parasitica*, *Colletotrichum boninense*, *Fusarium oxysporum* f. sp. *passiflorae* and *Fusarium solani* f. sp. *passiflorae*) and one bacterial (*Xanthomonas axonopodis* pv. *passiflorae*) phytopathogens. Screening of endophyte isolate has antimicrobial activity was done using agar well diffusion and dual plate methods. Furthermore, this study compared the cultivated endophytic communities of *P. incarnata* with the total endophytic communities as determined by cultivation-dependent techniques and Illumina MiSeq sequencing. Bacterial taxa in the samples were analyzed using Illumina-based sequencing of the V3-V4 hyper variable regions of bacterial 16S rRNA genes. Among the ten most abundant taxa of the total communities, five aligned well with the cultivated taxa; however, the abundance of these taxa in the two communities differed greatly.

Keywords: bacterial endophytes, 16S rRNA, *P. incarnata*, antimicrobial, NGS.

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