P61 ENDOPHYTIC BACTERIA FOR BIOCONTROL OF COFFEE LEAF RUST (*HEMILEIA VASTATRIX*)

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Endophytic microorganisms are used for biological control of plant diseases and for enhanced agronomic plant characteristics. Several mechanisms may control the suppression of plant pathogens, either directly by antibiosis and competition, or indirectly by induction of plant resistance response. The objective of this work was to select endophytic bacteria strains from coffee leaves (F) and stems (G) with biocontrol potential against coffee leaf rust (*Hemileia vastatrix*). Two hundred thirty two endophytic bacterial strains were evaluated in coffee leaf discs. Bacterial suspensions were applied on leaf discs, 72 and 24 hours before, after and simultaneously with the pathogen. As results, nine bacterial strains (116G, 123G, 36F, 137G, 14F, 109G, 115G, 3F, and 119G) showed to be effective in reducing the rust development. These selected bacterial strains were evaluated in coffee seedlings (*Coffea arabica* 'Mundo Novo'). The bacterial suspensions were sprayed to the foliage 72 and 24 hours before, after, and simultaneously with the pathogen. The best control levels were obtained when the biocontrol agents were applied 72 hours before the pathogen. Four endophytic strains - 119G, 3F, 115G, and 109G - were effective in controlling the coffee leaf rust (89%, 84%, 69%, and 66%, respectively).

The activity of enzymes (peroxidase, lipoxygenase, and phenilalanine ammonia-liase) was assessed in relation to the control of *H. vastatrix* in leaf coffee seedlings seven days after the spray of four bacterial strains (119G, 3F, 115G, and 109G). It was observed that the inoculation of the strains 3F and 119G increased the peroxidase activity in leaves of coffee seedlings and significantly reduced the number of rust lesions per leaf. The other enzymes were not affected. The detection of peroxidase activity in leaves without the presence of the antagonists and pathogen proves the induction of systemic resistance, but probably there are other mechanisms of action. The isolates were identified based on cell membrane fatty acid contents, analyzed in a gas chromatograph, using microbial identification software (MIDI Sherlock TSBA Library version 5.0, Microbial ID, USA), as 3F=*Bacillus coagulans*, 115G=*Microbacterium testaceum*, and 119G=*Cedecea davisae*.

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