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Studies on the colonization of Axenically grown tomato plants by a GFP-Tagged strain of *Clavibacter michiganensis* subsp. *Michiganensis*.

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Clavibacter michiganensis subsp. *michiganensis* (Cmm) is the causal agent of bacterial wilt and canker of tomato (*Solanum lycopersicum*), which is considered to be the most serious disease of tomato. In this project, a green fluorescent (GFP)-tagged, spontaneous rifampicin resistant strain of Cmm was generated to study the colonization of axenically grown tomato plants. Transformants expressed GFP in a stable way also *in planta*. The virulence of the GFP-tagged strain was comparable with that of the wild type strain. Plants were drop-inoculated at the stem base and the number of CFU per gram of tissue was determined by dilution plating on a selective medium. Cmm efficiently colonized the *in vitro* plants. At 0 dpi, the bacteria were already present in low densities in the roots. At 16 dpi, both strains were equally distributed throughout the entire plant with high densities of ca. 10^{10} CFU g⁻¹. Plants developed symptoms typical for Cmm such as canker, wilting and growth reduction. The presence of Cmm in vascular and parenchymatic tissue was confirmed by UV stereo- and confocal microscopy. This study showed that GFP-tagged strains can be effectively used for detailed studies on plant colonization of Cmm. The testing system based on *in vitro* plants can be potentially used for fast screening of the virulence of Cmm strains or plant material for resistance against Cmm. We thank Dr. R. Eichenlaub (Bielefeld, Germany) for providing the *gfp*-plasmid.

Apoio: FAPEMIG, CAPES.