

**The type III secretion system is necessary to develop a pathogenic interaction  
between *Herbaspirillum rubrisubalbicans* and the plant**

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*Herbaspirillum rubrisubalbicans* is a diazotrophic, endophytic  $\beta$  Proteobacterium which associates with several Poaceae. *H. rubrisubalbicans* causes mottled stripe disease in the B-4362 variety of sugar cane.

In several plants, bacterial pathogen virulence is in part dependent on a group of proteins that are injected into the host cells by a type III secretion system (TTSS). This is a highly conserved secretion machinery to deliver bacterial proteins into eukaryotic cells. The *hrpE* and *hrcN* genes, which code for proteins of the TTSS, were identified in the genome of *H. rubrisubalbicans*.

Two mutants TSE (*hrpE*) and TSN (*hrcN*) were obtained. As shown previously sugar cane B-4362 was inoculated with the wild type M1 and mutant strain TSE. Characteristic symptoms of the mottled stripe disease were observed in the plant inoculated with the M1. Plants inoculated with TSE, however, failed to develop any symptoms of the disease.

In this work the mutants TSE and TSN were also inoculated in *Vigna unguiculata* cv. *Red Coloonis* and, in contrast to plants inoculated with the wild type strain, ten days after inoculation plants treated with the mutants failed to develop the hypersensitive response or disease in the leaves. We also noticed that the capacity of the mutant strains to colonize the leaves internally was lower than the wild type M1. These results confirm that TTSS is functional in *H. rubrisubalbicans* and the genes *hrpE* and *hrcN* probably are structural elements of the TTSS machinery that participate in the colonization process of *H. rubrisubalbicans* in *Vigna* leaves.

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