Genetic transformation of Micro-Tom tomato with a citrus calcium signal modifier gene (CSM-1) targeting resistance to *Ca.* L. solanacearum.

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Candidatus Liberibacter spp. infection in citrus and tomatoes causes reduction of productivity and devastating economic losses. Transgenic citrus plants transformed with a calcium signal modifier (CSM-1) gene showed resistance to a bacterial and two fungal pathogens in preliminary detached leaf assays. Citrus has a long juvenile period whereas tomatoes have a short lifecycle, easy to genetically transform, and can be used as a model organism. The objectives of this study were to develop transgenic micro-Tom (MT) tomato plants over-expressing CSM-1, study morphological and physiological changes, observe how CSM-1 segregates and screen for resistance to *Ca.* L. solanacearum (Lso). MT cotyledons were transformed with CSM-1 gene using *Agrobacterium* strain EHA105 (optical density of 0.2-0.6), putative transformed shoots were identified by kanamycin resistance and histochemical GUS assay. CSM-1 gene expression was verified through RT-PCR for a total of 17 transgenic lines. Some transgenic MT lines produced seedless fruit; other lines produced low to moderate seeds giving a mean of 2.12 seeds per fruit and a 60% germination rate. Pollen viability was determined by germination on semi-solid medium for seedless lines and observed every 3h. Wild type MT pollen germination was 37.94% compared with a 2.19% rate of one of the transgenic lines; low pollen viability caused low seed set. Offspring of transgenic MT plants were infected with Lso via tomato/potato psyllid (*Bactericera cockerelli*) feeding and infected plants were confirmed by quantitative PCR (qPCR). CSM-1 gene copy number was determined through qPCR and verified by Southern blots for shoots excised from transgenic calli (T0 plants).