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ANALYSIS OF VIRUS RESISTANCE IN A GM TOMATO LINE: BIOLOGICAL STUDIES AND MECHANISMS INVOLVED

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Tomato spotted wilt virus (TSWV), genus *Tospovirus*, is an important pathogen of many crops worldwide. We have previously described the production and selection of a TSWV-resistant tomato line (30-4) obtained by genetic transformation with the N gene of TSWV. This line has a true-to-type phenotype and a single integration locus with multiple rearranged transgene copies.

Due to the interesting features of this line, we decided to study the resistance more in depth, using biological as well as molecular tools. Since post-transcriptional gene silencing (PTGS) is often involved in cases of extreme resistance to viruses and is associated with the presence of siRNAs, RNAs were extracted from the transgenic homozygous 30-4 plants and analysed by urea PAGE: following transfer on nylon membrane, hybridizations were performed with transgene-specific dig-labelled probes and small interfering RNAs (siRNA) were detected.

The biological role of these siRNA in the resistance has been studied by grafting experiments. Transgenic scions were grafted on TSWV-infected tomato rootstocks to evaluate whether viral infection could be transmitted through phloem to the transgenic scion. In a second type of grafting, nontransgenic scions were grafted on transgenic rootstocks and, after one week, mechanically inoculated with TSWV. These experiments should indicate whether a "resistance signal" is present in the GM plants, and whether it can be translocated through the grafting junctions, affecting virus replication.

Several plant viruses have been shown to code for silencing suppressors (2b, HC-Pro, p19, p25, AC2, etc.). Experiments are in progress to understand if these viruses interfere with the resistance observed.