OVEREXPRESSION OF TREHALOSE BIOSYNTHESIS GENES FROM *Saccharomyces cerevisiae* IN TRANSGENIC TOMATO PLANTS

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Introduction. In this work, we report the overexpression of trehalose biosynthesis genes by a gene fusion trehalose phosphate synthase and trehalose phosphate phosphatase (*TPS-TPP*) from *Saccharomyces cerevisiae* in tomato transgenic plants. The gene fusion was driven by the action of two different promoters, the constitutive 35SCaMV promoter, and the RD29A promoter, inducible by different abiotic stresses (1). Our working group has previously generated transgenic alfalfa plants with the gene fusion to overproduce trehalose. Transgenic alfalfa displayed a significant increase in drought, freezing, salt, and heat tolerance; demonstrating that can be improve tolerance to different abiotic stresses in this crop (2). Thus, the yeast TPS-TPP protein represents a great potential for generating stress-tolerant crop plants for agriculture.

Methods. Constructs for plant transformation containing the *TPS1-TPS2* gene fusion were reported (1). These constructs use as a backbone the pBin19 vector containing either the *35S* or the *RD29A* promoter. The constructs were introduced by electroporation in *Agrobacterium tumefaciens* LBA4404 strain. The resulting bacteria were used to transform tomato. Well-developed shoots were recovered from callus culture on media containing 100 mg L^{-1} kanamycin. Rooted plantlets were transferred to pots with vermiculite as growth substrate (Fig. 1).

Results. Tomato transformation experiments originated several kanamycin resistant shoots. Independent transgenics shoots, were transferred to elongation and rooting medium and then sown in soil. Putative transformed plants were screened by PCR analysis using genomic DNA of tomato leaves from WT and transgenic lines as template. Five transgenic tomato plants, amplify the fragment corresponds to 760 pb fragment for selectable marker gene *NPTII* (Fig. 2). So far, transgenic plants had no morphological differences compared to the WT.

Fig.1 Aspect of transgenic tomato plants under inducible promoter RD29A.

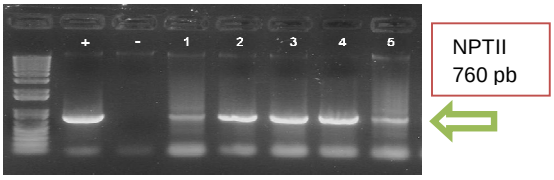

Fig.2 Genomic polymerase chain reaction (PCR) of tomato plants. Lines transformed with the *RD29A::TPS1-TPS2* constructs. The DNA band corresponds to a 760 bp PCR fragment of *NPTII* selectable marker gene.

Conclusions. Five transgenic lines were obtained under the RD29A promoter, none of the lines displayed morphological alterations.

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