A POTENTIAL OF *SLETR1*-2, A WEAK ALLELE OF TOMATO ETHYLENE RECEPTOR MUTANT AS A BREEDING MATERIAL FOR IMPROVING SHELF LIFE OF FRUITS

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Ethylene is a key factor for the regulation of tomato fruit shelf life and accelerates fruit quality deterioration. Modification of ethylene signaling pathway and biosynthesis allows us to improve tomato fruit shelf life. In our previous study, we have isolated tomato mutants with a mutation in the ethylene receptor gene (*ETR1*) from our Micro-Tom mutant library. According to the preliminary evaluation, *Sletr1*-2 mutant showed a reduced sensitivity to ethylene and extended shelf life of fruits, expecting the potential as a breeding material. The aim of this study was to evaluate the potential of *Sletr1*-2 mutation for F1 hybrid cultivars with extended fruit shelf life. *Sletr1*-2 and its background (*WT-MT*) were crossed with four commercial pure line cultivars (‘Aichi First’, ‘Ailsa Craig’, ‘Money Maker’ and ‘M82’) to obtain F1 hybrid lines that would be evaluated. The F1 hybrids were cultivated using NFT hydroponic cultivation systems and evaluated for the growth and development. Compared to *WT-MT* F1 hybrid lines, *Sletr1*-2 F1 hybrid lines showed extended fruit shelf life, increased fruit firmness and slightly reduced a fruit red color while it did not show significant differences in other fruit characters such as size, fresh weight and pericarp thickness and plant development. Furthermore, the sugar content of two *Sletr1*-2 F1 lines was higher than those *WT-MT* F1. These results suggest a significant potential of *Sletr1*-2 as a breeding material for improving shelf life of tomato fruits.