

**CHARACTERIZATION OF AOX GENE EXPRESSION IN RESPONSE TO MESA AND MEJA PRE-TREATMENT AND LOW TEMPERATURE IN PINK TOMATOES (*LYCOPERSICON ESCULENTUM*)<sup>s</sup>**

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Methyl salicylate (MeSA) vapor increased resistance against chilling injury (CI) in freshly harvested pink tomatoes (*Lycopersicon esculentum* L. cv. Beefsteak). The expression patterns of alternative oxidase (AOX) before and during the chilling period demonstrated that pre-treatment of tomato fruit with MeSA vapor increased the transcript levels of AOX. We used 4 EST tomato clones of AOX from the public database that belong to two distinctly related families, 1 and 2 defined in plants. Three clones were designated as LeAOX1a, 1b and 1c and the fourth clone as LeAOX2. Using RT-PCR, all three Family 1 clones were expressed in leaf and fruit tissues, but RNA transcript from LeAOX1a of AOX subfamily 1 was present in much greater abundance than 1b or 1c. The presence of longer AOX transcript detected by Northern analysis in cold-stored tomato fruit was confirmed to be the un-spliced pre-mRNA transcript of LeAOX1a and LeAOX1b clones, while intron splicing of LeAOX1c clone was not affected by cold storage. The intron splicing event in AOX pre-mRNAs did not relate to its abundance level. Transcript levels of key genes involved in RNA processing (splicing factors: 9G8-SR and SF2-SR, fibrillarin and DEAD box RNA helicase) were altered by changes in storage temperature. The inhibition of the AOX intron splicing event and its relationship with the change in expression of RNA processing enzymes in cold stored tomato fruit was discussed.

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