

Supporting Information

Volatile Compound and Gene Expression Analyses Reveal Temporal and Spatial Production of LOX-derived Volatiles in Pepino (*Solanum muricatum* Aiton) Fruit and LOX Specificity

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Table S1. Degenerate and specific primers from pepino for qPCR assays.

Gene	Primer type	Forward primer sequence (5'→3')	Reverse primer sequence (5'→3')	Amplicon size (bp)	T _m (°C)
5-LOX potato	Degenerate	ATGVTTGCKGGNGTAAATCC	CATNKTRTYNCGRTAGTGAGG	~600	52
9-LOX.1	Degenerate	THTGCAATTCTTGGGKTATC	CGCTCGTCYCTYGGBACATAKAT	373	58
9-LOX.2	Degenerate	GCTTCAYCCHATTTCATAARCTTYT	CCTTCCACCAVGCTTGKAGTTCA	392	58
13-LOX.1	Degenerate	CMTGYAAYTCWTGGGTTC	ATKSTTCATCTCTYGGWACRTA	369	58
13-LOX.2	Degenerate	TAAGYGCRATGCATCCWATWTATA	1. GYATACCAWGCTTGCAGCTCCC 2. CTRACCACCAAGCTTGGAGTTCTT	397 399	58 58
<i>SmLOXA</i>	Specific	TTAAGTTTGCCACATCCAAATGG	GATGAACACCTGAGTCAACAAC	136	62
<i>SmLOXB</i>	Specific	CTAAGTTTACCACATCCAGACGG	GATGAATGCCCGTGTCATTAC	136	64
<i>SmLOXC</i>	Specific	GCTCTATTGCCTATGGTGCTGA	CTAGTTTCAATCCATGTGGTGCA	114	64
<i>SmLOXD</i>	Specific	TAGAAATTAACGGCTTGGCTCAC	ATCCCTCTTCGGATAAGGTCAG	163	64

<i>SmLOX5</i>	Specific	CGACAAACAGGCAACTAAGTGT	AAGCTGCTGAGGTCATCTCCAT	174	62
<i>SmLOX5-like1</i>	Specific	GCTAGTAACTTTGAGAGGAGATG	TACTCAGAGGACCCTCCAAGGA	141	64
<i>SmLOX5-like2</i>	Specific	ATTGAACCACCATGACACCCTG	TCAAAGTTCCATCATCTTGCAGAA	113	64
<i>SmLOX5-like3</i>	Specific	AATTGTTCTGGGTCATAATTCCAG	CCCTTTCCTCATCGCTATCTTT	113	62
<i>SmTCPB</i>	Specific	GCTAAGGCGGTTGATGAACTAG	ACTGTCTAACCCAGCATTGTCG	123	64

Table S2. Putative lipoxygenase genes aligned against pepino transcriptome.

Putative gene	GenBank access	Fragment size (bp)	Unigene ^a	Length (bp)	Identity
<i>SmLOXA</i>	KY783402	864	SMUC30340_TC01	3,145	821/864 (95%)
<i>SmLOXB</i>	KY783403	1,558	No Match	-----	-----
<i>SmLOXC</i>	KY783404	1,535	SMUC02536_TC01	3,085	1534/1535 (99%)
<i>SmLOXD</i>	KY783405	351	SMUC28699_TC01	3,083	350/351 (99%)
<i>SmLOX5</i>	KY783406	447	SMUC15710_TC01	421	385/387(99%)
<i>SmLOX5-like1</i>	KY783407	326	No Match	-----	-----
<i>SmLOX5-like2</i>	KY783408	867	SMUC02419_TC05	3,182	864/867(99%)
<i>SmLOX5-like3</i>	KY783409	1,492	No Match	-----	-----
No Match	-----	-----	SMUC30339_TC01	345	-----
No Match	-----	-----	SMUC36124_TC01	638	-----
No Match	-----	-----	SMUC37650_TC01	1,176	-----
No Match	-----	-----	SMUC39068_TC01	307	-----

^a From the transcriptome sequenced by Herraiz *et al.*, 2016.

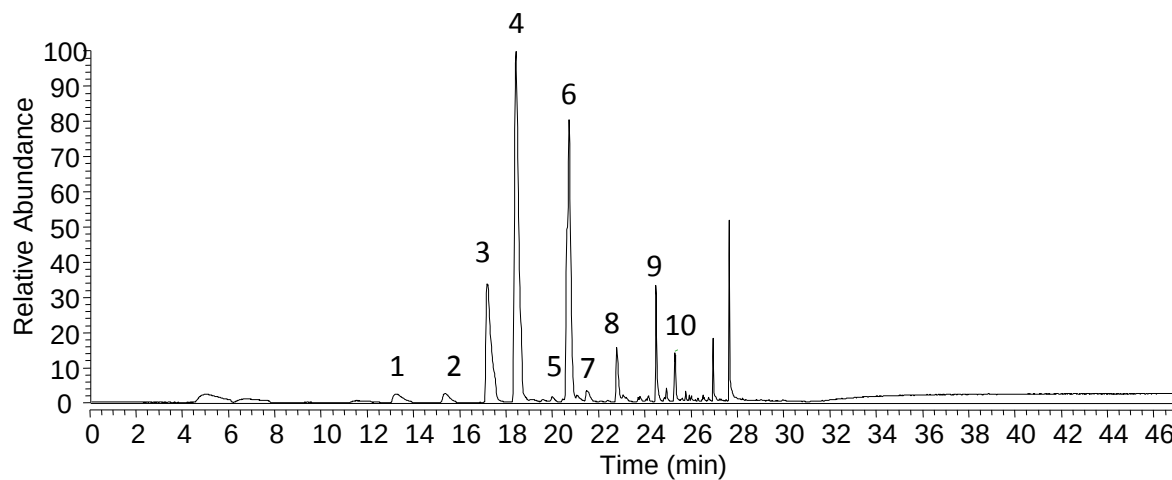


Figure S1. GC-MS chromatogram of a ripe intact pepino fruit (Phenological stage 5) during 2016 [1: butyl acetate; 2: 3-methylbutyl acetate; 3: methyl 3-methyl-2-butenate; 4: 3-methyl-3-butenyl acetate; 5: *cis*-ocimene; 6: *trans*-ocimene and limonene; 7: hexyl acetate; 8: perillene; 9: 3-methyl-3-butenyl 3-methylbutanoate; 10: butyl 3-methyl-2-butenate; 11 unknown; 12 unknown].

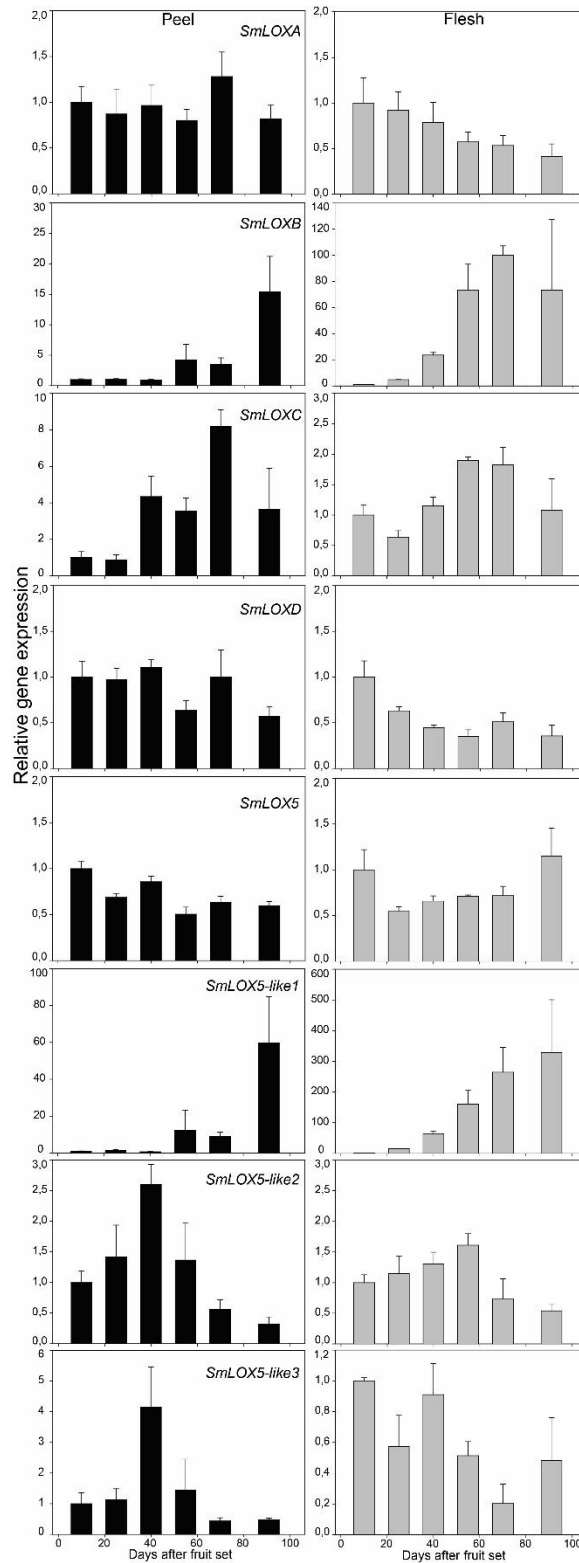


Figure S2. Relative expression of lipoxigenase (LOX) genes during pepino development in the 2015 season. Error bars indicate SE from three biological replicates. Expression levels of each gene are expressed as a ratio relative to the phenological stage 1 (10 days after fruit set), which was set at 1.

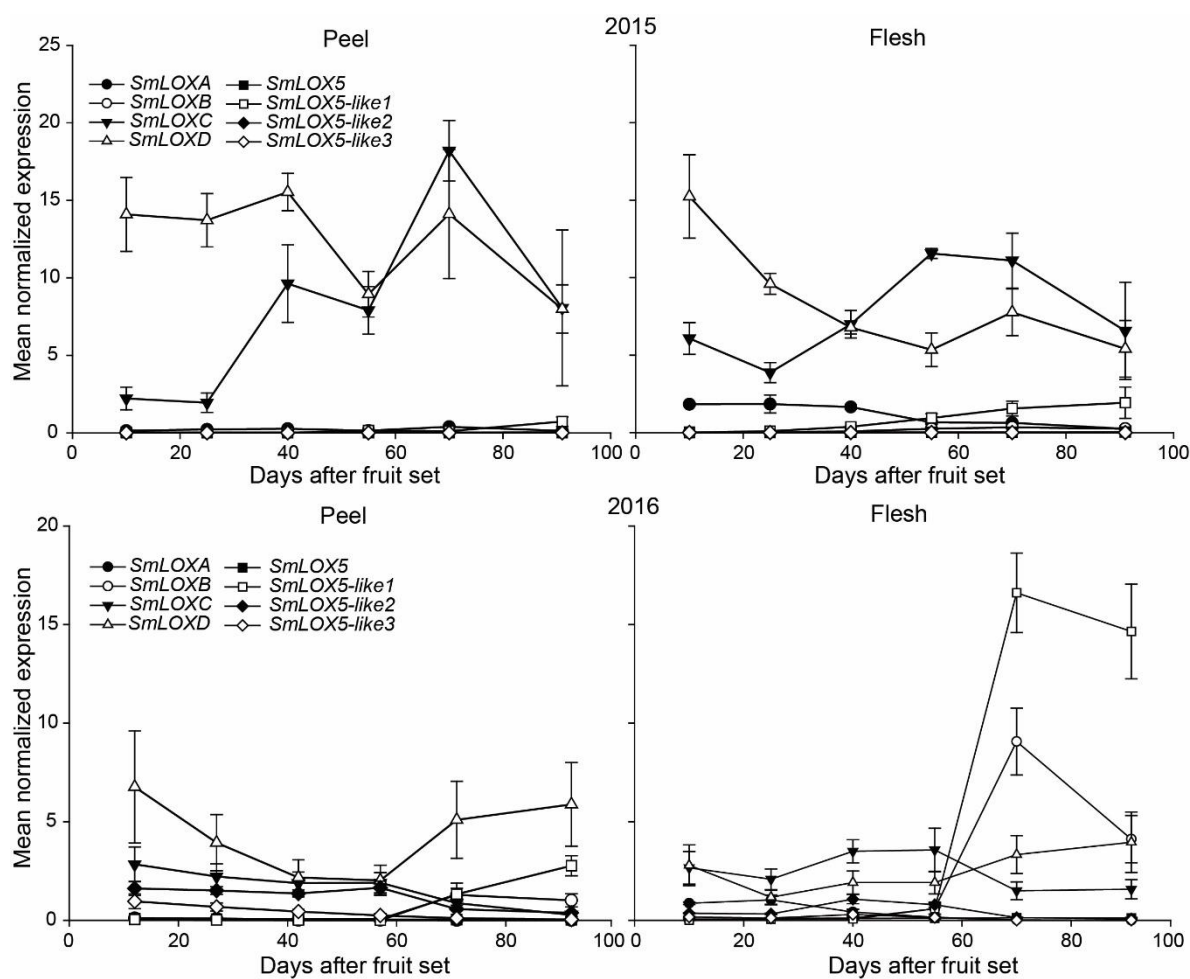


Figure S3. LOX transcript levels in pepino peel and flesh tissue during fruit ripening for 2015 (top) and 2016 (bottom) years. Data are means $\pm$ SE of three biological replicates.