

Supplementary Table 1A. Triplicate Ct values of L-galactose pathway genes associated with AsA biosynthesis during fruit development in flavedo of *Citrus sinensis* cv. Nagpur sweet orange

	GME			GMP			GGP			R1	GPP		GDH			GLDH		
	R1	R2	R3	R1	R2	R3	R1	R2	R3		R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	31.64	32.2	31.1	21.67	22.1	21.1	25.48	26	24.9	20.19	21	19.8	32.71	33.2	32	23.21	23.8	22.5
Stage 2	21.15	21.8	20.9	32.76	33.5	32.1	29.32	30	28.8	21.09	22	20.5	15.76	16.5	15.1	32.34	33.1	31.8
Stage 3	19.89	20.5	19.2	21.44	22	20.9	20.33	21.1	19.5	21.2	22	20.5	21.91	22.5	21	20.43	21	19.8

Supplementary Table 1B. Triplicate Ct values of L-galactose pathway genes associated with AsA biosynthesis during fruit development in albedo of *Citrus sinensis* cv. Nagpur sweet orange

	GME			GMP			GGP			R1	GPP		GDH			GLDH		
	R1	R2	R3	R1	R2	R3	R1	R2	R3		R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	25.31	25.8	24.9	30.26	31.1	29.8	29.03	30	28.5	35.24	34	33.9	32.48	33.1	31.9	25.89	26.5	25.2
Stage 2	30.12	30.8	29.5	34	35.12	34.41	31.94	32.5	31.2	22.42	23.1	21.8	35	34.1	34.2	28.96	29.6	28.2
Stage 3	23.81	24.5	23.1	26.21	27	25.8	25.75	26.3	25.1	24.77	25.5	24.1	23.4	24.1	23	20.25	20.8	19.9

Supplementary Table 1C. Triplicate Ct values of L-galactose pathway genes associated with AsA biosynthesis during fruit development in pulp of *Citrus sinensis* cv. Nagpur sweet orange

	GME			GMP			GGP			R1	GPP		GDH			GLDH		
	R1	R2	R3	R1	R2	R3	R1	R2	R3		R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	22.94	23.44	22.04	23.01	22.11	23.51	22.33	23.33	21.43	19.94	20.84	19.44	35.02	34.52	34.02	29.16	28.66	30.16
Stage 2	25.67	26.12	24.9	32.85	33.5	31.9	28.85	29.42	28.2	35.21	34.12	34	24.95	25.72	24.1	27.16	28.02	26.5
Stage 3	23.41	24.1	22.8	27.41	28.2	26.9	22.08	22.95	21.5	26.08	25.5	26.8	24.94	25.5	24.1	25	25.8	24.5

Supplementary Table 2A. Triplicate Ct values of Myo-inositol pathway genes associated with AsA biosynthesis during fruit development in flavedo of *Citrus sinensis* cv. Nagpur sweet orange

	MyoOX						MyoIPS		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1		32.08		32.9		31.5	31.32	32.1	30.9
Stage 2		33.79		34.2		33	32.27	33	31.5
Stage 3		27.58		28.2		27	28.32	28.9	27.5

Supplementary Table 2B. Triplicate Ct values of Myo-inositol pathway genes associated with AsA biosynthesis during fruit development in albedo of *Citrus sinensis* cv. Nagpur sweet orange

	MyoOX						MyoIPS		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1		32.72		33.2		32.1	31.34	32.1	30.5
Stage 2		27.32		28		26.8	27.92	28.5	27.2
Stage 3		27.02		27.8		26.5	27.28	28	26.5

Supplementary Table 2C. Triplicate Ct values of Myo-inositol pathway genes associated with AsA biosynthesis during fruit development in pulp of *Citrus sinensis* cv. Nagpur sweet orange

	MyoOX						MyoIPS		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1		33.2		34.2		32.7	32.68	31.78	33.18
Stage 2		32.69		33.11		32.05	31.67	32.14	31
Stage 3		27.54		28.2		27	26.97	27.4	26.2

Supplementary Table 3A. Triplicate Ct values of D- galacturonic acid pathway genes associated with AsA biosynthesis during fruit development in flavedo of *Citrus sinensis* cv. Nagpur sweet orange

	GalUR8			GalUR10			GalUR12		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	22.31	23	21.8	24.01	24.5	23.6	21.65	22.1	21
Stage 2	27.87	28.5	27.1	30.61	31	30.1	28.36	29	28
Stage 3	28.52	29	28	23.32	23.9	22.8	23.91	24.5	23.2

Supplementary Table 3B. Triplicate Ct values of D- galacturonic acid pathway genes associated with AsA biosynthesis during fruit development in albedo of *Citrus sinensis* cv. Nagpur sweet orange

	GalUR8			GalUR10			GalUR12		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	26.12	24.1	24.41	25.2	25.31	25.3	23.77	24.2	23.3
Stage 2	26.14	25	25.5	26.2	26.11	26	26.1	25.17	26.5
Stage 3	21.72	22.3	21.5	27.53	28.1	27.2	22.47	23	22

Supplementary Table 3C. Triplicate Ct values of D- galacturonic acid pathway genes associated with AsA biosynthesis during fruit development in Pulp of *Citrus sinensis* cv. Nagpur sweet orange

	GalUR8			GalUR10			GalUR12		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	27.79	28.79	26.89	26.81	25.91	27.31	26.67	25.77	27.17
Stage 2	30.57	29.78	31.05	34.03	33.11	34.5	24.65	25.3	24
Stage 3	26.63	27.2	26.1	26.19	27	25.8	26.71	27.5	25.9

Supplementary Table 4A. Triplicate Ct values of degradation pathway genes associated with AsA biosynthesis during fruit development in flavedo of *Citrus sinensis* cv. Nagpur sweet orange

	AO			APX2			APX3		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	25.43	25.9	24.9	23.02	23.6	22.8	29.54	30.2	29.1
Stage 2	26.85	27.5	26.2	27.1	28	26.5	26.67	27.5	25.9
Stage 3	25.96	26.5	25.1	20.79	21.5	20.1	21.18	21.8	20.5

Supplementary Table 4B. Triplicate Ct values of degradation pathway genes associated with AsA biosynthesis during fruit development in albedo of *Citrus sinensis* cv. Nagpur sweet orange

	AO			APX2			APX3		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	27.07	27.8	26.5	28.93	29.4	28.1	28.32	29.1	27.9
Stage 2	26.11	26.9	25.5	25.61	26	25.2	26.01	26.8	25.6
Stage 3	26.21	26.8	25.5	22.14	22.8	21.9	23.84	24.2	23.5

Supplementary Table 4C. Triplicate Ct values of degradation pathway genes associated with AsA biosynthesis during fruit development in pulp of *Citrus sinensis* cv. Nagpur sweet orange

	AO			APX2			APX3		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
Stage 1	27.56	28.56	26.66	29.69	30.69	28.79	30.22	29.22	31.22
Stage 2	26.17	25.68	26	23.5	24.21	22.95	24.61	25.03	24.12
Stage 3	25.33	26.1	24.5	17.49	18.2	17.1	24.94	25.5	24.3

Supplementary Table 5A. Triplicate Ct values of recycling pathway genes associated with AsA biosynthesis during fruit development in flavedo of *Citrus sinensis* cv. Nagpur sweet orange

	MDHAR			DHAR		
	R1	R2	R3	R1	R2	R3
Stage 1	25.22	25.8	24.9	29.86	30.5	29.2
Stage 2	26.41	27.1	25.9	28.37	29	27.8
Stage 3	25.41	26	24.8	22.15	23	21.5

Supplementary Table 5B. Triplicate Ct values of recycling pathway genes associated with AsA biosynthesis during fruit development in albedo of *Citrus sinensis* cv. Nagpur sweet orange

	MDHAR			DHAR		
	R1	R2	R3	R1	R2	R3
Stage 1	28.09	28.8	27.5	27.89	28.3	27
Stage 2	31.34	32	30.9	29.74	30.2	29.1
Stage3	28.81	29.4	28.1	26.67	27.1	26

Supplementary Table 5C. Triplicate Ct values of recycling pathway genes associated with AsA biosynthesis during fruit development in pulp of *Citrus sinensis* cv. Nagpur sweet orange

	MDHAR			DHAR		
	R1	R2	R3	R1	R2	R3
Stage 1	29.17	30.17	28.67	29.87	29.37	30.87
Stage 2	35.04	35.65	34.5	27.68	28.2	27
Stage 3	28.57	29.1	28	25.30	26	24.6