

Table S1 Standard curve equation of seven organic acids.

Compounds	Retention time (min)	Regression equation	correlation coefficient (R ²)
Oxalic acid	5.969	y=878.829x	0.9994
L-malic acid	6.551	y=696.775x	0.9995
Citric acid	11.507	y=747.495x	0.9991
Succinic acid	13.267	y=520.039x	0.9997
Quinic acid	5.312	y=1726.84x	0.9993
Tartaric acid	5.900	y=221.156x	0.9991
Lactic acid	7.986	y=407.078x	0.9996

Table S2 Standard curve equation of seven polyphenols.

Compounds	Retention time (min)	Regression equation	correlation coefficient (R ²)
Protocatechuic acid	5.430	y=24019.7x-16240.1	0.9992
Chlorogenic acid	10.464	y=11465.8x-12492.7	0.9993
Gallic acid	24.068	y=11444.4x-13123.8	0.9993
Epicatechin	28.066	y=4707.05x-5854.57	0.9993
Catechin	4.321	y=1839.95x	0.9991
Caffeic acid	19.159	y=7519.72x	0.9991
Phloretin	22.877	y=1646.81x	0.9995

Table S3. Organic acid concentration of pear-kiwifruit juice and corresponding wines with and without deacidification treatment.

Compounds	Organic acid concentration (g/L)			
	Mixed juice ^a	AF wine ^b	MLF wine ^c	CD wine ^d
Oxalic acid	0.78±0.006 ^a	0.76±0.007 ^b	0.66±0.002 ^c	0.44±0.003 ^d
L-malic acid	1.97±0.015 ^a	1.80±0.012 ^b	0.04±0.001 ^c	1.70±0.01 ^b
Citric acid	0.59±0.002 ^d	0.80±0.005 ^a	0.73±0.001 ^c	0.75±0.006 ^b
Succinic acid	0.10±0.001 ^b	0.11±0.002 ^a	0.06±0.001 ^d	0.08±0.001 ^c
Quinic acid	1.53±0.009 ^a	1.13±0.005 ^b	0.93±0.004 ^d	0.99±0.006 ^c
Tartaric acid	1.43±0.009 ^a	1.38±0.003 ^b	0.99±0.012 ^c	0.39±0.004 ^d
Lactic acid	0.22±0.006 ^c	0.64±0.005 ^b	1.23±0.004 ^a	ND

All values are reported as the mean (± SD) of three experiments. ND: not detected.

Values in the same row with different letters indicate statistically different by Tukey's test ($P < 0.05$).

^a Mixed juice: pear and kiwifruit juice at the blend ratio of 60:40.

^b AF wine: pear-kiwifruit juice co-inoculated with *Saccharomyces cerevisiae* ES488 and *Metschnikowia pulcherrima* 346.

^c MLF wine: AF wine inoculated with *Oenococcus oeni* strain GF-2.

^d CD wine: Chemically deacidified wine by 1.0 g/L Na₂CO₃, 1.0 g/L K₂CO₃ and 5.0 g/L KHC₄H₄O₆.

Table S4 Polyphenol concentration of pear-kiwifruit juice and corresponding wines with and without deacidification treatment.

Compounds	Polyphenol concentration ($\mu\text{g/mL}$)			
	Mixed juice ^a	AF wine ^b	MLF wine ^c	CD wine ^d
Protocatechuic acid	3.52 \pm 0.02 ^b	3.58 \pm 0.01 ^{ab}	3.62 \pm 0.05 ^a	ND
Chlorogenic acid	8.26 \pm 0.03 ^c	10.41 \pm 0.17 ^b	11.06 \pm 0.09 ^a	5.80 \pm 0.01 ^d
Gallic acid	6.17 \pm 0.04 ^b	6.05 \pm 0.01 ^c	6.49 \pm 0.08 ^a	5.97 \pm 0.04 ^d
Epicatechin	6.33 \pm 0.01 ^c	7.85 \pm 0.13 ^a	6.60 \pm 0.03 ^b	6.39 \pm 0.01 ^c
Catechin	10.17 \pm 0.14 ^c	12.70 \pm 0.13 ^a	11.11 \pm 0.15 ^b	5.38 \pm 0.08 ^d
Caffeic acid	1.38 \pm 0.03 ^b	1.21 \pm 0.02 ^c	1.52 \pm 0.07 ^a	0.68 \pm 0.02 ^d
Phloretin	3.30 \pm 0.06 ^c	5.77 \pm 0.09 ^a	4.26 \pm 0.09 ^b	2.02 \pm 0.05 ^d

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^a Mixed juice: pear and kiwifruit juice at the blend ratio of 60:40.

^b AF wine: pear-kiwifruit juice co-inoculated with *Saccharomyces cerevisiae* ES488 and *Metschnikowia pulcherrima* 346.

^c MLF wine: AF wine inoculated with *Oenococcus oeni* strain GF-1.

^d CD wine: Chemically deacidified wine by 1.0 g/L Na_2CO_3 , 1.0 g/L K_2CO_3 and 5.0 g/L $\text{KHC}_4\text{H}_4\text{O}_6$.

Table S5 Volatile aroma compounds in pear-kiwifruit juice and corresponding alcohol fermentation or deacidification wines.

Number	Compounds	Aroma compounds concentration ($\mu\text{g/L}$)			
		Mixed juice ^a	AF wine ^b	MLF wine ^c	CD wine ^d
A1	Ethyl acetate	239 \pm 11 ^b	227 \pm 4 ^c	278 \pm 12 ^a	100 \pm 10 ^d
A2	Ethyl butanoate	15.4 \pm 4.7 ^c	69.6 \pm 4.6 ^a	66.2 \pm 8.3 ^a	24.3 \pm 0.9 ^b
A3	n-Ethyl propanoate	4.9 \pm 2.3 ^a	3.3 \pm 1.6 ^b	3.8 \pm 0.3 ^b	ND
A4	n-butyl acrylate	0.24 \pm 0.01 ^a	ND	ND	ND
A5	Phenethyl acetate	138 \pm 16 ^b	198 \pm 60 ^a	216 \pm 5 ^a	110 \pm 11 ^b
A6	Isobutyl acetate	ND	7.5 \pm 0.3 ^a	12.5 \pm 7.8 ^a	ND
A7	Hexyl acetate	503 \pm 24 ^a	425 \pm 19 ^c	477 \pm 11 ^b	210 \pm 14 ^d
A8	Isoamyl acetate	483 \pm 31 ^b	1231 \pm 98 ^a	1305 \pm 166 ^a	349 \pm 18 ^c
A9	Ethyl hexanoate	1037 \pm 98 ^a	1014 \pm 131 ^a	1138 \pm 88 ^a	420 \pm 13 ^b
A10	3-Methylbutyl hexanoate	32.6 \pm 13.7 ^a	13.4 \pm 1.9 ^b	10.1 \pm 1.7 ^b	ND
A11	Methyl hexoate	22.2 \pm 5.2 ^a	13.7 \pm 0.4 ^b	ND	ND
A12	(3Z)-3-Hexen-1-yl acetate	66.6 \pm 10.8 ^a	21.6 \pm 4.6 ^c	48.7 \pm 0.6 ^b	ND
A13	Ethyl heptanoate	ND	5.1 \pm 0.7 ^b	11.5 \pm 0.2 ^a	ND
A14	Heptyl acetate	3.6 \pm 0.3 ^b	7.6 \pm 0.7 ^a	8.4 \pm 0.4 ^a	ND
A15	2-Methylpropyl octanoate	7.3 \pm 1.7 ^c	14.5 \pm 0.7 ^a	11.3 \pm 1.0 ^b	ND
A16	Ethyl nonanoate	12.0 \pm 5.5 ^b	22.0 \pm 1.8 ^a	24.9 \pm 2.4 ^a	ND
A17	Methyl octylate	35.8 \pm 4.9 ^a	37.8 \pm 6.7 ^a	41.7 \pm 1.1 ^a	ND
A18	Ethyl caprylate	2899 \pm 116 ^a	3129 \pm 485 ^a	3458 \pm 498 ^a	1979 \pm 47 ^a
A19	Hexyl octanoate	3.6 \pm 0.5 ^b	2.9 \pm 1.0 ^a	ND	ND
A20	3-Methylbutyl octanoate	42.6 \pm 5.2 ^c	76.7 \pm 2.9 ^a	61.6 \pm 3.4 ^b	42.6 \pm 2.1 ^c
A21	Methyl caprate	ND	12.5 \pm 1.7 ^a	7.3 \pm 0.3 ^b	ND
A22	Ethyl caprate	874 \pm 79 ^c	1485 \pm 122 ^b	2188 \pm 150 ^a	341 \pm 17 ^d
A23	Isoamyl decanoate	ND	36.40 \pm 1.17 ^a	38.62 \pm 1.38 ^a	ND
A24	Isobutyl decanoate	ND	25.42 \pm 7.46 ^a	17.88 \pm 7.99 ^a	ND

A25	Diethyl succinate	3.2±0.2 ^b	4.6±0.8 ^b	552±43 ^a	2.0±0.7 ^b
A26	Ethyl laurate	320±18 ^b	716±21 ^a	708±5 ^a	304±6 ^b
A27	Ethyl tetradecanoate	1.1±0.3 ^b	6.9±0.6 ^a	8.6±1.2 ^a	ND
A28	Ethyl hex-3-enoate	4.4±0.9 ^a	1.3±0.1 ^b	1.5±0.2 ^b	ND
A29	7-Octenoic acid ethyl ester	ND	2.0±0.1 ^a	2.7±0.6 ^a	ND
A30	Ethyl (<i>E</i>)-2-hexenoate	8.5±2.2 ^a	2.4±0.4 ^b	2.1±0.2 ^b	0.4±0.1 ^b
A31	Citronellol acetate	6.2±1.4 ^a	4.3±0.4 ^a	ND	ND
A32	methyl (2 <i>E</i> ,4 <i>Z</i>)-deca-2,4-	2.8±0.3 ^b	1.3±0.1 ^b	4.2±0.3 ^a	ND
A33	ethyl (2 <i>E</i> ,4 <i>Z</i>)-deca-2,4-	718±18 ^b	730±27 ^b	879±41 ^a	6.3±1.1 ^c
A34	Ethyl undecylenate	7.4±1.0 ^a	7.8±1.0 ^a	7.3±0.6 ^a	ND
A35	Propyl octanoate	5.5±1.4 ^a	ND	ND	ND
A36	Ethyl palmitate	0.59±0.04 ^c	2.4±0.1 ^a	1.1±0.5 ^b	ND
A37	Ethyl lactate	ND	ND	1.9±0.1 ^a	ND
A38	Methyl salicylate	2.4±0.1 ^b	ND	4.9±0.4 ^a	ND
	Total esters	7500±237^c	9558±1001^b	11598±1057^a	3889±143^d
B1	Isobutanol	35.6±12.8 ^b	103.4±8.8 ^a	102.7±2.5 ^a	33.0±1.7 ^b
B2	Pentanol	1029±142 ^b	3264±70 ^a	3452±121 ^a	1087±48 ^b
B3	1-Octanol	10.7±2.1 ^b	20.7±4.8 ^b	39.3±1.4 ^a	14.4±0.3 ^b
B4	1-Hexanol	650±42 ^a	480±35 ^a	527±17 ^a	249±16 ^b
B5	1-Heptanol	50.1±5.2 ^a	51.0±4.1 ^a	54.2±1.5 ^a	42.9±1.8 ^b
B6	Decan-1-ol	ND	9.5±2.2 ^a	9.5±2.9 ^a	5.8±0.4 ^a
B7	Phenylethyl alcohol	528±64 ^d	1398±48 ^b	1780±85 ^a	724±41 ^c
B8	Benzyl alcohol	ND	ND	10.0±0.4 ^a	ND
B9	3-Methylpentanol	ND	4.8±0.7 ^a	4.4±0.3 ^a	ND
B10	(<i>E</i>)-3-Hexen-1-ol	15.3±2.6 ^c	54.4±3.6 ^a	32.1±2.3 ^b	ND
B11	(<i>Z</i>)-4-Hepten-1-ol	ND	2.9±0.1 ^a	3.3±0.6 ^a	ND
B12	2-Ethyl-1-hexanol	6.7±1.3 ^a	1.4±0.1 ^d	3.2±0.2 ^c	4.4±0.4 ^b
B13	2, 3-Butanediol	ND	2.7±0.5 ^b	20.4±3.3 ^a	0.60±0.06 ^b
B14	Isopulegol	3.3±0.5 ^b	3.4±0.3 ^b	7.1±0.1 ^a	2.1±0.1 ^c
B15	(<i>E</i>)-2-Decen-1-ol	ND	ND	1.5±0.3 ^a	ND
B16	5-Methylheptan-3-ol	ND	ND	7.2±0.2 ^a	ND
B17	(<i>Z</i>)-3-Hexen-1-ol	13.6±2.9 ^b	11.9±0.3 ^b	71.1±3.6 ^a	15.9±0.9 ^b
B18	1-Nonanol	0.93±0.03 ^a	ND	ND	0.91±0.05 ^a
	Total alcohols	2343±168^c	5408±178^b	6125±238^a	2180±112^c
C1	Isobutyric acid	4.2±1.0 ^b	9.8±0.7 ^a	8.1±0.4 ^a	4.9±0.7 ^b
C2	Octanoic acid	326±20 ^a	276±17 ^b	341±5 ^a	70.9±5.3 ^c
C3	Heptanoic acid	1.3±0.5 ^a	1.3±0.3 ^a	1.4±0.2 ^a	ND
C4	9-Decenoic acid	ND	ND	2.3±0.7 ^a	ND
C5	(<i>Z</i>)-5-dodecenoic acid	4.5±1.4 ^a	3.7±0.1 ^a	ND	ND
C6	2-Methylbutyric acid	16.2±2.9 ^b	45.9±3.6 ^a	ND	6.2±0.4 ^c
C7	3-Hydroxycinnamic acid	ND	ND	1.2±0.1 ^a	ND
C8	nonanoic acid	1.9±0.1 ^a	ND	ND	ND
	Total volatile fatty acids	354±24^a	337±22^a	354±6^a	82±7^b
D1	α-Terpineol	3.8±1.1 ^b	4.3±0.3 ^b	15.1±0.6 ^a	1.9±0.2 ^c
D2	Citronellol	8.9±2.4 ^c	14.0±0.5 ^b	18.7±0.7 ^a	9.8±0.5 ^c
D3	Nerol	2.4±0.1 ^b	ND	7.0±0.2 ^a	2.4±0.6 ^b
D4	β-damascenone	3.1±1.2 ^a	2.4±0.8 ^a	1.9±0.6 ^a	ND
D5	Linalool	16.2±3.5 ^b	15.4±1.5 ^b	33.3±1.8 ^a	10.6±0.6 ^c
D6	Terpinen-4-ol	24.7±4.2 ^a	21.0±1.7 ^a	ND	ND
D7	Lauryl alcohol	ND	ND	4.7±0.9 ^a	ND
	Total terpenoids	59±13^b	57±5^b	81±8^a	25±4^c
E1	Nonanal	0.87±0.05 ^a	ND	ND	ND
E2	Decanal	4.1±1.3 ^a	ND	ND	ND
E3	Sulcatone	5.1±1.7 ^a	6.2±0.2 ^a	ND	2.4±0.2 ^b

E4	Methyl eugenol	22.8±3.7 ^a	25.7±1.8 ^a	24.7±1.2 ^a	11.3±0.3 ^b
E5	Eugenol	3.0±0.6 ^b	2.5±0.2 ^b	18.6±1.9 ^a	3.3±0.1 ^b
E6	Styrene	ND	ND	15.4±0.7 ^a	ND
Total other compounds		36±8^{ab}	34±24^{ab}	59±21^a	17±3^b

All values are reported as the mean (\pm SD) of three experiments. ND: not detected.

Values in the same row with different letters indicate statistically different by Tukey's test ($P < 0.05$).

^a Mixed juice: pear and kiwifruit juice at the blend ratio of 60:40.

^b AF wine: pear-kiwifruit juice co-inoculated with *Saccharomyces cerevisiae* ES488 and *Metschnikowia pulcherrima* 346.

^c MLF wine: AF wine inoculated with *Oenococcus oeni* strain GF-1.

^d CD wine: Chemically deacidified wine by 1.0 g/L Na₂CO₃, 1.0 g/L K₂CO₃ and 5.0 g/L KHC₄H₄O₆.

Table S6 Sensory descriptors used in the CATA test and their frequencies (n=36) presented in the order of most often selected attributes.

CATA attribute	AF wine ^a	MLF wine ^b	CD wine ^c	P-value ^d
Fruity	20	28	5	0.050
perry-like	10	20	3	<0.001
Fermented	24	22	22	0.450
Acidic	24	12	6	0.010
Acidic/fresh	5	23	16	<0.001
Astringent	19	11	13	0.640
Sweet	5	7	8	0.720
Bitter	3	2	26	0.013
Floral	12	21	6	<0.001
Cooked pear	18	27	7	<0.001
Fresh pear	9	16	5	0.020
Alcoholic	10	10	9	0.760
Mild	4	9	7	0.580
Tropical fruit	1	2	1	0.780
Yeasty	11	8	6	0.610
Honey	5	6	3	0.660
Diverse	10	25	8	<0.001
Strong	6	3	5	0.470
Earthy	3	1	3	0.700
Citrus	3	3	2	0.730
Simple	12	1	9	0.017
Spicy	6	1	2	0.240
Sharp	11	2	4	0.063
Chemical	1	0	2	0.580
Grassy	7	7	6	0.720

^a AF wine: pear-kiwifruit juice co-inoculated with *Saccharomyces cerevisiae* ES488 and *Metschnikowia pulcherrima* 346.

^b MLF wine: AF wine inoculated with *Oenococcus oeni* strain GF-1.

^c CD wine: Chemically deacidified wine by 1.0 g/L Na₂CO₃, 1.0 g/L K₂CO₃ and 5.0 g/L KHC₄H₄O₆.

^d Based on Cochran's Q-test ($P < 0.05$).