

Supplementary data for

Analysis of targeted phenolic ageing markers in Syrah red wines during bottle ageing: influence of cork oxygen transfer rate

Luca Garcia^a, Elodie Martet^a, Lucas Suc^a, François Garcia^a and Cédric Saucier^a.

a - SPO, Univ Montpellier, INRAE, Institut Agro, Montpellier, France

* Corresponding author: Tel.: +33411759567; Fax: +33411759638. E-mail address:

cedric.saucier@umontpellier.fr (Saucier, C.).

Table of contents

	Page
Table S1. Dissolved oxygen measured after bottling. Mean value \pm standard deviation. Different letters indicate the significant differences between samples in one column according to Tukey's test, $p < 0.05$.	S-3
Table S2. Fragmentor and collision energy for each MRM transitions	S-4
Figure S1. H^1 NMR spectra and assignment of synthesized compounds	S-5
Figure S2. Example of H^1 NMR quantification by ERETIC2 methodology: vitisin B	S-8
Table S3. Formal potential (E°) of the standard polyphenols in model wine solution (pH 3.6) using SWCNT-SPCE. Mean value \pm standard deviation. Different letters indicate the significant differences between samples in one column according to Tukey's test, $p < 0.05$.	S-9

Table S4. Matrix effect (Z-score) coefficient calculated for two Syrah red wines compared to model wine	S-9
Table S5. Characterization of Syrah red wine samples before ageing. Mean value \pm standard deviation	S-10
Table S6. Concentration of monomeric anthocyanins in mg.L^{-1} of eq Malvidin3-O-glucoside during 24 months for each wine/cork combination ; glc = glycosidic anthocyanin ; acetyl = acetylated anthocyanins ; coum = coumaroylated anthocyanins ; total = sum of each family. Mean value \pm standard deviation	S-11
Table S7. Concentration of polyphenols measured by UHPLC-QqQ-MS in mg.L^{-1} during 24 months for each wine/cork combination. B4 was expressed in mg.L^{-1} eq of B2 and Vitisin A was expressed in mg.L^{-1} eq of Vitisin B. Mean value \pm standard deviation	S-13

12

13

14

15

16

17

18

19

20

21

22

24 *Table S1. Dissolved oxygen measured after bottling. Mean value \pm standard deviation.*
 25 *Different letters indicate the significant differences between samples in one column according*
 26 *to Tukey's test, $p < 0.05$.*

27

Wines	Bottle volume (L)	Wine temperature (°C)	Dissolved oxygen (mg.L ⁻¹)
CR1	0.75	20.4	0.12
	0.75	20.4	0.12
	0.75	20.4	0.14
	0.75	20.6	0.12
LR1	0.75	20.5	0.14
	0.75	20.2	0.14
	0.75	20.2	0.10
	0.75	20.6	0.10
LR2	0.75	20.5	0.11
	0.75	20.2	0.14
	0.75	20.2	0.09
	0.75	20.2	0.12
LR3	0.75	20.8	0.13
	0.75	20.7	0.09
	0.75	20.6	0.11
	0.75	20.8	0.10
LR4	0.75	20.6	0.11
	0.75	20.3	0.09
	0.75	20.3	0.11
	0.75	20.6	0.10
CR2	0.75	20.6	0.16
	0.75	20.3	0.11
	0.75	20.3	0.14
	0.75	20.5	0.13

28

29

30

31

32

33

34

35

36

37

Molecules	MRM transitions	Fragmentor	Collision energy ⁴⁰
Catechin	291→139	100	24
	291→147	100	16 42
	291→123	100	36
Epicatechin	291→139	100	88 43
	291→147	100	24 44
	291→123	100	16
Epigallocatechin	307→139	110	24 45
	307→195	110	24 46
	307→163	110	12
Epicatechin-3-O-gallate	443→123	100	4 47
	443→273	100	36 48
	443→139	100	28
Dimer B1	579→127	140	32 49
	579→139	140	28 50
	579→123	140	72
Dimer B2	579→127	140	36 51
	579→139	140	32 52
	579→123	140	76
Dimer B3	579→127	130	40 53
	579→139	130	32 54
	579→123	130	80
Dimer B4	579→127	140	40 55
	579→139	140	36
	579→123	140	80 56
Malvidin-3-O-glucoside	493→331	130	24
	493→315	130	60
	493→287	130	60
Epicatechin-SO ₃ H	371→127	100	44
	371→289	100	8
	371→135	100	20
Vitisin B	517→355	140	20
	517→339	140	60
	517→266	140	60
Vitisin A	561→399	140	60
	561→383	140	20
Malvidin-ethyl-catechin	809→357	220	48
	809→341	220	96
	809→115	220	200

57 *Figure S1. NMR spectra and assignment of synthesized compounds*

58 • Epicatechin-SO₃H

59 ¹H NMR (400 MHz, DMSO) δ 6.89 (dd, *J* = 2.0, 0.6 Hz, 1H), 6.74 – 6.67 (m, 1H), 6.64 (ddd, *J* = 8.1, 2.0, 0.6 Hz, 1H), 5.85 (d, *J* = 2.4 Hz, 1H), 5.83 (d, *J* = 2.4 Hz, 1H), 5.23
60 (d, 1H), 4.29 (t, *J* = 1.4 Hz, 1H), 3.75 (d, 1H).

61

62

63

64

65

66

67

68

69

70

71

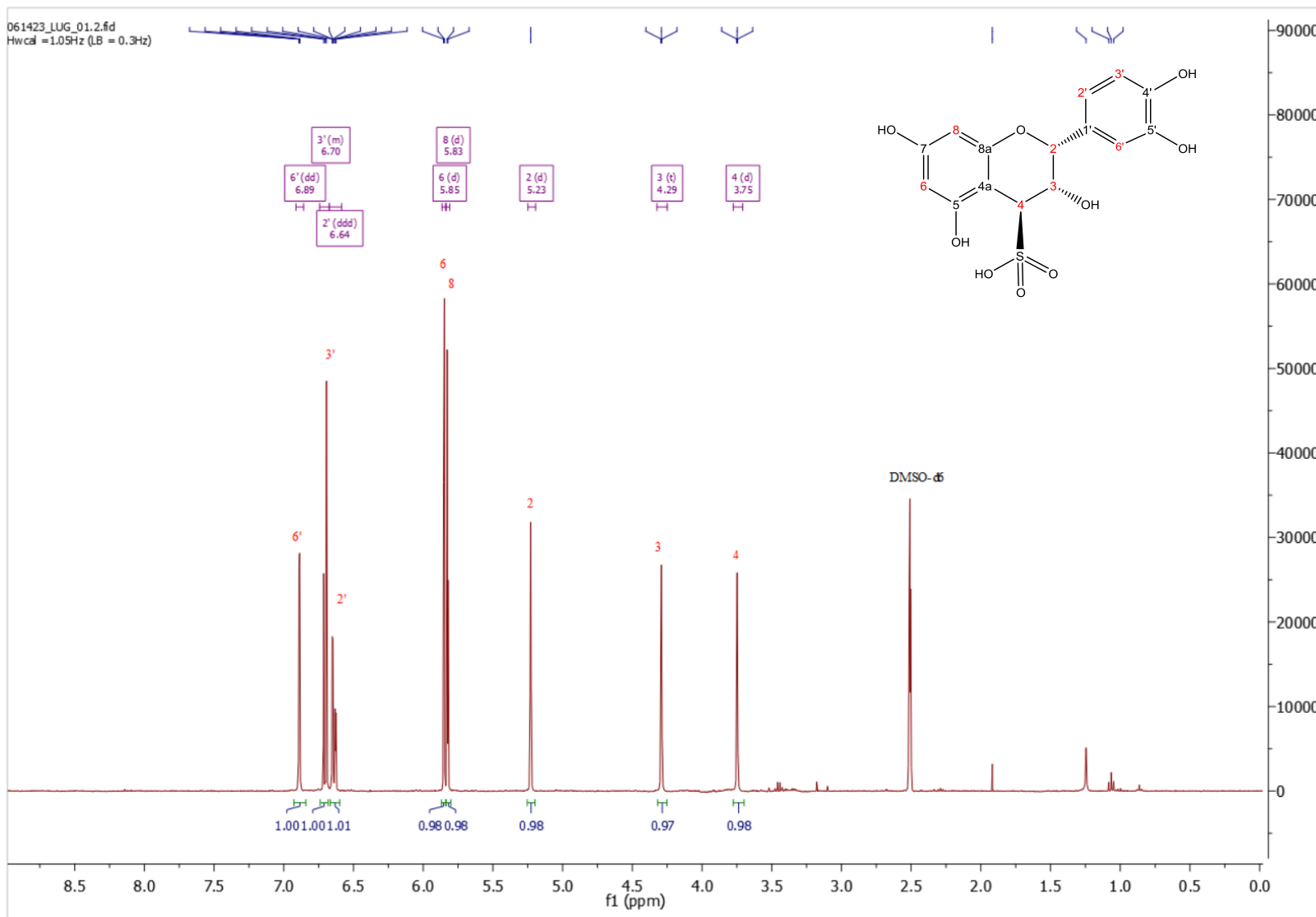
72

73

74

75

76



77 • Vitisin B

78 ¹H NMR (400 MHz, DMSO) δ 8.57 (d, 1H), 7.79 (s, 2H), 7.42 – 7.38 (m, 1H), 7.18 (d, *J* = 1.9 Hz, 1H), 4.71 (d, *J* = 7.8 Hz, 1H), 3.92 (s, 3H), 3.53 – 3.46 (m, 1H), 3.46 –
 79 3.42 (m, 1H), 3.28 (dd, *J* = 11.8, 5.6 Hz, 1H), 3.22 (t, *J* = 8.8 Hz, 1H), 3.13 (dd, *J* = 16.0, 6.4 Hz, 1H), 3.08 – 3.00 (m, 1H).

80

81

82

83

84

85

86

87

88

89

90

91

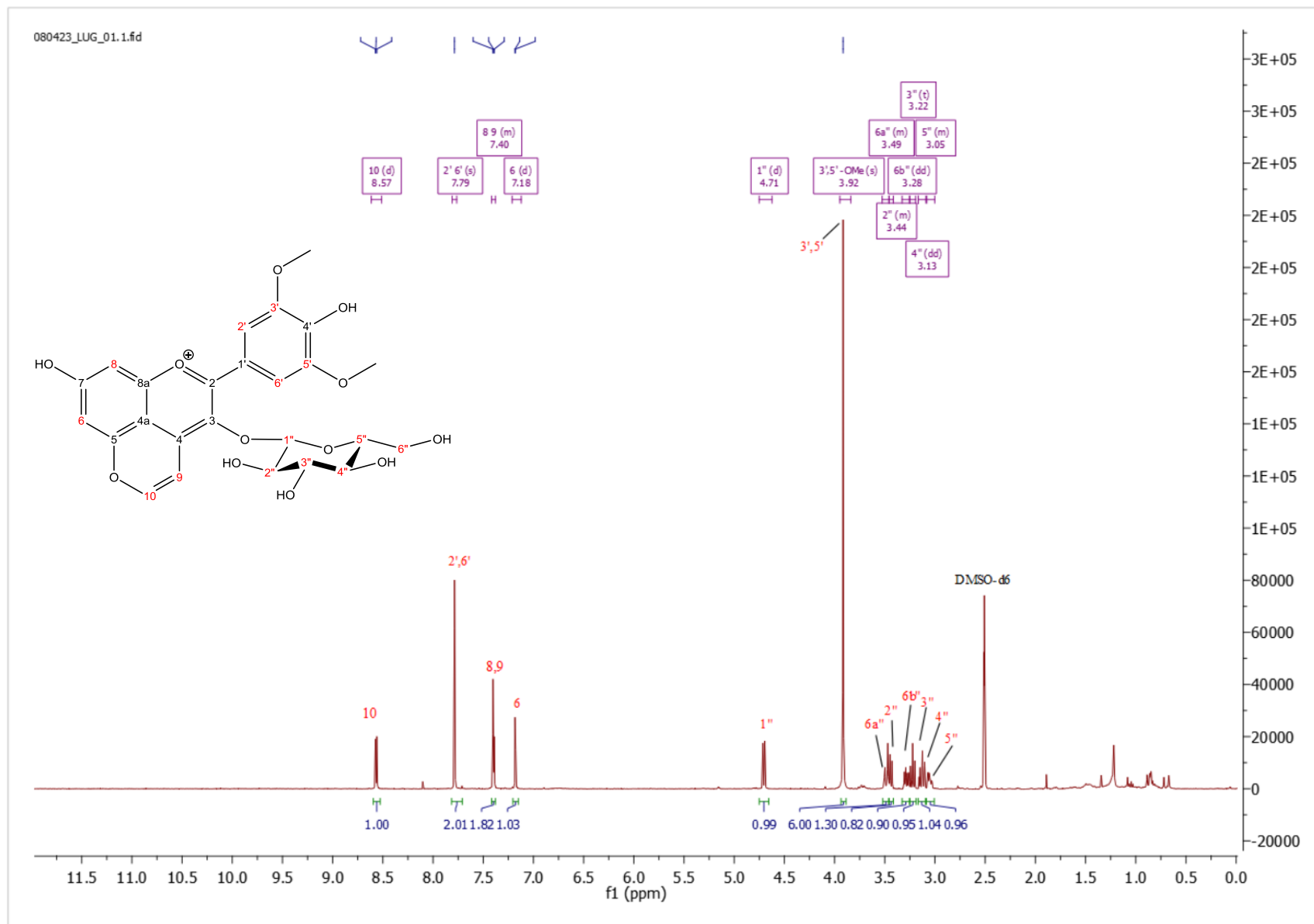
92

93

94

95

96



97

- Malvidin-ethyl-catechin

98

$^1\text{H NMR}$ (400 MHz, DMSO) δ 8.73 (d, $J = 3.6$ Hz, 1H), 7.83 (d, $J = 4.8$ Hz, 2H), 6.75 (d, $J = 4.7$ Hz, 1H), 6.44 (dt, $J = 16.0, 8.0$ Hz, 1H), 6.27 (d, $J = 1.8$ Hz, 1H), 6.14

99

(d, $J = 10.0$ Hz, 1H), 5.97 (d, $J = 8.2$ Hz, 1H), 5.31 (dd, $J = 32.7, 7.1$ Hz, 1H), 5.04 (dq, $J = 23.0, 7.4$ Hz, 1H), 4.06 (dd, $J = 52.5, 8.3$ Hz, 1H), 3.87 – 3.78 (m, 6H), 3.74 –

100

3.42 (m, 6H), 3.27 (td, $J = 9.0, 3.8$ Hz, 1H), 2.75 (td, $J = 16.3, 5.8$ Hz, 2H), 2.31 (dt, $J = 13.0, 6.8$ Hz, 3H), 1.72 (dd, $J = 9.4, 7.7$ Hz, 3H).

101

102

103

104

105

106

107

108

109

110

111

112

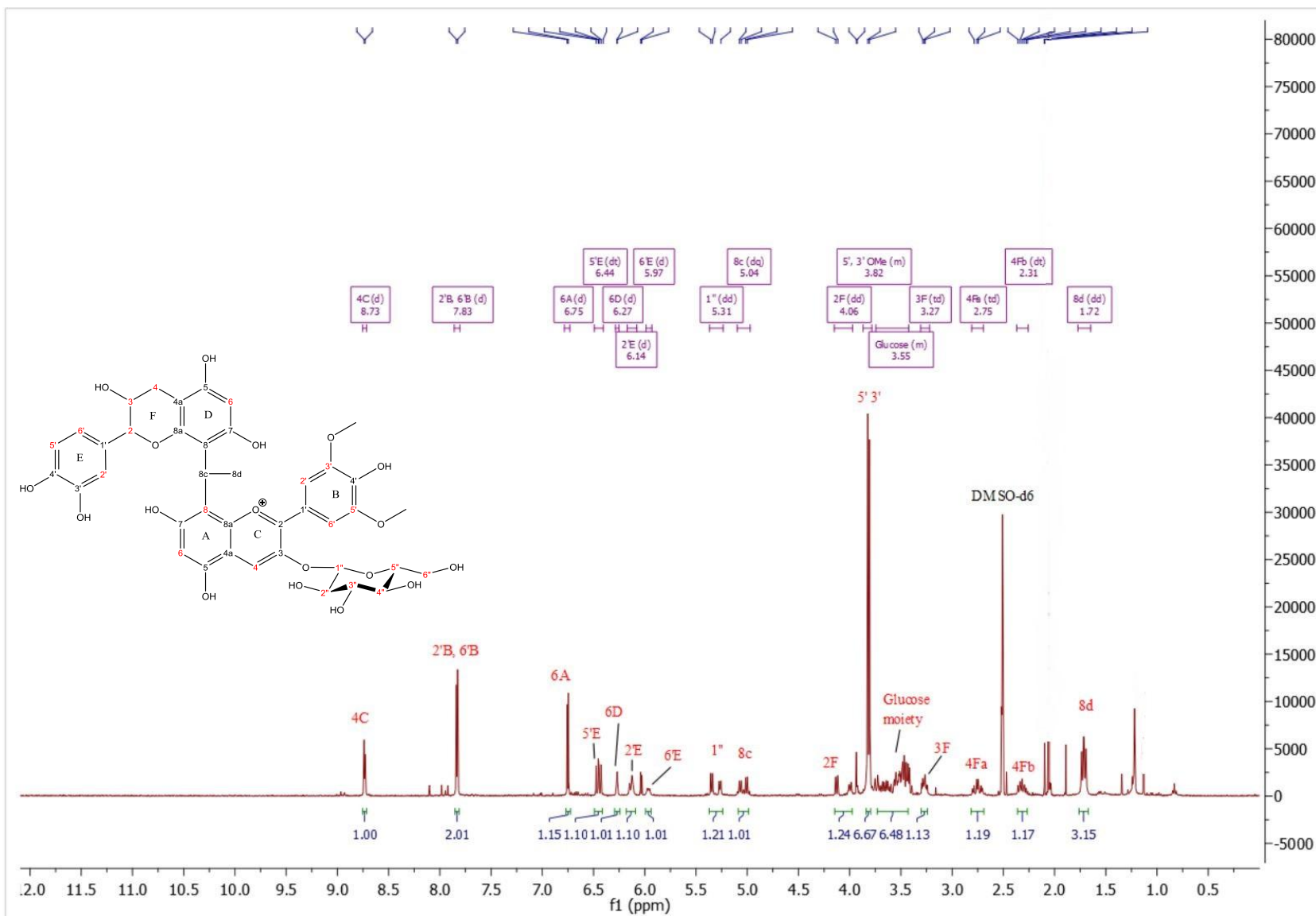
113

114

115

116

117



118 *Figure S2. Example of H^1 NMR quantification by ERETIC2 methodology: vitisin B*

Concentration Average: **8.5860 mM**

RMSD%: 0.00

Spectrum Data:

Dataset: F:/BckupOrion_Actuel/Mnova/2023_Bckup_400MHz/080423_LUG_01/1/fid

Acquisition Date: 2023-08-04T08:56:14

Spectrometer: Avance NEO 400 INRAE

Probe: Z175994_0028 (PA BBI 400S1 H-BB-D-05 Z H-SCR)

P1: 8.13

Receiver Gain: 101

Number of Scans: 1

Parameters:

Multiplet Integration Method: EditedSum with GSD Peak Picking

Reference Integration Method: Peaks with GSD Peak Picking

Concentration Method: Concentration Conversion Factor

Concentration Conversion Factor: **0.00000648 mM (GA_01 @ 98.33mM)**

Parameters for Reference:

-Receiver Gain: (101.00)

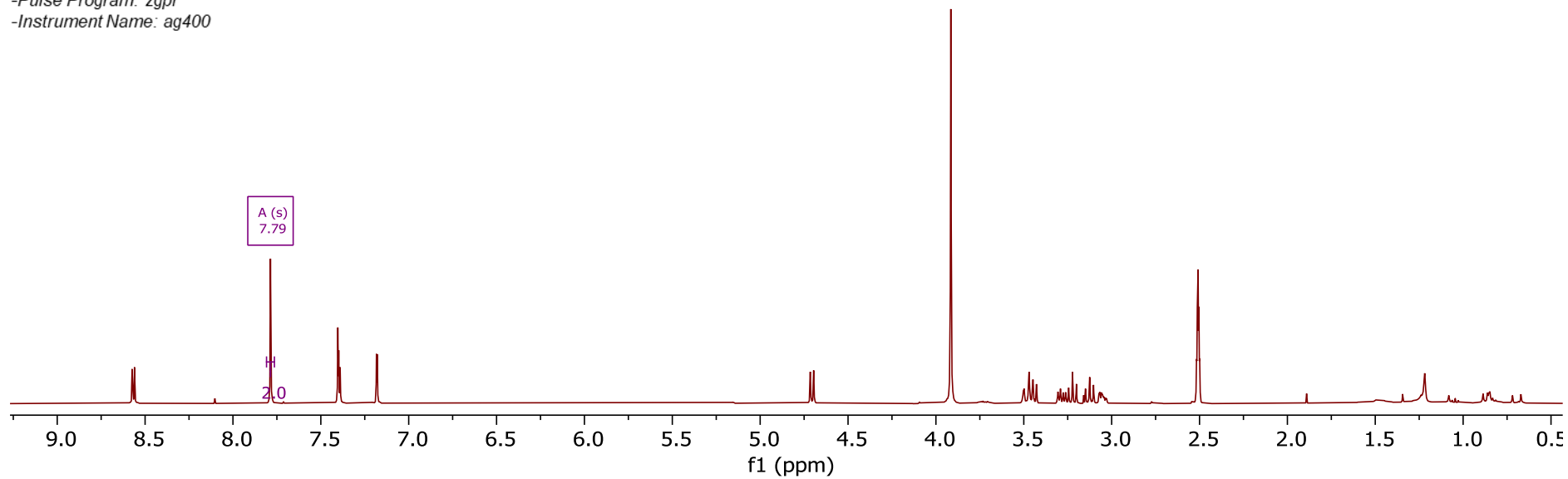
-Number of Scans: (1)

-Pulse Length: (7)

-Pulse Program: zgpr

-Instrument Name: ag400

119



080423_LUG_01.1.fid —

120 *Table S3.* Formal potential (E'_0) of the standard polyphenols in model wine solution (pH 3.6) using
 121 SWCNT-SPCE. Mean value \pm standard deviation. Different letters indicate the significant differences
 122 between samples in one column according to Tukey's test, $p < 0.05$.

Standards	Formal potential (E'_0 in mV vs. $Ag_{(s)}$) for SWCNT-SPCE)
Catechin	117.2 ± 1.2^c
Epicatechin	110.8 ± 1.2^d
Malvidin-3-O-glu	358.9 ± 2.4^b
Vitisin B	383.3 ± 1.4^a
Epicatechin-SO ₃ H	105.8 ± 2.5^d
Malvidin-ethyl-catechin	111.1 ± 3.2^d

131
132
133
134
135

136 *Table S4.* Matrix effect (Z-score) coefficient calculated for two Syrah red wines compared to
 137 model wine

	Z-score	
	RW ₁	RW ₂
Catechin	1.236	2.543
Epicatechin	4.959	2.3
Epigallocatechin	3.239	2.133
Epicatechin-3-O-gallate	1.004	1.333
Dimer B1	1.183	0.998
Dimer B2	1.304	1.176
Dimer B3	5.03	5.106
Malvidin-3-O-glucoside	2.083	2.168
Epicatechin-SO ₃ H	1.183	0.998
Vitisin B	1.052	2.011
Malvidin-ethyl-catechin	5.381	6.506

138
139

140 *Table S5. Characterization of Syrah red wines samples before ageing. Mean value ± standard deviation*

Wines	Volatile acidity (g.L ⁻¹ of H ₂ SO ₄)	Total acidity	pH	Cu (mg.L ⁻¹)	Fe (mg.L ⁻¹)	Free SO ₂ (mg.L ⁻¹)	Total SO ₂ (mg.L ⁻¹)	Ethanol % (v/v)
CR1	0.31 ± 0.00	2.74 ± 0.00	3.81 ± 0.00	0.45 ± 0.01	2.20 ± 0.00	29.3 ± 0.58	54.7 ± 0.58	12.95 ± 0.01
LR1	0.51 ± 0.00	2.74 ± 0.00	3.94 ± 0.00	0.36 ± 0.00	3.13 ± 0.06	30.7 ± 1.15	70.0 ± 0.00	14.26 ± 0.01
LR2	0.41 ± 0.00	2.72 ± 0.00	3.73 ± 0.00	0.44 ± 0.01	2.17 ± 0.06	30.0 ± 0.00	50.0 ± 0.00	14.31 ± 0.01
LR3	0.45 ± 0.01	2.55 ± 0.00	3.97 ± 0.00	0.53 ± 0.01	2.10 ± 0.00	29.0 ± 0.00	68.0 ± 0.00	14.75 ± 0.01
LR4	0.66 ± 0.01	3.04 ± 0.00	3.71 ± 0.00	0.42 ± 0.00	1.40 ± 0.00	28.7 ± 0.58	48.0 ± 0.00	16.16 ± 0.02
CR2	0.67 ± 0.00	3.41 ± 0.00	3.64 ± 0.00	0.34 ± 0.01	0.70 ± 0.00	25.0 ± 0.00	86.7 ± 0.58	13.60 ± 0.01
Wines	Total monomeric anthocyanins (mg.L ⁻¹)	Total monomeric flavanols (mg.L ⁻¹)	Total dimeric flavanols (mg.L ⁻¹)	Pyranoanthocyanins (mg.L ⁻¹)	Malvidin-ethylcatechin (mg.L ⁻¹)	Epicatechin-SO ₃ H (mg.L ⁻¹)	Total flavanols (g.L ⁻¹)	T/A ratio
CR1	352.41 ± 3.52	242.9 ± 3.01	139.15 ± 0.40	0.27 ± 0.03	1.05 ± 0.04	0.66 ± 0.02	3.11 ± 0.05	8.82 ± 0.20
LR1	246.72 ± 5.29	116.3 ± 0.43	111.9 ± 1.15	0.39 ± 0.01	0.59 ± 0.03	0.87 ± 0.01	2.04 ± 0.05	8.26 ± 0.39
LR2	226.17 ± 0.08	141.2 ± 0.19	156.90 ± 2.49	1.1 ± 0.03	1.75 ± 0.05	0.51 ± 0.01	3.13 ± 0.04	13.82 ± 0.18
LR3	279.36 ± 7.65	106.14 ± 0.59	75.29 ± 1.18	0.42 ± 0.01	0.58 ± 0.00	0.40 ± 0.01	1.29 ± 0.05	4.61 ± 0.26
LR4	253.40 ± 0.94	102.65 ± 1.34	80.16 ± 0.17	0.68 ± 0.01	0.29 ± 0.01	0.92 ± 0.02	1.523 ± 0.04	6.01 ± 0.16
CR2	111.91 ± 1.43	111.58 ± 2.47	80.23 ± 1.08	0.59 ± 0.01	0.38 ± 0.01	0.70 ± 0.03	1.58 ± 0.05	14.12 ± 0.27

141 *Table S6. Concentration of monomeric anthocyanins in mg.L⁻¹ of eq Malvidin3-O-glucoside during 24 months for each wine/cork combination ;*
 142 *Mean value of three biological replicate ; glc = glycosidic anthocyanin ; acetyl = acetylated anthocyanins ; coum = coumaroylated*
 143 *anthocyanins ; total = sum of each family. Mean value ± standard deviation*

Wines	Cork	T0				T6				T12				T24			
		Glc	Acetyl	Coum	Total	Glc	Acetyl	Coum	Total	Glc	Acetyl	Coum	Total	Glc	Acetyl	Coum	Total
CR1	D1	227.62 ± 1.55	84.68 ± 1.53	40.12 ± 0.46	352.41 ± 3.53	135.08 ± 4.73	49.23 ± 1.07	20.36 ± 0.06	204.68 ± 5.72	97.8 ± 0.93	35.77 ± 0.18	13.38 ± 0.5	146.94 ± 0.5	53.52 ± 0.24	18.88 ± 0.26	6.36 ± 0.3	78.76 ± 0.44
	D2	227.62 ± 1.55	84.68 ± 1.53	40.12 ± 0.46	352.41 ± 3.53	133.65 ± 0.4	48.01 ± 0.74	19.52 ± 0.04	201.19 ± 0.35	95.34 ± 2.2	35.14 ± 1.45	12.96 ± 0.88	143.44 ± 3.54	49.96 ± 0.87	17.71 ± 0.28	5.11 ± 0.06	72.78 ± 0.97
	D3	227.62 ± 1.55	84.68 ± 1.53	40.12 ± 0.46	352.41 ± 3.53	128.82 ± 3.83	46.84 ± 1.23	18.09 ± 0.91	193.74 ± 5.93	94.53 ± 1.71	34.06 ± 0.51	12.74 ± 0.38	141.32 ± 2.46	48.12 ± 0.46	16.94 ± 0.17	5.38 ± 0.25	70.44 ± 0.22
	D4	227.62 ± 1.55	84.68 ± 1.53	40.12 ± 0.46	352.41 ± 3.53	127.47 ± 2.67	46.55 ± 1.16	17.83 ± 0.39	191.85 ± 4.13	93.32 ± 1.1	33.82 ± 0.31	12.11 ± 0.37	139.25 ± 1.11	46.08 ± 1.62	16 ± 0.4	4.7 ± 0.14	66.78 ± 2.13
LR1	D1	173.23 ± 3.54	42.86 ± 0.93	30.63 ± 0.97	246.72 ± 5.3	110.78 ± 2.16	28.71 ± 0.71	16.94 ± 1.06	156.43 ± 3.92	85.81 ± 0.83	22.09 ± 0.24	14.44 ± 0.01	122.34 ± 0.83	49.29 ± 0.06	14.56 ± 0.11	10.95 ± 0.12	74.81 ± 0.15
	D2	173.23 ± 3.54	42.86 ± 0.93	30.63 ± 0.97	246.72 ± 5.3	109.05 ± 1.6	28.07 ± 0.08	16.44 ± 0.36	153.55 ± 1.26	83.99 ± 1.25	21.44 ± 0.13	13.94 ± 0.31	119.37 ± 1.47	47.1 ± 0.31	13.87 ± 0.17	10.08 ± 0.06	71.04 ± 0.47
	D3	173.23 ± 3.54	42.86 ± 0.93	30.63 ± 0.97	246.72 ± 5.3	108.43 ± 2.14	27.96 ± 1.03	16.53 ± 1.69	152.93 ± 4.85	82.88 ± 1.07	21.58 ± 0.19	14.05 ± 0.32	118.5 ± 0.84	45.59 ± 0.51	13.6 ± 0.11	9.64 ± 0.13	68.83 ± 0.53
	D4	173.23 ± 3.54	42.86 ± 0.93	30.63 ± 0.97	246.72 ± 5.3	107.1 ± 3.23	27.53 ± 0.86	15.83 ± 0.33	150.46 ± 3.82	78.13 ± 0.47	21.13 ± 0.56	13.69 ± 0.53	112.95 ± 1.56	43.6 ± 0.55	12.63 ± 0.13	9.09 ± 0.09	65.32 ± 0.46
LR2	D1	146.35 ± 0.35	47.85 ± 0.81	31.97 ± 0.49	226.17 ± 0.09	98.72 ± 2.12	32.23 ± 0.7	17.22 ± 1.66	148.17 ± 2.89	73.15 ± 0.69	23.42 ± 0.18	10.97 ± 0.14	107.54 ± 1	37.35 ± 0.12	11.09 ± 0.13	5.01 ± 0.04	53.45 ± 0.23
	D2	146.35 ± 0.35	47.85 ± 0.81	31.97 ± 0.49	226.17 ± 0.09	95.47 ± 1.99	31.33 ± 3.23	16.39 ± 0.51	143.18 ± 4.52	71.8 ± 0.28	22.52 ± 0.86	10.49 ± 0.39	104.82 ± 1.31	36.13 ± 0.24	10.87 ± 0.09	4.72 ± 0.02	51.73 ± 0.33
	D3	146.35 ± 0.35	47.85 ± 0.81	31.97 ± 0.49	226.17 ± 0.09	92.25 ± 5.11	29.66 ± 0.99	15.88 ± 0.66	137.79 ± 5.48	71.69 ± 0.89	22.43 ± 0.55	10.28 ± 0.28	104.41 ± 1.68	34.74 ± 0.13	9.95 ± 0.11	4.17 ± 0.01	48.86 ± 0.13
	D4	146.35 ± 0.35	47.85 ± 0.81	31.97 ± 0.49	226.17 ± 0.09	92.68 ± 4.9	28.96 ± 1.51	15.51 ± 0.39	137.15 ± 6.51	69.36 ± 0.75	21.48 ± 0.86	9.39 ± 0.29	100.24 ± 1.64	32.68 ± 0.16	9.35 ± 0.13	3.87 ± 0.03	45.9 ± 0.23
LR3	D1	179.97 ± 4.77	67.28 ± 1.98	32.11 ± 0.92	279.36 ± 7.66	132.76 ± 2.33	50.05 ± 1.85	17.96 ± 1.06	200.77 ± 4.25	102.33 ± 0.6	37.58 ± 0.27	12.53 ± 0.08	152.43 ± 0.65	57.64 ± 0.39	21.18 ± 0.11	7.01 ± 0.07	85.84 ± 0.55
	D2	179.97 ± 4.77	67.28 ± 1.98	32.11 ± 0.92	279.36 ± 7.66	131.21 ± 3.27	49.64 ± 1.44	17.43 ± 0.4	198.28 ± 4.89	96.46 ± 1.36	35.01 ± 0.71	11.88 ± 0.24	143.35 ± 1.24	54.77 ± 0.1	19.36 ± 0.38	6.55 ± 0.01	80.67 ± 0.38
	D3	179.97 ± 4.77	67.28 ± 1.98	32.11 ± 0.92	279.36 ± 7.66	129.58 ± 5.4	48.54 ± 2.6	16.38 ± 1.44	194.49 ± 9.43	92.78 ± 2.29	34.49 ± 0.24	11.52 ± 0.26	138.78 ± 2.54	53.62 ± 0.4	18.38 ± 0.1	5.75 ± 0.13	77.75 ± 0.48

	D4	179.97 ± 4.77	67.28 ± 1.98	32.11 ± 0.92	279.36 ± 7.66	128.62 ± 0.33	47.05 ± 0.06	16.27 ± 0.45	191.94 ± 0.72	87.87 ± 0.62	33.81 ± 0.26	11.22 ± 0.35	132.9 ± 0.54	51.72 ± 0.35	17.09 ± 0.06	5.5 ± 0.1	74.3 ± 0.29
LR4	D1	181.65 ± 0.8	48.81 ± 1.04	22.94 ± 0.29	253.4 ± 0.95	115.37 ± 3.16	27.92 ± 0.49	12.95 ± 0.22	156.24 ± 2.69	81.48 ± 2.05	19.47 ± 0.57	8.06 ± 0.3	109.01 ± 2.8	40.84 ± 0.13	9.65 ± 0.12	4 ± 0.02	54.5 ± 0.23
	D2	181.65 ± 0.8	48.81 ± 1.04	22.94 ± 0.29	253.4 ± 0.95	109.49 ± 2.17	26.23 ± 1.74	11.71 ± 0.18	147.44 ± 3.7	79.64 ± 1.48	18.68 ± 0.47	7.34 ± 0.34	105.66 ± 2.1	39.08 ± 0.13	8.9 ± 0.07	3.71 ± 0.03	51.69 ± 0.04
	D3	181.65 ± 0.8	48.81 ± 1.04	22.94 ± 0.29	253.4 ± 0.95	108.3 ± 0.96	26.1 ± 0.39	10.33 ± 0.25	144.72 ± 0.75	77.58 ± 0.91	18.12 ± 0.14	7.06 ± 0.19	102.76 ± 0.96	38.34 ± 0.38	8.52 ± 0.08	3.09 ± 0.03	49.95 ± 0.45
	D4	181.65 ± 0.8	48.81 ± 1.04	22.94 ± 0.29	253.4 ± 0.95	102.93 ± 1.13	25.86 ± 0.45	9.85 ± 0.41	138.64 ± 1.05	76.47 ± 1.66	18 ± 0.29	6.87 ± 0.06	101.33 ± 1.86	37.09 ± 0.19	8.11 ± 0.14	2.95 ± 0.02	48.16 ± 0.31
CR2	D1	80.93 ± 0.61	20.74 ± 0.1	10.24 ± 0.76	111.91 ± 1.43	42 ± 0.51	11.51 ± 0.03	4.49 ± 0.19	57.99 ± 0.67	33.23 ± 0.46	9 ± 0.28	2.56 ± 0.07	44.8 ± 0.79	18.2 ± 0.03	3.49 ± 0.02	1.19 ± 0.01	22.88 ± 0.02
	D2	80.93 ± 0.61	20.74 ± 0.1	10.24 ± 0.76	111.91 ± 1.43	41.33 ± 0.78	11.18 ± 0.28	4.25 ± 0.25	56.76 ± 1.2	32.69 ± 0.76	8.82 ± 0.05	2.49 ± 0.04	44.01 ± 0.82	17.85 ± 0.14	3.32 ± 0.01	1.05 ± 0.02	22.23 ± 0.12
	D3	80.93 ± 0.61	20.74 ± 0.1	10.24 ± 0.76	111.91 ± 1.43	40.89 ± 0.89	10.91 ± 0.29	4.09 ± 0.05	55.89 ± 1.19	31.81 ± 0.52	8.42 ± 0.1	2.41 ± 0.03	42.64 ± 0.49	17.42 ± 0	3.16 ± 0.05	0.96 ± 0.01	21.54 ± 0.06
	D4	80.93 ± 0.61	20.74 ± 0.1	10.24 ± 0.76	111.91 ± 1.43	40.16 ± 0.67	10.42 ± 0.08	3.99 ± 0.11	54.57 ± 0.84	31.51 ± 0.2	8.23 ± 0.06	2.33 ± 0.07	42.07 ± 0.12	16.98 ± 0.1	2.99 ± 0.01	0.89 ± 0.01	20.87 ± 0.11

144

145

146

147

148

149

150

151 *Table S7. Concentration of polyphenols measured by UHPLC-QqQ-MS in mg.L⁻¹ during 24 months for each wine/cork combination ; Mean*
 152 *value of three biological replicate ; B4 was expressed in mg.L⁻¹ eq of B2 ; Vitisin A was expressed in mg.L⁻¹ eq of Vitisin B. Mean value ±*
 153 *standard deviation*

Ageng	Wine	Cork	Epicatechin-SO3H	B3	B1	Catechin	Epigallocatechin	B4	B2	Epicatechin	Epicatechin-3-gallate	Vitisin B	Vitisin A	Malvidin-ethylcatechin (Isomer 1)	Malvidin-ethylcatechin (Isomer 2)
T0		D1	0.66 ± 0.02	10.00 ± 0.04	65.04 ± 0.10	139.98 ± 2.12	2.68 ± 0.02	12.40 ± 0.23	51.71 ± 0.26	100.17 ± 0.9	0.05 ± 0.00	0.15 ± 0.02	0.12 ± 0.01	0.24 ± 0.01	0.81 ± 0.04
			1.09 ± 0.04	9.36 ± 0.10	65.34 ± 0.36	134.75 ± 0.89	2.56 ± 0.02	11.06 ± 0.05	50.88 ± 0.88	87.16 ± 0.06	0.03 ± 0.01	0.19 ± 0.01	0.23 ± 0.01	0.36 ± 0.00	0.97 ± 0.02
			1.06 ± 0.04	9.23 ± 0.16	64.24 ± 0.05	131.74 ± 0.27	2.49 ± 0.02	10.94 ± 0.02	49.09 ± 0.71	86.39 ± 0.29	0.00 ± 0.00	0.22 ± 0.00	0.23 ± 0.01	0.38 ± 0.01	1.05 ± 0.02
			1.01 ± 0.08	9.04 ± 0.04	63.98 ± 0.09	130.61 ± 0.39	2.40 ± 0.04	10.73 ± 0.05	49.14 ± 0.29	84.99 ± 0.25	0.02 ± 0.02	0.24 ± 0.00	0.24 ± 0.00	0.40 ± 0.00	1.09 ± 0.01
T6		D4	0.86 ± 0.11	8.62 ± 0.29	62.77 ± 0.30	127.92 ± 0.20	2.36 ± 0.01	10.31 ± 0.19	48.31 ± 0.6	83.71 ± 0.44	0.02 ± 0.01	0.26 ± 0.01	0.25 ± 0.00	0.42 ± 0.00	1.14 ± 0.00
			1.23 ± 0.10	8.83 ± 0.06	63.51 ± 0.53	127.4 ± 1.49	2.32 ± 0.01	9.96 ± 0.06	50.4 ± 0.23	80.6 ± 0.47	0.02 ± 0.01	0.28 ± 0.01	0.33 ± 0.01	0.54 ± 0.02	1.54 ± 0.05
			1.25 ± 0.06	8.71 ± 0.01	62.60 ± 0.27	125.89 ± 1.40	2.26 ± 0.01	9.82 ± 0.03	49.65 ± 0.31	79.22 ± 0.22	0.01 ± 0.01	0.32 ± 0.00	0.37 ± 0.01	0.61 ± 0.01	1.67 ± 0.01
			1.27 ± 0.06	8.55 ± 0.02	61.77 ± 0.63	127.09 ± 0.58	2.23 ± 0.01	9.68 ± 0.12	49.35 ± 0.3	79.2 ± 0.48	0.02 ± 0.01	0.35 ± 0.01	0.36 ± 0.00	0.63 ± 0.01	1.71 ± 0.01
T12	CR1	D4	1.16 ± 0.09	8.19 ± 0.06	60.76 ± 0.49	121.04 ± 1.85	2.12 ± 0.06	9.51 ± 0.03	47.11 ± 0.39	76.97 ± 0.68	0.02 ± 0.01	0.35 ± 0.02	0.40 ± 0.02	0.66 ± 0.02	1.75 ± 0.03
			1.79 ± 0.16	7.67 ± 0.03	60.13 ± 0.79	116.12 ± 4.34	1.99 ± 0.06	8.31 ± 0.15	45.8 ± 0.66	70.45 ± 1.54	0.01 ± 0.01	0.45 ± 0.01	0.42 ± 0.00	0.14 ± 0.00	0.36 ± 0.01
			1.83 ± 0.10	7.42 ± 0.02	57.57 ± 1.26	109.9 ± 1.16	1.88 ± 0.01	7.83 ± 0.08	45.09 ± 0.16	63.31 ± 1.14	0.01 ± 0.01	0.48 ± 0.01	0.42 ± 0.01	0.15 ± 0.00	0.39 ± 0.01
			1.74 ± 0.22	7.14 ± 0.08	57.80 ± 0.01	108.52 ± 0.93	1.86 ± 0.01	7.46 ± 0.07	44.22 ± 0.54	62.44 ± 0.38	0.01 ± 0.01	0.53 ± 0.02	0.44 ± 0.00	0.15 ± 0.00	0.39 ± 0.01
T24		D4	1.70 ± 0.08	6.83 ± 0.23	55.75 ± 0.45	108.21 ± 0.90	1.78 ± 0.01	7.15 ± 0.28	43.2 ± 0.44	60.26 ± 0.26	0.01 ± 0.01	0.59 ± 0.01	0.05 ± 0.01	0.17 ± 0.00	0.44 ± 0.00
			0.87 ± 0.01	11.58 ± 0.53	81.78 ± 1.03	94.81 ± 0.42	1.93 ± 0.06	3.31 ± 0.06	15.23 ± 0.08	19.57 ± 0.06	0.02 ± 0.02	0.1 ± 0.00	0.30 ± 0.01	0.15 ± 0.02	0.44 ± 0.02
			1.55 ± 0.08	9.96 ± 0.25	78.22 ± 0.36	93.41 ± 1.13	1.82 ± 0.01	3.00 ± 0.01	15.01 ± 0.06	18.38 ± 0.03	0.01 ± 0.01	0.15 ± 0.00	0.53 ± 0.03	0.19 ± 0.00	0.59 ± 0.01
			1.66 ± 0.20	9.73 ± 0.14	77.06 ± 0.38	90.93 ± 0.92	1.74 ± 0.02	2.94 ± 0.02	14.71 ± 0.08	18.26 ± 0.11	0.00 ± 0.00	0.15 ± 0.00	0.61 ± 0.02	0.21 ± 0.01	0.61 ± 0.01
T6	LR1	D3	1.56 ± 0.17	9.79 ± 0.04	76.92 ± 0.85	89.59 ± 0.91	1.74 ± 0.01	2.84 ± 0.07	14.55 ± 0.03	17.94 ± 0.07	0.01 ± 0.00	0.16 ± 0.00	0.67 ± 0.01	0.21 ± 0.01	0.63 ± 0.02

T12	D4	1.63 ± 0.13	9.45 ± 0.56	78.11 ± 1.14	88.45 ± 0.06	1.70 ± 0.01	2.62 ± 0.03	14.25 ± 0.03	17.67 ± 0.05	0.00 ± 0.00	0.18 ± 0.00	0.70 ± 0.02	0.23 ± 0.00	0.66 ± 0.00	
	D1	2.00 ± 0.04	9.59 ± 0.07	74.89 ± 0.63	90.87 ± 0.94	1.71 ± 0.02	2.75 ± 0.04	14.3 ± 0.11	17.27 ± 0.10	0.00 ± 0.00	0.23 ± 0.00	0.95 ± 0.0	0.27 ± 0.00	0.83 ± 0.01	
	D2	1.99 ± 0.15	9.40 ± 0.03	73.90 ± 1.56	89.49 ± 0.27	1.67 ± 0.02	2.63 ± 0.04	13.93 ± 0.09	16.92 ± 0.02	0.00 ± 0.00	0.25 ± 0.00	1.00 ± 0.00	0.28 ± 0.00	0.87 ± 0.01	
	D3	2.16 ± 0.11	9.35 ± 0.09	74.88 ± 0.81	89.01 ± 0.69	1.63 ± 0.02	2.49 ± 0.04	13.8 ± 0.14	16.75 ± 0.06	0.00 ± 0.00	0.26 ± 0.00	1.01 ± 0.00	0.31 ± 0.01	0.96 ± 0.00	
T24	D4	2.03 ± 0.09	8.89 ± 0.29	71.25 ± 0.88	87.97 ± 0.22	1.58 ± 0.02	2.31 ± 0.03	13.33 ± 0.17	15.23 ± 0.12	0.01 ± 0.00	0.27 ± 0.00	1.04 ± 0.03	0.35 ± 0.01	1.03 ± 0.01	
	D1	3.22 ± 0.07	8.27 ± 0.03	70.43 ± 0.71	89.72 ± 0.32	1.49 ± 0.02	2.08 ± 0.00	12.98 ± 0.15	13.47 ± 0.08	0.00 ± 0.01	0.29 ± 0.00	1.07 ± 0.01	0.12 ± 0.00	0.30 ± 0.00	
	D2	3.22 ± 0.06	7.89 ± 0.08	67.77 ± 1.23	86.20 ± 2.39	1.42 ± 0.01	1.94 ± 0.02	12.51 ± 0.11	13.07 ± 0.10	0.00 ± 0.00	0.30 ± 0.00	1.13 ± 0.01	0.12 ± 0.01	0.32 ± 0.00	
	D3	3.16 ± 0.15	7.48 ± 0.05	66.08 ± 0.74	82.52 ± 0.65	1.37 ± 0.02	1.84 ± 0.02	12.17 ± 0.06	12.89 ± 0.03	0.00 ± 0.00	0.32 ± 0.00	1.20 ± 0.01	0.12 ± 0.01	0.33 ± 0.00	
D4	3.14 ± 0.12	7.12 ± 0.11	63.20 ± 0.90	80.58 ± 0.34	1.33 ± 0.01	1.64 ± 0.06	11.57 ± 0.24	12.62 ± 0.13	0.00 ± 0.00	0.34 ± 0.00	1.34 ± 0.02	0.12 ± 0.01	0.35 ± 0.00		
T0		0.51 ± 0.01	9.04 ± 0.02	127.05 ± 2.28	117.22 ± 0.11	2.64 ± 0.04	3.57 ± 0.06	17.24 ± 0.5	21.30 ± 0.11	0.02 ± 0.01	0.08 ± 0.01	0.99 ± 0.04	0.48 ± 0.03	1.27 ± 0.02	
T6	D1	0.76 ± 0.07	8.63 ± 0.03	122.19 ± 0.31	116.41 ± 0.62	2.44 ± 0.03	3.12 ± 0.14	16.39 ± 0.08	19.48 ± 0.09	0.01 ± 0.02	0.15 ± 0.01	1.22 ± 0.01	0.71 ± 0.01	1.89 ± 0.05	
	D2	0.89 ± 0.05	8.51 ± 0.03	119.97 ± 0.35	113.25 ± 1.15	2.36 ± 0.02	3.02 ± 0.04	16.28 ± 0.04	18.98 ± 0.10	0.02 ± 0.02	0.17 ± 0.00	1.28 ± 0.01	0.72 ± 0.00	1.93 ± 0.01	
	D3	0.77 ± 0.09	8.21 ± 0.03	118.8 ± 1.76	111.05 ± 1.16	2.29 ± 0.05	2.86 ± 0.02	15.99 ± 0.31	18.64 ± 0.09	0.02 ± 0.01	0.18 ± 0.00	1.37 ± 0.06	0.73 ± 0.01	1.97 ± 0.01	
	D4	0.93 ± 0.05	8.13 ± 0.08	118.16 ± 1.85	109.38 ± 1.12	2.21 ± 0.02	2.69 ± 0.10	15.37 ± 0.32	18.31 ± 0.36	0.01 ± 0.01	0.2 ± 0.01	1.44 ± 0.03	0.79 ± 0.02	2.02 ± 0.03	
T12	LR2	D1	1.14 ± 0.09	7.89 ± 0.12	119.73 ± 1.13	112.61 ± 0.15	2.25 ± 0.03	2.82 ± 0.08	15.73 ± 0.06	17.31 ± 0.02	0.00 ± 0.00	0.29 ± 0.00	1.41 ± 0.03	1.12 ± 0.03	3.13 ± 0.02
	D2	1.20 ± 0.02	7.71 ± 0.06	114.6 ± 0.67	110.51 ± 0.44	2.22 ± 0.03	2.58 ± 0.01	15.58 ± 0.01	17.03 ± 0.06	0.01 ± 0.01	0.30 ± 0.01	1.44 ± 0.01	1.18 ± 0.02	3.20 ± 0.06	
	D3	1.20 ± 0.05	7.53 ± 0.03	114.47 ± 1.25	108.84 ± 0.44	2.17 ± 0.01	2.53 ± 0.01	15.36 ± 0.31	16.84 ± 0.06	0.01 ± 0.01	0.31 ± 0.00	1.46 ± 0.01	1.22 ± 0.01	3.40 ± 0.07	
D4	1.14 ± 0.03	7.40 ± 0.06	108.12 ± 0.64	105.53 ± 0.70	2.13 ± 0.01	2.40 ± 0.03	15.01 ± 0.17	16.73 ± 0.04	0.00 ± 0.00	0.32 ± 0.01	1.52 ± 0.00	1.3 ± 0.02	3.56 ± 0.05		
T24	D1	1.62 ± 0.11	7.21 ± 0.1	112.22 ± 0.68	106.38 ± 1.08	2.04 ± 0.03	2.23 ± 0.05	15.24 ± 0.05	15.13 ± 0.02	0.01 ± 0.01	0.37 ± 0.02	1.51 ± 0.01	0.29 ± 0.01	0.81 ± 0.10	
	D2	1.61 ± 0.12	6.28 ± 0.34	108.00 ± 1.11	103.98 ± 1.10	1.98 ± 0.04	2.13 ± 0.04	14.83 ± 0.04	14.80 ± 0.06	0.00 ± 0.00	0.42 ± 0.01	1.61 ± 0.06	0.31 ± 0.01	0.79 ± 0.01	
	D3	1.60 ± 0.09	5.74 ± 0.08	103.29 ± 1.34	100.92 ± 0.84	1.92 ± 0.03	2.04 ± 0.01	14.75 ± 0.04	14.68 ± 0.12	0.01 ± 0.01	0.46 ± 0.01	1.69 ± 0.02	0.32 ± 0.00	0.80 ± 0.00	
	D4	1.62 ± 0.06	5.18 ± 0.28	98.69 ± 1.54	93.86 ± 1.11	1.86 ± 0.02	1.94 ± 0.04	14.42 ± 0.14	13.87 ± 0.49	0.00 ± 0.00	0.51 ± 0.02	1.80 ± 0.02	0.34 ± 0.00	0.85 ± 0.01	
T0	LR3		0.40 ± 0.01	4.83 ± 0.04	35.58 ± 0.79	63.28 ± 0.59	2.85 ± 0.02	6.52 ± 0.06	28.36 ± 0.36	39.99 ± 0.08	0.02 ± 0.01	0.11 ± 0.00	0.32 ± 0.01	0.13 ± 0.01	0.46 ± 0.01
T6	D1	0.46 ± 0.02	4.14 ± 0.02	32.92 ± 0.02	60.63 ± 0.02	2.71 ± 0.02	5.86 ± 0.02	26.79 ± 0.02	37.31 ± 0.15	0.02 ± 0.01	0.17 ± 0.01	0.73 ± 0.01	0.26 ± 0.01	0.74 ± 0.01	

			0.07	± 0.22	0.23		0.01	0.3			0.01	0.01	0.00	0.00
	D2	0.52 ± 0.04	4.15 ± 0.02	32.42 ± 0.18	59.18 ± 0.05	2.67 ± 0.06	5.78 ± 0.02	26.01 ± 0.12	36.69 ± 0.06	0.02 ± 0.01	0.20 ± 0.00	0.79 ± 0.00	0.27 ± 0.00	0.77 ± 0.01
	D3	0.51 ± 0.05	4.02 ± 0.03	31.95 ± 0.15	58.69 ± 0.26	2.59 ± 0.02	5.68 ± 0.03	25.75 ± 0.12	36.40 ± 0.07	0.02 ± 0.00	0.22 ± 0.00	0.80 ± 0.01	0.28 ± 0.00	0.77 ± 0.01
	D4	0.54 ± 0.07	3.95 ± 0.04	31.26 ± 0.39	57.07 ± 0.49	2.54 ± 0.03	5.60 ± 0.11	25.61 ± 0.04	35.73 ± 0.44	0.02 ± 0.00	0.23 ± 0.00	0.84 ± 0.01	0.28 ± 0.00	0.82 ± 0.02
T12	D1	0.69 ± 0.08	3.95 ± 0.01	32.40 ± 1.24	60.39 ± 0.47	2.65 ± 0.01	5.63 ± 0.13	26.59 ± 0.17	36.68 ± 0.23	0.03 ± 0.02	0.36 ± 0.01	0.95 ± 0.02	0.35 ± 0.01	1.09 ± 0.01
	D2	0.67 ± 0.1	3.79 ± 0.07	30.88 ± 0.17	59.23 ± 0.34	2.62 ± 0.01	5.42 ± 0.01	26.03 ± 0.32	35.48 ± 0.52	0.02 ± 0.01	0.38 ± 0.00	0.99 ± 0.01	0.36 ± 0.01	1.12 ± 0.02
	D3	0.67 ± 0.07	3.72 ± 0.03	30.12 ± 0.55	57.43 ± 0.74	2.52 ± 0.04	5.36 ± 0.02	25.74 ± 0.24	34.80 ± 0.39	0.02 ± 0.00	0.38 ± 0.00	1.02 ± 0.02	0.38 ± 0.00	1.14 ± 0.01
	D4	0.70 ± 0.04	3.64 ± 0.06	29.31 ± 0.34	55.65 ± 0.74	2.48 ± 0.02	5.06 ± 0.13	25.1 ± 0.06	33.56 ± 0.44	0.02 ± 0.00	0.40 ± 0.01	1.11 ± 0.01	0.43 ± 0.01	1.22 ± 0.01
T24	D1	0.95 ± 0.01	3.47 ± 0.03	30.81 ± 0.26	56.58 ± 0.44	2.43 ± 0.04	4.24 ± 0.02	24.5 ± 0.11	31.67 ± 0.12	0.07 ± 0.02	0.43 ± 0.01	0.98 ± 0.01	0.12 ± 0.01	0.30 ± 0.00
	D2	0.99 ± 0.02	3.41 ± 0.03	29.49 ± 0.14	55.58 ± 0.44	2.33 ± 0.02	4.16 ± 0.03	24.24 ± 0.04	31.35 ± 0.20	0.07 ± 0.01	0.44 ± 0.02	1.08 ± 0.01	0.12 ± 0.00	0.33 ± 0.01
	D3	0.89 ± 0.05	3.32 ± 0.02	29.11 ± 0.11	54.85 ± 0.67	2.23 ± 0.02	4.12 ± 0.01	23.44 ± 0.24	30.84 ± 0.92	0.06 ± 0.01	0.48 ± 0.01	1.14 ± 0.01	0.13 ± 0.00	0.33 ± 0.01
	D4	0.99 ± 0.03	3.09 ± 0.07	28.13 ± 0.45	53.11 ± 0.13	2.1 ± 0.07	3.99 ± 0.01	23.04 ± 0.17	29.19 ± 0.42	0.07 ± 0.01	0.59 ± 0.01	1.24 ± 0.01	0.14 ± 0.00	0.35 ± 0.00
T0		0.92 ± 0.02	4.17 ± 0.04	44.30 ± 0.11	71.86 ± 1.10	1.22 ± 0.00	4.61 ± 0.07	27.08 ± 0.22	29.54 ± 0.22	0.03 ± 0.03	0.09 ± 0.01	0.60 ± 0.02	0.11 ± 0.01	0.19 ± 0.01
T6	D1	1.07 ± 0.03	3.79 ± 0.01	42.21 ± 0.28	67.88 ± 0.53	1.13 ± 0.01	3.82 ± 0.03	25.49 ± 0.09	26.41 ± 0.02	0.04 ± 0.01	0.15 ± 0.00	0.79 ± 0.01	0.17 ± 0.00	0.39 ± 0.02
	D2	1.00 ± 0.02	3.63 ± 0.11	41.56 ± 0.39	66.80 ± 0.09	1.11 ± 0.00	3.74 ± 0.01	25.13 ± 0.29	26.08 ± 0.15	0.03 ± 0.01	0.16 ± 0.00	0.87 ± 0.01	0.18 ± 0.00	0.45 ± 0.01
	D3	1.11 ± 0.14	3.56 ± 0.01	40.86 ± 0.66	66.11 ± 0.19	1.07 ± 0.00	3.68 ± 0.02	24.64 ± 0.03	25.62 ± 0.07	0.03 ± 0.00	0.18 ± 0.01	0.91 ± 0.01	0.2 ± 0.00	0.47 ± 0.01
	D4	1.05 ± 0.09	3.44 ± 0.11	38.98 ± 0.66	63.63 ± 0.84	1.01 ± 0.01	3.62 ± 0.03	23.58 ± 0.20	24.84 ± 0.06	0.03 ± 0.01	0.23 ± 0.00	0.95 ± 0.01	0.22 ± 0.00	0.49 ± 0.01
LR4	D1	1.20 ± 0.01	3.5 ± 0.05	39.75 ± 0.22	63.53 ± 0.48	1.08 ± 0.00	3.16 ± 0.07	23.51 ± 0.15	23.63 ± 0.09	0.04 ± 0.00	0.26 ± 0.02	0.94 ± 0.00	0.18 ± 0.02	0.52 ± 0.01
	D2	1.29 ± 0.10	3.33 ± 0.03	39.34 ± 0.07	61.99 ± 0.04	1.05 ± 0.00	3.04 ± 0.00	23.17 ± 0.10	23.36 ± 0.12	0.03 ± 0.01	0.28 ± 0.01	0.96 ± 0.00	0.23 ± 0.01	0.6 ± 0.02
	D3	1.33 ± 0.18	3.25 ± 0.05	39.24 ± 0.17	61.52 ± 0.11	1.01 ± 0.01	3.00 ± 0.01	23.09 ± 0.18	23.07 ± 0.08	0.03 ± 0.00	0.31 ± 0.00	0.98 ± 0.00	0.26 ± 0.01	0.65 ± 0.00
	D4	1.36 ± 0.05	2.89 ± 0.07	38.23 ± 0.32	60.72 ± 0.26	0.97 ± 0.02	2.88 ± 0.06	22.54 ± 0.31	22.62 ± 0.06	0.03 ± 0.01	0.34 ± 0.01	1.01 ± 0.01	0.28 ± 0.01	0.69 ± 0.01
T24	D1	2.08 ± 0.18	3.06 ± 0.08	38.25 ± 0.27	59.79 ± 0.32	1.04 ± 0.00	2.40 ± 0.03	21.73 ± 0.11	22.25 ± 0.20	0.04 ± 0.02	0.20 ± 0.02	0.98 ± 0.01	0.09 ± 0.00	0.19 ± 0.00
	D2	1.81 ± 0.15	2.89 ± 0.02	37.23 ± 0.29	59.18 ± 0.10	1.00 ± 0.01	2.34 ± 0.01	21.02 ± 0.13	21.77 ± 0.16	0.02 ± 0.01	0.31 ± 0.01	0.99 ± 0.01	0.1 ± 0.00	0.23 ± 0.01
	D3	1.80 ± 0.08	2.79 ± 0.05	36.72 ± 0.08	58.24 ± 0.32	0.96 ± 0.01	2.26 ± 0.01	20.66 ± 0.03	21.06 ± 0.02	0.02 ± 0.01	0.38 ± 0.00	1.02 ± 0.00	0.11 ± 0.00	0.24 ± 0.00

	D4	2.15 ± 0.22	2.48 ± 0.08	36.22 ± 0.27	57.45 ± 0.27	0.88 ± 0.01	2.17 ± 0.03	20.42 ± 0.01	20.68 ± 0.04	0.01 ± 0.01	0.42 ± 0.01	1.04 ± 0.01	0.12 ± 0.00	0.28 ± 0.00
T0		0.70 ± 0.03	3.91 ± 0.09	48.07 ± 0.87	80.53 ± 2.38	1.26 ± 0.02	4.19 ± 0.18	24.05 ± 0.14	29.74 ± 0.51	0.05 ± 0.01	0.21 ± 0.02	0.38 ± 0.01	0.13 ± 0.01	0.25 ± 0.00
	D1	1.18 ± 0.05	3.48 ± 0.02	46.71 ± 0.08	75.15 ± 0.85	1.19 ± 0.02	3.31 ± 0.01	23.04 ± 0.08	27.5 ± 0.34	0.04 ± 0.00	0.36 ± 0.01	0.91 ± 0.01	0.23 ± 0.00	0.51 ± 0.03
T6	D2	1.19 ± 0.10	3.37 ± 0.01	46.47 ± 0.22	73.83 ± 1.00	1.16 ± 0.01	3.25 ± 0.02	22.63 ± 0.06	26.83 ± 0.11	0.03 ± 0.01	0.39 ± 0.00	0.96 ± 0.00	0.24 ± 0.00	0.55 ± 0.01
	D3	1.13 ± 0.02	3.33 ± 0.01	45.47 ± 0.14	71.44 ± 0.65	1.14 ± 0.01	3.19 ± 0.01	22.17 ± 0.12	26.39 ± 0.05	0.03 ± 0.00	0.39 ± 0.00	0.98 ± 0.02	0.25 ± 0.00	0.57 ± 0.00
	D4	1.27 ± 0.05	3.25 ± 0.01	44.78 ± 0.36	71.24 ± 0.63	1.13 ± 0.00	3.11 ± 0.02	22.09 ± 0.28	25.57 ± 0.09	0.03 ± 0.00	0.43 ± 0.00	1.02 ± 0.01	0.27 ± 0.00	0.59 ± 0.00
	D1	1.78 ± 0.06	3.12 ± 0.03	45.12 ± 0.24	71.36 ± 0.01	1.15 ± 0.01	2.81 ± 0.02	21.66 ± 0.35	25.51 ± 0.13	0.02 ± 0.01	0.58 ± 0.01	1.02 ± 0.00	0.31 ± 0.00	0.83 ± 0.01
T12	CR2 D2	1.65 ± 0.03	2.97 ± 0.00	43.91 ± 0.51	70.97 ± 0.05	1.13 ± 0.00	2.76 ± 0.03	21.27 ± 0.59	24.78 ± 0.07	0.02 ± 0.00	0.62 ± 0.01	1.08 ± 0.01	0.32 ± 0.00	0.86 ± 0.01
	D3	1.63 ± 0.07	2.89 ± 0.01	43.30 ± 0.28	70.27 ± 0.20	1.12 ± 0.00	2.68 ± 0.01	20.97 ± 0.18	24.47 ± 0.05	0.02 ± 0.00	0.63 ± 0.00	1.09 ± 0.01	0.35 ± 0.00	0.89 ± 0.01
	D4	1.69 ± 0.12	2.82 ± 0.01	42.30 ± 0.50	69.52 ± 0.11	1.09 ± 0.01	2.52 ± 0.01	21.03 ± 0.33	23.93 ± 0.01	0.02 ± 0.00	0.67 ± 0.02	1.13 ± 0.02	0.37 ± 0.01	0.94 ± 0.01
	D1	2.59 ± 0.05	2.60 ± 0.06	39.24 ± 0.07	68.79 ± 0.07	1.07 ± 0.00	2.1 ± 0.02	19.09 ± 0.29	22.63 ± 0.15	0.02 ± 0.00	0.65 ± 0.02	1.11 ± 0.01	0.13 ± 0.00	0.27 ± 0.00
T24	D2	2.40 ± 0.17	2.47 ± 0.03	38.67 ± 0.08	67.48 ± 0.07	1.02 ± 0.00	2.05 ± 0.01	18.59 ± 0.08	22.26 ± 0.05	0.02 ± 0.00	0.67 ± 0.00	1.13 ± 0.00	0.14 ± 0.00	0.29 ± 0.00
	D3	2.49 ± 0.21	2.40 ± 0.02	37.89 ± 0.25	65.79 ± 0.22	0.99 ± 0.01	2.00 ± 0.03	18.13 ± 0.27	21.82 ± 0.01	0.02 ± 0.00	0.72 ± 0.02	1.16 ± 0.00	0.14 ± 0.00	0.31 ± 0.00
	D4	2.37 ± 0.17	2.15 ± 0.07	37.68 ± 1.43	64.30 ± 0.29	0.93 ± 0.02	1.87 ± 0.02	17.79 ± 0.04	21.57 ± 0.09	0.02 ± 0.01	0.78 ± 0.01	1.24 ± 0.01	0.16 ± 0.01	0.33 ± 0.01

154

155