

Supplementary materials

Table S1. Results of simple descriptive test of winery fermentation in Riesling must (upscale)

Sample*	Look	Odor/Smell	Taste	Mouthfull	Aftertaste	Rankings
EC1118	Clear, clean yellow	Fresh, green paper, apple	Dry, fruity, acidic	Medium body	Light bitter, strong	1
SFE + EC1118	Clear, clean yellow	Intensive, fresh, fruity, sweet	Dry, slightly bitter, sweet	Medium body, thick	Bitter, strong	2
TFL2	Very bright yellow	Less fruity, sweet, reserved	Very dry, bitter, less aroma	Flat, weak body	Bitter, herbal	3
TFL2 + EC1118	Clear, clean yellow	Fresh, fruity, intensive	Dry, acidic, fruity	Medium body	Longlasting, strong	4
SFE	Clear, clean yellow	Sweet aromas lemon, citrus, medium intensity	Dry, sweet, high fruity	Strong, medium body	Slightly bitter	5

*All samples were fermented at the Hochschule Geisenheim University winery according to their standard protocol. Scale up was up to 20 L of fresh Riesling must in metal kegs. First 10 days were single fermentation and then 7 days were co-fermentation (sequential). Riesling must was supplemented with 0.4 g/L Optimum-White (inactivated yeast product; according to the supplier's instructions; Lallemant, Austria) and 0.3 g/L Vitaferm Ultra F3 (multi-nutrient complex containing nutrients such as amino acids, fatty acids, minerals, sterols, vitamins, etc; according to the producer; Erbsloh, Germany). Manual stirring was done twice a day and at the end of the fermentation the young wine was filtered and bottled. Blind descriptive tasting was performed by the panel of 18 people. The panel was tasked to describe the wine and rank it. EC1118: *Saccharomyces cerevisiae* wine strain, SFE: *Saccharomycopsis fermentans* wild type strain, TFL2: trifluoro-leucine resistant mutant strain.

Table S2. Amino acids measurements*

	EC1118	SD	SFE	SD	TFL1	SD	TFL2	SD	TFL3	SD	TFL4	SD	Riesling must
aspartic acid	0.5	0.25	0.8	0.05	1.6	0.14	4.7	0.16	1.5	0.50	1.7	0.04	27.2
threonine	1.1	0.31	1.2	0.14	1.7	0.17	10.0	0.99	1.3	0.13	3.5	0.26	30.3
serine	0.7	0.16	0.3	0.02	0.3	0.04	0.6	0.14	0.7	0.11	0.8	0.02	27.5
asparagine	0.7	0.19	0.5	0.30	0.2	0.06	0.3	0.06	0.5	0.37	0.7	0.13	2.8
glutamic acid	0.3	0.05	12.7	1.95	11.1	0.12	75.3	0.83	10.8	1.04	33.3	0.51	47.1
glutamine	0.3	0.08	0.1	0.13	0.7	0.34	1.1	0.18	0.7	0.03	1.2	0.20	<0.1
glycine	0.7	0.04	1.2	0.04	1.9	0.04	5.8	0.17	1.9	0.03	2.2	0.11	2.4
alanine	6.2	0.97	2.6	0.05	5.4	0.40	2.6	0.22	5.1	0.19	4.1	0.26	77.3
citrulline	<0.1	-	<0.1	-	<0.1	-	<0.1	-	<0.1	-	<0.1	-	<0.1
valine	0.2	0.07	1.6	0.40	<0.1	-	0.2	0.07	0.1	0.06	1.5	0.30	9.2
cystine	1.9	0.09	0.3	0.06	0.7	0.17	0.7	0.02	0.9	0.14	0.5	0.01	0.2
methionine	0.2	0.04	0.1	0.03	0.4	0.18	0.3	0.12	0.2	0.08	0.8	1.09	0.9
isoleucine	0.3	0.12	0.5	0.14	0.6	0.15	2.2	0.39	0.4	0.18	0.7	0.07	4.9
leucine	0.4	0.07	0.4	0.07	3.2	0.04	3.2	0.17	2.8	0.06	2.9	0.06	7.2
tyrosine	0.2	0.06	0.1	0.09	0.1	0.10	3.2	0.21	0.1	0.05	0.6	0.37	3.9
phenylalanine	0.3	0.07	2.1	0.09	1.5	0.24	7.7	0.55	0.4	0.09	2.3	1.32	6.6
β-alanine	0.3	0.22	1.0	0.07	1.7	0.30	1.4	0.91	1.5	0.17	1.4	0.24	1.8
β-aminoisobutyric acid	0.2	0.15	<0.1	-	<0.1	-	<0.1	-	0.1	0.17	0.5	0.85	<0.1

EC1118															
SFE		3.5	0.08	<0.1	-	50.8	3.09	<0.1	-	0.3	-	0.2	0.01	80	3.54
TFL1		3.6	0.07	0.8	0.01	40.4	1.22	<0.1	-	0.1	<0.01	0.2	0.01	71	16.4
TFL2		3.3	0.11	<0.1	-	51	0.84	<0.1	-	<0.1	-	0.2	0.01	289	12.5
TFL3		3.5	0.12	<0.1	-	49.1	5.05	<0.1	-	<0.1	-	0.2	0.02	253	5.11
TFL4		3.5	0.18	0.6	-	51.2	2.46	<0.1	-	0.2	-	0.2	0.01	206	19.6
Must		3.3	-	3.8	-	52.9		<0.1	-	<0.1	-	0.2	-	nd	-
Müller-Thurgau	Strain	Tartaric acid		Malic acid		Shikimic acid		Lactic acid		Acetic acid		Citric acid		Isovaleric acid	
		[g/L]		[g/L]		[mg/L]		[g/L]		[g/L]		[g/L]		[mg/L]	
		SF	SD	SF	SD	SF	SD	SF	SD	SF	SD	SF	SD	SF	SD
	EC1118	4.4	0.17	1.8	0.03	25	0.19	0.16	0.01	0.36	0.01	<0.1	-	5	0.23
	SFE	5.4	0.05	1.6	0.09	16	6.84	0.48	0.03	<0.1	-	<0.1	-	3	0.18
	TFL1	5.5	<0.01	1.3	<0.01	26	0.17	0.44	0.10	<0.1	-	<0.1	-	11	0.94
	TFL2	5.4	0.40	1.1	0.05	25	2.34	<0.1		0.36	0.04	<0.1	-	20	0.88
	TFL3	5.4	0.06	1.3	0.02	25	0.88	0.69	<0.01	<0.1	-	<0.1	-	8	0.39
	TFL4	5.3	0.10	1.3	0.03	25	0.84	0.4	0.01	<0.1	-	<0.1	-	10	0.35
	Must	5.6	-	1.6	-	28	-	<0.1	-	<0.1	-	<0.1	-	nd	-
		CF	SD	CF	SD	CF	SD	CF	SD	CF	SD	CF	SD	CF	SD
	EC1118														
	SFE	5.1	0.10	1.5	0.07	13.4	1.39	0.3	0.09	0.1	0.13	0.1	0.01	9	0.41
	TFL1	5.2	0.14	1.2	0.08	15.1	0.23	0.3	0.02	0.4	0.13	0.1	0.01	19	0.84
	TFL2	5.1	0.24	1.2	0.17	6.7	0.98	0.2	0.03	0.1	0.13	<0.1	-	21	0.85
	TFL3	5.1	0.08	1.6	0.03	14.2	0.48	0.4	0.04	0.2	0.13	0.1	-	14	1.03
	TFL4	5.1	0.62	1.5	0.06	14.8	0.60	0.4	0.11	0.1	0.13	0.1	0.01	19	2.04
	Must	5	-	1.6	-	26	-	<0.1	-	<0.1	-	<0.1	-	nd	-

*This table contains information on HPLC results of measured acid concentration generated during the fermentation of three grape varieties: Riesling, Chardonnay and Müller-Thurgau at both single fermentation (SF) and co-fermentation (CF) processes. SD: Standard Deviation, calculated for triplicate samples; ** Isovaleric acid was measured by GC-MS; nd: not detected.