

Table S1. Results of statistical analysis using ANOVA variance analysis, represents the p-value of the samples in case of residual sugar content, volatile acid concentration and pH

Sample	Residual sugar	Volatile acid	pH
	p-value	p-value	p-value
H1-H2	0.004 **	0.985	0.995
Spas-H2	0.788	0.002 *	0.167
ST-H2	0.002 **	0.847	0.999
Spar-H2	0.786	0.002 *	0.318
Skud-H2	0.0008 ****	0.255	0.218
Spas-H1	0.011	0.005 *	0.337
ST-H1	0.996	0.994	0.977
Spar-H1	0.012	0.006	0.566
Skud-H1	0.334	0.555	0.421
ST-Spas	0.008 **	0.011	0.118
Spar-Spas	1.000	0.991	0.997
Skud-Spas	0.001 ***	0.064	0.999
Spar-ST	0.008 **	0.014	0.233
Skud-ST	0.524	0.834	0.156
Skud-Spar	0.001 ***	0.094	0.999

H1, H2: isolates investigated, Sc: *S. cerevisiae* CBS1171, Skud: *S. kudriavzevii* CBS 8840, Spar: *S. paradoxus* CBS 432, Spas: *S. pastorianus* VTT-A63015
, ST: *S. cerevisiae* Fermol Elegance starter strain, $p \leq 0$ ****, $p \leq 0.001$ ***, $p \leq 0.01$ **, $p \leq 0.05$ *

Table S2. Significant components identified by One-way ANOVA and post-hoc analysis

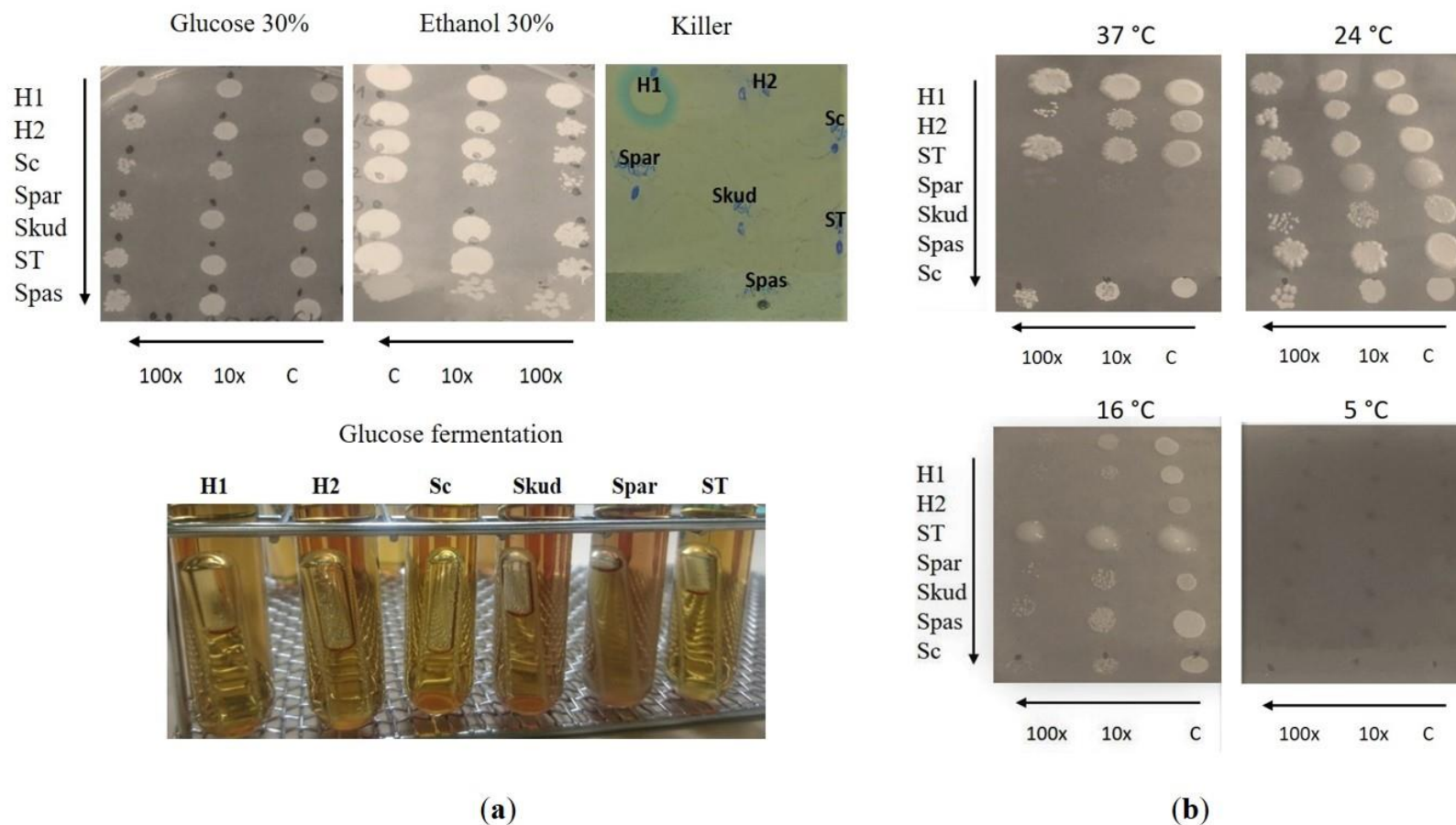
	f values	p values	Fisher's LSD Post-hoc test
acetic acid	141.17	3.13E-10	H2 - H1; H1 - Skud; H1 - Spar; H1 - Spas; H2 - Skud; H2 - Spar; H2 - Spas; H2 - ST; Skud - Spar; Skud - Spas; ST - Spar; ST - Spas
glycerol	129.99	5.08E-10	H2 - H1; Skud - H1; Spar - H1; Spas - H1; ST - H1; Skud - H2; Spar - H2; H2 - Spas; ST - H2; Skud - Spar; Skud - Spas; Skud - ST; Spar - Spas; Spar - ST; ST - Spas
ethyl-butyrate	50.372	1.22E-07	H2 - H1; Spar - H1; Spas - H1; ST - H1; H2 - Skud; Spar - H2; H2 - Spas; H2 - ST; Spar - Skud; Spas - Skud; ST - Skud; Spar - Spas; Spar - ST
butanol	41.457	3.66E-07	Spar - H1; Spas - H1; Spar - H2; Spas - H2; Spar - Skud; Spas - Skud; Spar - Spas; Spar - ST; Spas - ST
ethyl-hexanoate	33.936	1.12E-06	H2 - H1; Spar - H1; Spas - H1; ST - H1; H2 - Skud; H2 - Spas; H2 - ST; Spar - Skud; Spas - Skud; ST - Skud; Spar - Spas; Spar - ST
isobutanol	33.591	1.18E-06	H2 - H1; Skud - H1; Skud - H2; Skud - Spar; Skud - Spas; Skud - ST
isopentyl acetate	27.194	3.74E-06	H2 - H1; Spar - H1; Spas - H1; H2 - Skud; H2 - ST; Spar - Skud; Spas - Skud; Spar - ST; Spas - ST
isopentyl alcohol	20.67	1.62E-05	H2 - H1; Skud - H1; Spar - H1; Spas - H1; Spar - H2; H2 - ST; Spar - Skud; Skud - ST; Spar - Spas; Spar - ST; Spas - ST
isobutyl-acetate	19.725	2.06E-05	H2 - H1; Skud - H1; Spar - H1; ST - H1; Skud - H2; H2 - Spar; H2 - Spas; Skud - Spar; Skud - Spas; Skud - ST; ST - Spas
ethyl-lactate	19.637	2.11E-05	H2 - H1; Spar - H1; Spas - H1; H2 - Skud; H2 - ST; Spar - Skud; Spas - Skud; Spar - ST; Spas - ST
2-phenylethanol	16.872	4.62E-05	H2 - H1; Spar - H1; Spas - H1; Spar - H2; H2 - ST; Spar - Skud; Spar - Spas; Spar - ST; Spas - ST
ethyl-acetate	14.422	1.02E-04	H2 - H1; Spar - H1; ST - H1; H2 - Skud; H2 - Spar; H2 - Spas; H2 - ST; Spar - Skud; ST - Skud; Spar - Spas; ST - Spas
2-phenethyl acetate	11.131	3.57E-04	H2 - H1; Spar - H1; Spas - H1; H2 - Skud; H2 - ST; Spar - Skud; Spas - Skud; Spar - ST; Spas - ST
hexyl-acetate	7.0173	2.78E-03	H1 - Skud; H2 - Skud; Spar - Skud; Spas - Skud; ST - Skud; Spas - ST
diethyl-succinate	5.6893	6.45E-03	Spar - H1; Spar - H2; Spar - Skud; Spar - Spas; Spar - ST

H1, H2: isolates investigated, Skud: *S. kudriavzevii* CBS 8840, Spar: *S. paradoxus* CBS 432, Spas: *S. pastorianus* VTT-A63015, ST: *S. cerevisiae* Fermol Elegance starter strain

Table S3. PC1 and PC2 loading values of the volatile components PCA.

Compound Name	Loadings	
	PC1	PC2
glycerol	0.99996	-0.0010939
isobutanol	0.0065121	-0.038795
isopentyl alcohol	0.0052171	0.20383
2-phenylethanol	9.86E-04	0.091742
ethyl-acetate	3.85E-04	-0.048921
acetic acid	-2.16E-04	-0.97242
butanol	6.78E-05	0.022328
1-hexanol	-3.20E-05	2.58E-04
isopentyl acetate	-2.56E-05	0.0030368
ethyl-lactate	2.43E-05	0.0044502
ethyl-butyrate	1.26E-05	6.74E-04
hexyl-acetate	-9.59E-06	1.49E-04
isobutyl-acetate	8.33E-06	-1.22E-04
ethyl-hexanoate	6.96E-06	4.41E-04
2-phenethyl acetate	-5.19E-06	8.31E-04
diethyl-succinate	1.03E-06	2.57E-04
beta-citronellol	7.08E-07	-1.67E-05
linalool	5.58E-07	-1.06E-05

Figure S1. Results of the physiological characterization I: glucose tolerance test in presence 30% glucose, ethanol tolerance using 30% ethanol, killer activity test, glucose fermentation test at 16 °C, temperature tolerance test at 5 °C, 16 °C, 24 °C and 37 °C

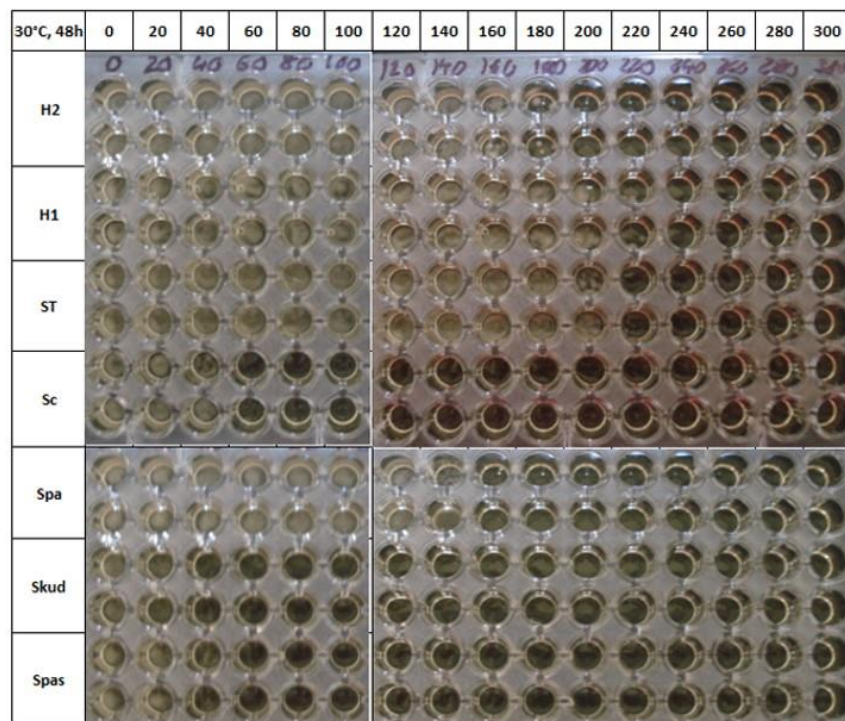


H1, H2: isolates investigated, Sc: *S. cerevisiae* CBS1171, Skud: *S. kudriavzevii* CBS 8840, Spar: *S. paradoxus* CBS 432, Spas: *S. pastorianus* VTT-A63015, ST: *S. cerevisiae* Fermol Elegance starter strain, strains were tested using glucose tolerance test (30%), ethanol tolerance test (30%), killer activity test, glucose fermentation test at 16 °C (a) and temperature tolerance test at 5 °C, 16 °C, 24 °C, 37 °C (b), C: non-diluted cell suspension, 10x: 10 times diluted cell suspension, 100x: 100 times diluted cell suspension. Glucose tolerance of *S. pastorianus* reference strain was not determined and glucose fermentation result of *S. pastorianus* is not presented.

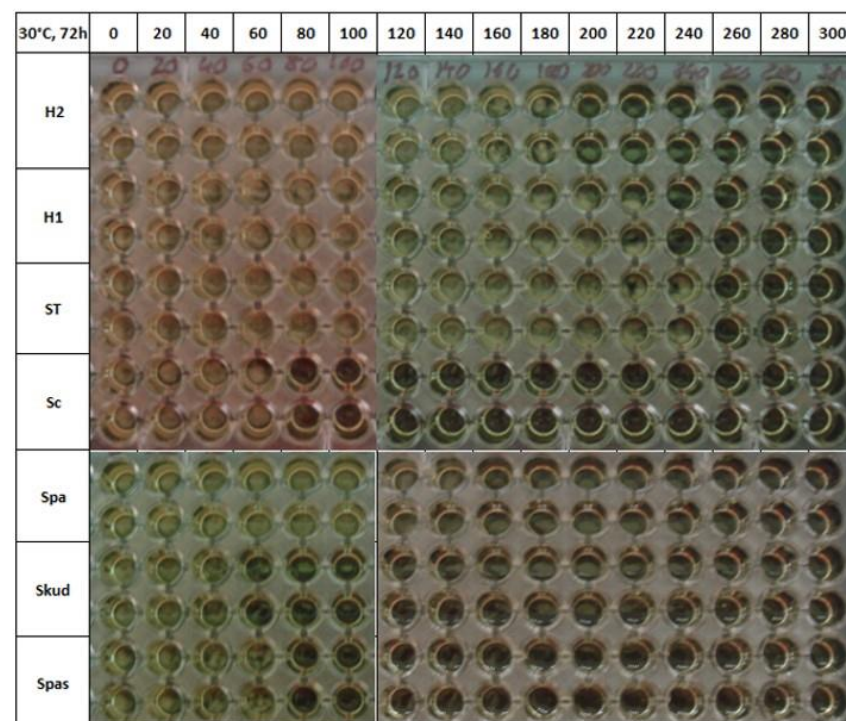
Figure S2. Results of the physiological characterization II: sulphur dioxide (SO₂) tolerance determined by microdilution methods

30°C, 48h	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
H2	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
H1	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
ST	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Sc	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Spa	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-
Skud	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spas	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-

30°C, 72h	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
H2	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
H1	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
ST	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-
Sc	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Spa	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-
Skud	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Spas	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-



(a)



(b)

H1, H2: isolates investigated, Sc: *S. cerevisiae* CBS1171, Skud: *S. kudriavzevii* CBS 8840, Spar: *S. paradoxus* CBS 432, Spas: *S. pastorianus* VTT-A63015, ST: *S. cerevisiae* Fermol Elegance starter strain. The tested potassium metabisulphite concentrations were 0, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280 and 300 mg/L. The strains were incubated for 48 (a) or 72 hours (b) at 30 °C. The presented figure shows two technical replicons of a MIC determination measurement.

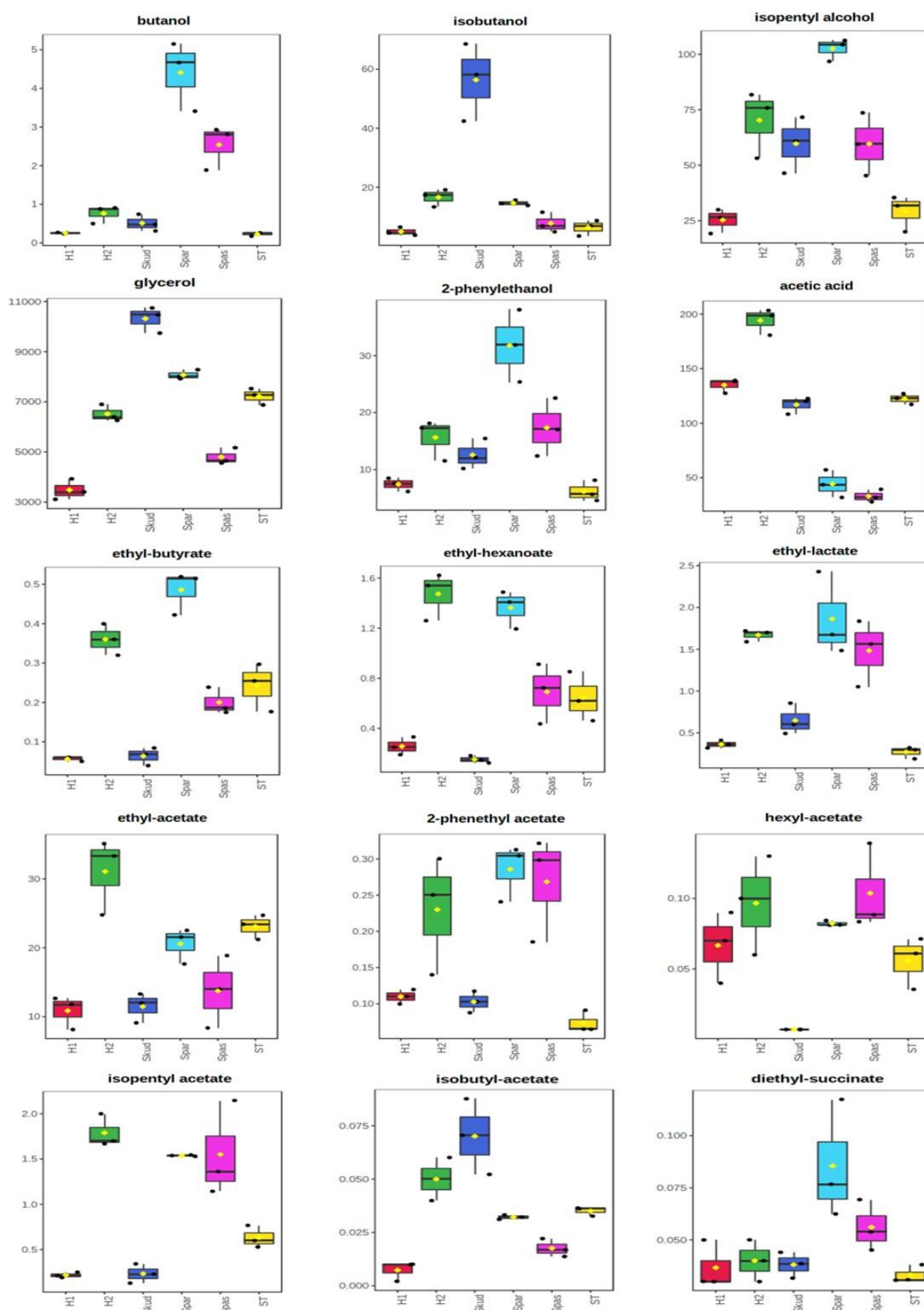


Figure S3. Differences in volatile compounds and glycerol in wines made with different starter yeasts. On the x-axis of the figure, the different yeast strains are shown in colours: H1 (red), H2 (green): isolates investigated, Skud: *S. kudriavzevii* CBS 8840 (blue), Spar: *S. paradoxus* CBS 432 (turquoise), Spas: *S. pastorianus* VTT-A63015, ST (purple): *S. cerevisiae* Fermol Elegance starter strain (yellow). Concentration values are plotted on the y-axis (mg/L).

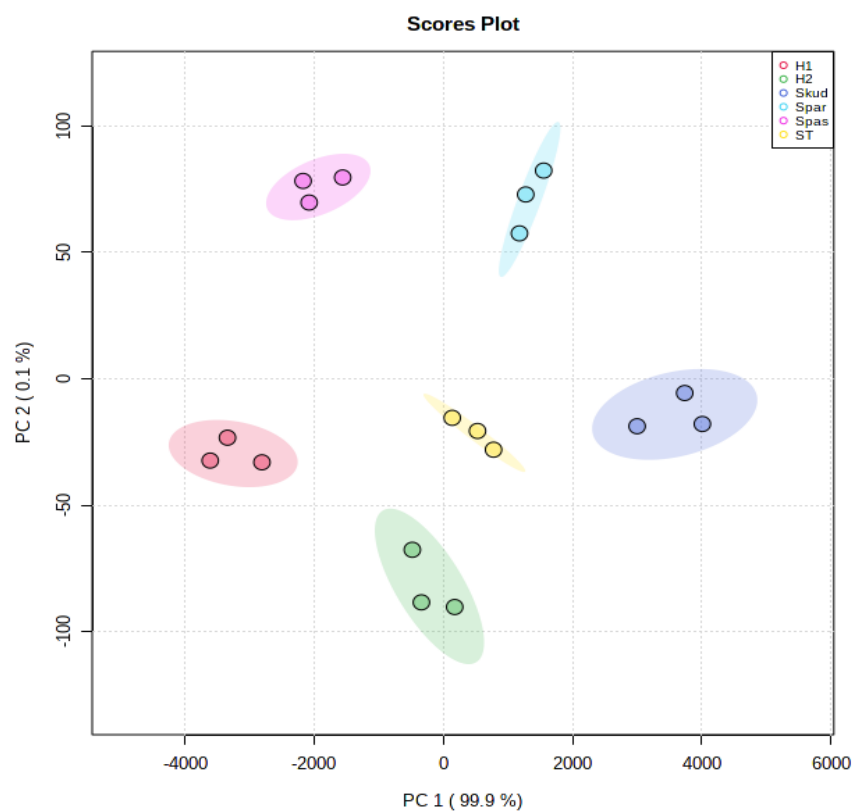


Figure S4 Principal component analysis (PCA) of the volatile components in the “Kéknyelű” wine inoculated with different yeast strains. PC1 and PC2 data derived from the principal component analysis (PCA). These components originated from the dimensional reduction of the volume of compounds by projecting each data point onto only the first two principal components to obtain lower-dimensional data, while preserving as much of the data's variation as possible. The PC1 can equivalently be defined as a direction that maximizes the variance of the projected data.