

Supplementary material

Table S1. Vineyard geographical location, varieties, and the types of analyzed wine

Area of production	Grape variety	Type of wine	Variety origin	Vintage	Number of samples (org./conv./homew.)
Dealul Bujorului	Wine sample 1	White	Native	2019	3 (0/3/0)
	Wine sample 2	White	Native	2019	4 (0/2/2)
	Wine sample 3	White	International	2019	4 (0/2/2)
	Wine sample 4	White	Native	2019	3 (0/3/0)
	Wine sample 5	White	Native	2019	3 (0/3/0)
	Wine sample 6	White	International	2019	2 (0/2/0)
	Wine sample 7	Red	Native	2018	3 (0/3/0)
	Wine sample 8	Red	International	2018	8 (3/3/2)
	Wine sample 9	Red	Native	2018	3 (0/3/0)
	Wine sample 10	Red	International	2019	2 (0/2/0)
	N/A 1	White	-	2019	3 (0/0/3)
	N/A 2	Red	-	2019	2 (0/0/2)
	N/A 3	Rosé	-	2019	7 (2/2/3)
Târnava	Wine sample 1	White	Native	2017	7 (3/2/2)
	Wine sample 2	White	Native	2017	8 (3/3/2)
	Wine sample 3	White	International	2018	4 (2/2/0)
	Wine sample 4	White	International	2018	2 (0/2/0)
	Wine sample 5	White	International	2019	2 (0/2/0)
	Wine sample 6	White	International	2019	2 (0/2/0)
	Wine sample 7	White	International	2018	2 (0/2/0)
	N/A 1	White	-	2019	3 (0/0/3)
	N/A 2	White	-	2019	3 (0/0/3)
	N/A 3	White	-	2019	3 (0/0/3)
Murfatlar	Wine sample 1	Red	International	2017	10 (5/5/0)
	Wine sample 2	Red	International	2017	6 (3/3/0)
	Wine sample 3	Red	Native	2018	5 (3/2/0)
	Wine sample 4	White	International	2018	6 (4/2/0)
	N/A 1	White	-	2018	3 (0/0/3)
	N/A 2	Red	-	2018	3 (0/0/3)
Cotnari	Wine sample 1	White	Native	2017	7 (2/3/2)
	Wine sample 2	White	Native	2017	8 (2/3/3)
	Wine sample 3	White	International	2017	3 (0/3/0)
	Wine sample 4	White	Native	2017	9 (3/2/4)
	Wine sample 5	White	International	2017	2 (0/2/0)
	Wine sample 6	White	International	2017	1 (0/1/0)
	N/A 1	White	-	2017	3 (0/0/3)
Sarica Niculițel	Wine sample 1	White	International	2018	7 (4/3/0)
	Wine sample 2	White	International	2018	4 (2/2/0)
	Wine sample 3	Red	International	2019	9 (3/3/3)
	Wine sample 4	Red	International	2018	5 (2/1/2)
	N/A 1	White	-	2018	4 (2/0/2)
	N/A 2	White	-	2018	4 (1/0/3)
Panciu	Wine sample 1	White	International	2018	5 (2/1/2)
	Wine sample 2	White	International	2018	5 (2/2/1)

Area of production	Grape variety	Type of wine	Variety origin	Vintage	Number of samples (org./conv./homew.)
	Wine sample 3	Red	International	2019	3 (2/1/0)
	Wine sample 4	Red	International	2019	2 (1/1/0)
	N/A 1	White	-	2019	1 (0/0/1)
	N/A 2	Red	-	2019	1 (0/0/1)
Huși	Wine sample 1	White	Native	2019	2 (0/2/0)
	Wine sample 2	White	Native	2019	3 (2/1/0)
	Wine sample 3	Red	Native	2018	1 (0/1/0)
	Wine sample 4	White	International	2019	2 (0/2/0)
	Wine sample 5	Red	International	2019	1 (0/1/0)
	N/A 1	White	-	2018	1 (0/0/1)
	N/A 2	Red	-	2018	1 (0/0/1)
Drăgășani	Wine sample 1	White	Native	2019	6 (2/2/2)
	Wine sample 2	White	International	2019	2 (0/2/0)
	Wine sample 3	Red	International	2019	2 (0/2/0)
	N/A 1	White	-	2019	2 (0/0/2)
Halmeu Wine Center	Wine sample 1	White	Native	2018	6 (2/2/2)
	Wine sample 2	White	International	2018	2 (0/2/0)
	Wine sample 3	White	International	2018	2 (0/2/0)
	Wine sample 4	White	International	2019	1 (0/1/0)
	N/A 1	White	-	2019	6 (0/0/6)

N/A = the vine variety cannot be established with certainty (only in the case of homemade wine); the total number of samples of wines = 239

Table S2. Instrumental conditions for the determination of each element using the ICP-MS technique

Element	Correlation coefficient	LoD (µg/L)	LoQ (µg/L)	BEC (µg/L)	Element	Correlation coefficient	LoD (µg/L)	LoQ (µg/L)	BEC (µg/L)
Ag	0.9990	0.018	0.166	0.017	K	0.9991	2.847	7.321	31.733
Al	0.9992	0.068	0.324	6.002	Li	0.9992	0.005	0.032	0.020
As	0.9994	0.212	0.704	0.536	Mg	0.9999	2.054	9.003	9.099
Ba	0.9999	0.879	3.574	2.684	Mn	0.9997	0.012	0.039	0.087
Be	0.9999	0.006	0.020	0.015	Na	0.9996	3.991	13.232	32.121
Bi	0.9999	0.009	0.030	0.002	Ni	0.9997	0.045	0.181	0.096
Ca	0.9995	5.384	17.986	21.004	Pb	0.9996	0.151	0.230	0.653
Cd	0.9993	0.029	0.069	0.032	Rb	0.9997	0.002	0.006	0.008
Co	0.9997	0.051	0.136	0.152	Se	0.9996	0.533	1.641	0.923
Cr	0.9999	1.607	5.533	0.637	Sr	0.9997	0.133	0.476	0.957
Cs	0.9999	0.006	0.021	0.015	Tl	0.9996	0.002	0.007	0.003
Cu	0.9998	0.035	0.139	0.236	V	0.9994	1.208	4.042	4.263
Fe	0.9998	5.232	17.574	71.426	U	0.9998	0.031	0.084	0.005
Ga	0.9997	0.013	0.041	0.041	Zn	0.9999	0.355	1.203	5.402
In	0.9998	0.004	0.011	0.009	Hg	0.9999	0.043	0.137	0.128

LoD = Detection limit; LoQ = Quantification limit; BEC = Background equivalent concentration.

Table S3. Working parameters for MIURA ONE I.S.E. S.r.L.

Parameter	Absorbance (nm)	Incubation temperature (°C)	Incubation time (min.)	Detection limit (g/L) / (mg/L)	Correlation coefficient (r ²)	Method linearity (g/L) / (mg/L)
Free SO ₂	560	37	10	3 mg/	0.9999	150 mg/L
Total SO ₂	405	37	5	3 mg/L	0.9999	400 mg/L
Pyruvic acid (mg/L)	340	37	1	6 mg/L	0.9996	400 mg/L
Acetaldehyde (mg/L)	340	37	2	0.1 mg/L	0.9994	200 mg/L
Amino acid (g/L)	340	37	5	0.3 mg/L	0.9990	250 mg/L
D (-) gluconic acid (g/L)	340	37	5	0.250 g/L	0.9996	0.004 mg/L
L (+) lactic acid (g/L)	340	37	10	0.02 g/L	0.9999	3.00 g/L
D (-) lactic acid (g/L)	340	37	5	0.250 g/L	0.9999	0.004 g/L
Acetic acid (g/L)	340	37	10	0.03 g/L	0.9999	1.30 g/L
Tartaric acid (g/L)	492	37	15	0.80 g/L	0.9999	0.4 g/L
L (-) malic acid (g/L)	340	37	5	0.5 g/L	0.9999	0.025 g/L
Glycerol (g/L)	500	37	5	0.01 g/L	0.9999	1.00 g/L

Filtered samples are decolorated using 1 g PVPP/100 mL wine samples

PVPP = Polyvinylpyrrolidone.

Table S4. The program of the microwave oven Milestone START D Microwave Digestion System

Step	Target Temp (°C)	Pressure Max. (psi)	Temperature Ramp (min.)	Hold Time (min.)	Power (%)
1.	220	800	10	20	100
2.	220	800	10	15	60
3.	35-40	800	-	45 min. cooling	-

Table S5. Instrumental (a) and data acquisition (b) parameters of ICP-MS

(a) Instrumental parameters		(b) Data acquisition parameters for quantitative mode	
RF power/W	1.4 kW	Measuring mode	Standard (Ar 5.0) Q Cell (Collision Cell) (He 6.0)
Argon (Ar) gas flow, Helium (He) gas flow		Point per peak	3
Nebulizer	1.0 L/min.	Scans/Replicate	7
Plasma gas flow rate (Ar 5.0)	18.0 L/min.	Replicate/Sample	7
Auxiliary gas flow rate (He 6.0)	0.20 L/min.		
Lens voltage	37 V	Dwell time (ms)	3
Mirror lens right	32 V		
Mirror lens bottom	31 V		
Sample uptake rate	90 s	Integration time	1-5 ms
Temperature spray chamber		2.10 °C	
Background correction		2 points/peak	
Injector tube		quartz 2-mm id	
Sample cone		Sample Cone 4450	
Skimmer cone		Ni – Skimmer iCAP Q 0.5 mm insert version	
Nebulizer		MicroMist Nebulizer 0.4 mL/min.	

Table S6. Physicochemical analyses of wine samples (average values)

Wine samples / Parameters	Organic	Conventional	Homemade	Organic + Conventional
ALC	13.57	13.22	11.38	13.40
TA	5.54	5.67	5.91	5.60
VA	0.43	0.47	0.58	0.45
RS	3.03	2.66	15.24	2.84
DM	21.03	20.90	19.24	20.96
pH	3.39	3.43	3.47	3.41
TPH	719.82	712.42	693.06	716.12
ANT	43.43	44.04	41.81	43.73
ACA	0.29	0.30	0.33	0.31
AMA	0.77	0.64	0.64	0.72
TAA	3.47	3.14	3.08	3.31
LLA	0.64	0.65	0.67	0.64
DLA	0.18	0.17	0.18	0.17
LMA	-	-	1.85	-
DGA	0.23	0.20	0.19	0.21
PA	80.18	79.21	75.69	79.69
G	6.17	6.02	5.95	6.09
ACDE	48.60	55.49	65.71	52.04
OD (420 nm)	1.56	1.54	1.37	1.55
OD (520 nm)	2.35	2.32	2.02	2.33
OD (620 nm)	0.54	0.47	0.38	0.50
CI	4.44	4.33	3.77	4.39
Hue	0.44	0.45	0.45	0.46

ALC = alcohol strength (vol. %); TA = titratable acidity (g tartaric acid/L); VA = volatile acidity (g acetic acid/L); RS = reducing sugars (g/L); DM = total dry matter (g/L); TPH = total phenolics (mg gallic acid/L); ANT = anthocyanins (mg malvidin-3-glucoside/L); ACA = acetic acid (g/L); AMA = amino acid (g/L); TAA = tartaric acid (g/L); LLA = L (+) lactic acid (g/L); DLA = D (-) lactic acid (g/L); LMA = L (-) malic acid (g/L); DGA = D (-) gluconic acid (g/L); PA = pyruvic acid (mg/L); G = glycerol (g/L); ACDE = acetaldehyde (mg/L); DO 420 = optical density at 420 nm using 1 cm quartz tub (AU); DO 520 = optical density at 520 nm using 1 cm quartz tub (AU); DO 620 = optical density at 520 nm using 1 cm quartz tub (AU); CI = color intensity (420+520+620 nm) (AU).

Table S7. Maximum SO₂ concentration depending on wine type, EU regulation¹ and O.I.V. recommendation² (mg/L)

1. EU regulation no: 1493/1999 and 1622/2000, modified in 1655/2001 [108]		
Type of wine	Sugar content < 5 g/L	Sugar content ≥ 5 g/L
Red wines	160 (+ 40)*	210 (+ 40)*
White and rozé	210 (+ 40)*	260 (+ 40)*
Red <i>vins de pays</i>	125	150
White and rozé <i>vins de pays</i>	150	175
Dessert wines	150	200
<i>Vins de pays</i> (TAV > 15 % vol. ; sugar > 45 g/L)		
White AOC wines Bordeaux superieur, Graves de Vayres, Côtes de Bordeaux Saint-Macaire, Premieres Côtes de Bordeaux, Saint-Floy Bordeaux, Côtes de Bergerac suivie ou non de la denomination Côtes de Saussignac, Haut Montravel, Côtes de Montravel et Rosette, Gaillac		
White DO wines Allela, La Mancha, Navarra, Penedes, Rioja, Reuda, Tarragona et Valencia Alto Adige, Trentino „passito” „dendemmia tardiva”		
Vqprd Moscato di Pandelleria naturale and Moscato di Pantelleria United Kingdom Vqprd describes as follows: botrytis, noble harvest, noble late harvested		
German wines		
Spätlese		300
Auslese and some Rumanian white wines		350
Berrenauslese, Ausbruch, Ausbruch-wein, Trockenbeerenauslese, Elswein		400
White AOC wines Sauternes, Barsac, Cadillac, Cérons, Louplac, Sainte-Croix-du-Mont, Graves supérieurs, Monbazillac, Jurançon, Pacherenc du Vic Bilh. Anjou-Coteaux de la Loire, Bonnezeaux, Quarts de Chaume, Coteau de l'Aubange, Coteaux du Layon, suivi du nom de la commune d'origine, Coteaux du Layon, suivi du nom de Chauma, Coteaux de Saumar, Alsace et Alsace grand cru suivi de la mention „vendanges tardives” ou „selection de grains nobles”		
Sweet wines from Greece (sugar ≥ 45 g/L)		
Samos, Rhodes, Patras, Rio Patron, Cephalonie, Limnos, Sitia, Santorin, Néméa, Daphines		
Certain Canadian white wines (e.g., icewine)		400
2. O.I.V. – maxim acceptable limits: International Code of Winemaking Practices and Collection of International Wine Analysis Methods, 2001 [109]		
Type of wine	Sugar content < 5 g/L	Sugar content ≥ 5 g/L
Red wine	150	300
White and rozé wine	200	300
Certain sweet white wine		400

AOC = Appellation d'Origine Contrôlée; DO = Designation of Origin; ¹Council Regulation (EC). Available online: https://www.fsai.ie/uploadedfiles/Consol_Reg1493_1999.pdf (Accessed on 28 Aug 2021); ²International

Organization of Vine and Wine. International code of oenological practices. Available online:
<https://www.oiv.int/public/medias/7713/en-oiv-code-2021.pdf> (Accessed on 28 Aug 2021).

* When required due to weather conditions in certain vineyard areas.

Table S8. Mean concentration of SO₂ (free and total) from organic (org.), conventional (conv.), and homemade (homew.) wine samples (average values)

Wine samples / Parameters	Org	Conv	Home	Org + Conv
Free SO ₂	16.00	20.18	11.22	18.09
Total SO ₂	88.23	129.39	98.35	108.81

Table S9. Mean concentration of elements in organic (org.), conventional (conv.), and homemade (homew.) wine samples (average values)

Wine samples / Element	Org	Conv	Home	Org + Conv
²³ Na (mg/L)	35.14	36.11	43.26	35.63
²⁴ Mg (g/L)	97.24	105.01	114.87	101.13
⁴³ Ca (mg/L)	44.01	48.14	43.62	46.01
¹⁹ K (mg/L)	599.66	607.84	565.08	603.75
⁷ Li (µg/L)	15.13	14.72	14.66	14.93
⁶⁴ Cu (mg/L)	0.33	0.39	0.37	0.37
⁵⁵ Mn (mg/L)	0.54	0.67	0.62	0.61
⁵⁶ Fe (mg/L)	0.91	1.58	0.94	1.26
²⁷ Al (µg/L)	316.00	347.09	252.53	331.55
⁵² Cr (µg/L)	338.57	341.63	345.23	339.76
⁵⁹ Co (µg/L)	6.22	7.40	7.43	6.81
⁶⁰ Ni (µg/L)	52.91	51.99	41.83	52.45
⁶⁵ Zn ¹ (µg/L)	2551.29	2832.64	2501.88	2691.96
⁵¹ V (µg/L)	210.86	206.58	214.80	208.72
¹⁰⁸ Ag (µg/L)	2.29	2.68	2.35	2.49
⁷⁵ As (µg/L)	< LOQ	< LOQ	< LOQ	-
⁹ Be (µg/L)	1.31	1.41	1.25	1.36
²⁰⁹ Bi (µg/L)	6.60	8.32	1.70	7.56
¹³³ Cs (µg/L)	4.10	4.70	3.82	4.40
¹³⁷ Ba (µg/L)	237.65	265.88	278.39	251.77
⁷⁰ Ga (µg/L)	1.73	1.83	1.81	1.78
¹¹⁵ In (µg/L)	< LOQ	< LOQ	< LOQ	-
⁸⁸ Sr (µg/L)	574.56	592.26	587.05	583.41
⁸⁵ Rb (µg/L)	875.20	881.14	894.30	878.17
⁷⁹ Se (µg/L)	4.40	6.28	5.16	5.34
²⁰⁴ Tl (µg/L)	0.54	0.59	0.44	0.57
¹¹¹ Cd (µg/L)	0.25	0.53	0.40	0.39
²⁰⁸ Pb (µg/L)	28.87	35.83	31.01	32.35
²⁰¹ Hg (µg/L)	< LOQ	< LOQ	< LOQ	-
²³⁸ U (µg/L)	< LOQ	< LOQ	< LOQ	-

Average value ± standard deviation. M.P.L. (Maximum Permissible Limit) for Na 60 mg/L; M.P.L. for Cu 1 mg/L; M.P.L. for Zn 5 mg/L; M.P.L. for As 0.2 mg/L; M.P.L. for Cd 0.01 mg/L; M.P.L. for Pb 0.15 mg/L. LOQ = Limit of Quantitation (lower than the limit of quantification); LOQ for As 0.7776 µg/L; LOQ for Be 0.0030 µg/L; LOQ for Bi 0.0223 µg/L; LOQ for Cs 0.0040 µg/L; LOQ for Ga 0.035 µg/L; LOQ for In 0.010 µg/L; LOQ for Tl 0.006 µg/L; LOQ for Cd 0.067 µg/L; LOQ for Pb 0.0053 µg/L; LOQ for Hg 0.137 µg/L; LOQ for U 0.084 µg/L.

Table S10. Concentration (Mean \pm standard deviation) of elements in wine samples from Dealu Bujorului, Târnavă, and Murfatlar vineyards

Location	Dealu Bujorului Vineyard			Târnavă Vineyard			Murfatlar Vineyard		
Element	Org	Conv	Home	Org	Conv	Home	Org	Conv	Home
²³ Na (mg/L)	36.58 \pm 10.95	35.83 \pm 9.69	41.34 \pm 10.49	54.20 \pm 1.01	57.33 \pm 0.77	57.29 \pm 3.33	49.44 \pm 3.10	52.88 \pm 0.16	62.05 \pm 3.56
²⁴ Mg (mg/L)	104.05 \pm 15.45	118.96 \pm 21.35	127.93 \pm 11.30	100.73 \pm 4.49	116.40 \pm 2.02	108.07 \pm 1.82	79.45 \pm 12.92	110.00 \pm 20.90	92.22 \pm 5.20
⁴³ Ca (mg/L)	55.13 \pm 23.59	60.31 \pm 21.22	52.57 \pm 23.29	48.62 \pm 5.45	45.03 \pm 1.28	44.82 \pm 0.79	50.91 \pm 14.03	54.54 \pm 13.88	52.28 \pm 3.90
¹⁹ K (mg/L)	625.38 \pm 238.34	611.22 \pm 219.92	570.00 \pm 252.76	267.78 \pm 11.14	287.16 \pm 2.65	334.22 \pm 9.94	533.88 \pm 237.65	533.64 \pm 235.89	520.66 \pm 113.96
⁷ Li (μg/L)	12.39 \pm 5.25	13.11 \pm 3.39	15.97 \pm 5.87	8.82 \pm 0.45	8.64 \pm 3.47	9.08 \pm 0.28	9.92 \pm 1.94	9.62 \pm 3.18	10.59 \pm 1.00
⁶⁴ Cu (mg/L)	0.33 \pm 0.22	0.34 \pm 0.20	0.39 \pm 0.16	0.66 \pm 0.03	0.70 \pm 0.07	0.55 \pm 0.10	0.47 \pm 0.20	0.49 \pm 0.20	0.42 \pm 0.13
⁵⁵ Mn (mg/L)	0.45 \pm 0.26	0.61 \pm 0.32	0.55 \pm 0.29	0.26 \pm 0.06	0.34 \pm 0.02	0.51 \pm 0.06	0.19 \pm 0.06	0.18 \pm 0.05	0.17 \pm 0.04
⁵⁶ Fe (mg/L)	0.97 \pm 0.49	2.18 \pm 1.08	1.19 \pm 0.23	0.95 \pm 0.07	1.23 \pm 0.02	0.61 \pm 0.11	0.86 \pm 0.20	1.15 \pm 0.13	0.83 \pm 0.41
²⁷ Al (μg/L)	229.09 \pm 75.88	280.81 \pm 129.11	205.87 \pm 53.52	118.12 \pm 7.69	156.03 \pm 8.62	169.52 \pm 18.31	448.15 \pm 208.68	596.78 \pm 83.25	394.48 \pm 78.24
⁵² Cr (μg/L)	238.45 \pm 72.51	260.10 \pm 59.46	344.35 \pm 120.74	531.29 \pm 30.36	536.33 \pm 11.25	672.93 \pm 14.68	599.76 \pm 250.94	539.37 \pm 277.54	592.69 \pm 344.94
⁵⁹ Co (μg/L)	8.23 \pm 2.91	7.80 \pm 2.79	8.15 \pm 2.06	3.56 \pm 0.87	3.39 \pm 0.09	7.01 \pm 2.08	3.55 \pm 0.18	3.88 \pm 3.43	4.70 \pm 2.70
⁶⁰ Ni (μg/L)	36.92 \pm 13.24	33.58 \pm 16.84	23.46 \pm 7.99	56.77 \pm 8.50	68.46 \pm 3.99	24.45 \pm 12.57	32.41 \pm 16.59	28.54 \pm 8.82	23.94 \pm 11.62
⁶⁵ Zn (mg/L)	2436.88 \pm 657.67	2880.66	2201.10 \pm 546.38	2935.70 \pm 59.86	4493.00 \pm 46.63	3521.26 \pm 77.03	1507.70 \pm 278.17	1757.18 \pm 228.83	1779.50 \pm 562.62
⁵¹ V (μg/L)	145.63 \pm 30.56	157.22 \pm 21.78	153.47 \pm 22.20	429.27 \pm 62.42	720.82 \pm 58.06	750.29 \pm 14.47	176.41 \pm 68.52	187.77 \pm 84.94	198.48 \pm 64.70
¹⁰⁸ Ag (μg/L)	0.16 \pm 0.08	0.18 \pm 0.05	0.09 \pm 0.01	LOQ	0.15 \pm 0.06	0.41 \pm 0.04	LOQ	LOQ	LOQ
⁹ Be (μg/L)	1.65 \pm 0.74	1.10 \pm 0.72	1.91 \pm 0.23	0.35 \pm 0.12	0.39 \pm 0.03	LOQ	0.34 \pm 0.18	1.14 \pm 0.56	1.25 \pm 0.41
²⁰⁹ Bi (μg/L)	9.13 \pm 5.95	10.37 \pm 8.82	2.29 \pm 0.85	10.11 \pm 1.94	16.92 \pm 10.98	13.74 \pm 5.58	1.56 \pm 1.15	2.24 \pm 1.35	1.54 \pm 0.69
¹³³ Cs (μg/L)	3.72 \pm 1.62	2.90 \pm 1.49	2.40 \pm 0.70	7.77 \pm 3.89	11.26 \pm 6.50	13.00 \pm 1.68	13.41 \pm 5.76	19.04 \pm 7.21	10.22 \pm 3.97
¹³⁷ Ba (μg/L)	233.00 \pm 71.20	241.94 \pm 37.93	273.47 \pm 57.98	173.85 \pm 34.84	147.12 \pm 18.86	163.81 \pm 13.14	146.35 \pm 81.47	118.72 \pm 59.13	119.33 \pm 65.33
⁷⁰ Ga (μg/L)	1.33 \pm 0.41	1.30 \pm 0.21	1.44 \pm 0.37	3.11 \pm 0.02	3.66 \pm 1.06	2.59 \pm 0.50	1.50 \pm 0.53	1.71 \pm 1.00	1.90 \pm 0.17
⁸⁸ Sr (μg/L)	636.50 \pm 75.94	648.81 \pm 83.00	612.53 \pm 94.19	768.95 \pm 52.42	759.74 \pm 47.75	734.64 \pm 45.75	467.92 \pm 23.79	486.50 \pm 37.49	453.02 \pm 33.22
⁸⁵ Rb (μg/L)	1036.66 \pm 264.12	1057.67 \pm 201.44	1073.22 \pm 218.09	774.26 \pm 132.64	758.23 \pm 50.03	677.33 \pm 116.12	711.15 \pm 185.93	727.05 \pm 168.82	768.17 \pm 166.57
⁷⁹ Se (μg/L)	3.28 \pm 2.76	3.05 \pm 2.36	2.20 \pm 1.28	5.05 \pm 1.50	7.30 \pm 2.37	4.00 \pm 2.00	LOQ	LOQ	LOQ
²⁰⁴ Tl (μg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	1.57 \pm 1.40	2.10 \pm 0.50	0.83 \pm 0.44
¹¹¹ Cd (μg/L)	0.17 \pm 0.06	0.33 \pm 0.09	0.30 \pm 0.09	0.17 \pm 0.02	0.43 \pm 0.10	0.33 \pm 0.10	0.86 \pm 0.24	0.93 \pm 0.64	0.74 \pm 0.45
²⁰⁸ Pb (μg/L)	25.46 \pm 7.54	31.99 \pm 10.65	28.25 \pm 16.63	22.87 \pm 1.48	32.45 \pm 1.25	35.45 \pm 11.95	38.54 \pm 9.26	46.28 \pm 12.35	41.29 \pm 14.26

Average value \pm standard deviation. M.P.L. (Maximum Permissible Limit) for Na 60 mg/L; M.P.L. for Cu 1 mg/L; M.P.L. for Zn 5 mg/L; M.P.L. for As 0.2 mg/L;

M.P.L. for Cd 0.01 mg/L; M.P.L. for Pb 0.15 mg/L. LOQ = Limit of Quantitation (lower than the limit of quantification); LOQ for As 0.7776 μg/L; LOQ for Be 0.0030 μg/L;

LOQ for Bi 0.0223 µg/L; LOQ for Cs 0.0040 µg/L; LOQ for Ga 0.035 µg/L; LOQ for In 0.010 µg/L; LOQ for Tl 0.006 µg/L; LOQ for Cd 0.067 µg/L; LOQ for Pb 0.0053 µg/L;
LOQ for Hg 0.137 µg/L; LOQ for U 0.084 µg/L.

Table S11. Concentration (Mean \pm standard deviation) of elements in wine samples from Cotnari, Sarica Niculiței, and Panciu vineyards

Location	Cotnari Vineyard			Sarica Niculiței Vineyard			Panciu Vineyard		
Element	Org	Conv	Home	Org	Conv	Home	Org	Conv	Home
²³ Na (mg/L)	36.36 \pm 3.63	42.31 \pm 0.82	42.51 \pm 2.34	33.57 \pm 1.81	34.01 \pm 2.96	39.72 \pm 0.60	37.87 \pm 7.51	36.36 \pm 6.36	35.80 \pm 9.80
²⁴ Mg (mg/L)	91.36 \pm 4.06	153.12 \pm 4.36	132.85 \pm 10.99	79.56 \pm 11.94	95.51 \pm 16.77	118.62 \pm 21.39	79.13 \pm 12.53	77.56 \pm 7.18	72.75 \pm 11.43
⁴³ Ca (mg/L)	73.11 \pm 3.15	77.03 \pm 6.59	73.08 \pm 6.63	39.68 \pm 19.35	33.64 \pm 12.38	14.71 \pm 6.27	51.74 \pm 27.73	57.77 \pm 27.94	39.80 \pm 18.87
¹⁹ K (mg/L)	259.72 \pm 5.49	207.58 \pm 8.39	311.97 \pm 12.65	587.33 \pm 320.58	470.65 \pm 282.10	393.69 \pm 160.32	657.02 \pm 360.01	642.76 \pm 355.29	598.96 \pm 356.86
⁷ Li (μg/L)	12.53 \pm 1.54	13.93 \pm 2.57	14.26 \pm 1.05	6.20 \pm 2.27	12.56 \pm 3.03	12.28 \pm 4.03	13.95 \pm 8.91	15.06 \pm 5.69	12.79 \pm 2.98
⁶⁴ Cu (mg/L)	0.28 \pm 0.05	0.33 \pm 0.04	0.51 \pm 0.12	0.60 \pm 0.27	0.77 \pm 0.13	0.65 \pm 0.22	0.41 \pm 0.28	0.34 \pm 0.23	0.30 \pm 0.26
⁵⁵ Mn (mg/L)	0.41 \pm 0.03	0.56 \pm 0.05	0.30 \pm 0.05	0.64 \pm 0.24	0.64 \pm 0.24	0.73 \pm 0.22	0.45 \pm 0.15	0.65 \pm 0.11	0.54 \pm 0.04
⁵⁶ Fe (mg/L)	0.95 \pm 0.07	1.72 \pm 0.11	1.07 \pm 0.14	0.68 \pm 0.10	1.34 \pm 0.69	1.11 \pm 0.51	0.61 \pm 0.44	0.85 \pm 0.68	0.82 \pm 0.58
²⁷ Al (μg/L)	369.64 \pm 6.53	420.46 \pm 11.13	515.44 \pm 17.77	242.11 \pm 42.96	204.09 \pm 100.86	128.08 \pm 23.55	475.56 \pm 272.80	575.71 \pm 272.80	413.72 \pm 205.64
⁵² Cr (μg/L)	387.38 \pm 2.72	388.38 \pm 2.72	301.07 \pm 15.17	313.21 \pm 103.62	308.45 \pm 99.11	343.12 \pm 84.34	474.71 \pm 272.84	508.15 \pm 232.62	510.85 \pm 253.79
⁵⁹ Co (μg/L)	3.92 \pm 0.66	2.67 \pm 0.74	7.63 \pm 1.14	4.61 \pm 2.80	4.82 \pm 1.93	4.23 \pm 2.63	5.12 \pm 2.02	3.51 \pm 1.49	4.23 \pm 3.18
⁶⁰ Ni (μg/L)	36.40 \pm 2.45	47.61 \pm 12.10	25.19 \pm 6.35	45.62 \pm 12.34	33.10 \pm 8.56	19.85 \pm 3.62	46.37 \pm 34.01	44.28 \pm 34.03	55.58 \pm 28.88
⁶⁵ Zn (mg/L)	3857.92 \pm 122.23	3664.76 \pm 109.12	2630.78 \pm 230.80	1735.22 \pm 511.24	2047.35 \pm 790.05	2038.81 \pm 665.80	2901.20 \pm 608.41	3277.20 \pm 795.05	3502.69 \pm 337.51
⁵¹ V (μg/L)	203.63 \pm 13.73	196.89 \pm 17.36	258.84 \pm 26.93	289.54 \pm 48.60	228.14 \pm 27.46	243.27 \pm 50.70	93.20 \pm 39.95	86.33 \pm 24.16	88.04 \pm 37.74
¹⁰⁸ Ag (μg/L)	3.71 \pm 0.75	4.00 \pm 2.40	0.21 \pm 0.06	LOQ	0.25 \pm 0.03	0.19 \pm 0.09	0.21 \pm 0.07	0.39 \pm 0.11	0.30 \pm 0.20
⁷⁵ As (μg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
⁹ Be (μg/L)	LOQ	0.15 \pm 0.07	LOQ	0.37 \pm 0.22	0.73 \pm 0.24	0.74 \pm 0.10	4.36 \pm 1.41	3.79 \pm 1.64	3.24 \pm 0.54
²⁰⁹ Bi (μg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	2.34 \pm 0.11	LOQ	1.03 \pm 0.35	1.99 \pm 0.37
¹³³ Cs (μg/L)	2.33 \pm 1.12	2.88 \pm 0.56	LOQ	6.29 \pm 4.77	7.07 \pm 4.56	7.92 \pm 4.06	8.24 \pm 5.82	9.73 \pm 6.03	10.41 \pm 6.17
¹³⁷ Ba (μg/L)	80.56 \pm 8.09	81.78 \pm 22.19	104.63 \pm 12.78	172.04 \pm 18.48	211.81 \pm 36.31	201.21 \pm 30.76	501.66 \pm 271.14	434.52 \pm 246.28	499.22 \pm 288.73
⁷⁰ Ga (μg/L)	3.25 \pm 1.76	5.12 \pm 0.73	4.67 \pm 2.09	LOQ	LOQ	LOQ	6.39 \pm 3.86	4.96 \pm 2.45	4.54 \pm 2.30
¹¹⁵ In (μg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
⁸⁸ Sr (μg/L)	212.17 \pm 56.83	256.17 \pm 10.76	238.28 \pm 13.18	321.53 \pm 34.32	289.55 \pm 27.74	309.94 \pm 58.30	552.88 \pm 326.98	542.78 \pm 303.43	566.97 \pm 276.74
⁸⁵ Rb (μg/L)	400.78 \pm 50.24	340.44 \pm 50.24	344.03 \pm 109.11	487.34 \pm 150.69	535.47 \pm 214.51	579.48 \pm 193.54	352.08 \pm 155.65	412.62 \pm 154.93	398.11 \pm 209.66
⁷⁹ Se (μg/L)	16.60 \pm 6.02	28.42 \pm 6.58	18.18 \pm 3.45	11.06 \pm 5.82	17.15 \pm 6.82	10.05 \pm 3.72	5.58 \pm 3.25	9.70 \pm 6.19	11.00 \pm 4.43
²⁰⁴ Tl (μg/L)	2.81 \pm 0.52	2.82 \pm 0.52	3.06 \pm 0.84	LOQ	LOQ	LOQ	0.41 \pm 0.09	0.70 \pm 0.16	0.28 \pm 0.03
¹¹¹ Cd (μg/L)	LOQ	0.15 \pm 0.02	0.15 \pm 0.04	0.10 \pm 0.09	0.21 \pm 0.04	LOQ	0.38 \pm 0.10	2.00 \pm 0.74	1.44 \pm 0.30
²⁰⁸ Pb (μg/L)	LOQ	LOQ	LOQ	53.97 \pm 33.02	69.69 \pm 37.69	56.21 \pm 31.25	53.00 \pm 21.74	59.19 \pm 11.57	62.68 \pm 11.30
²⁰¹ Hg (μg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ

²³⁸ U (µg/L)	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
Average value ± standard deviation. M.P.L. (Maximum Permissible Limit) for Na 60 mg/L; M.P.L. for Cu 1 mg/L; M.P.L. for Zn 5 mg/L; M.P.L. for As 0.2 mg/L; M.P.L. for Cd 0.01 mg/L; M.P.L. for Pb 0.15 mg/L. LOQ = Limit of Quantitation (lower than the limit of quantification); LOQ for As 0.7776 µg/L; LOQ for Be 0.0030 µg/L; LOQ for Bi 0.0223 µg/L; LOQ for Cs 0.0040 µg/L; LOQ for Ga 0.035 µg/L; LOQ for In 0.010 µg/L; LOQ for Tl 0.006 µg/L; LOQ for Cd 0.067 µg/L; LOQ for Pb 0.0053 µg/L; LOQ for Hg 0.137 µg/L; LOQ for U 0.084 µg/L.									

Table S12. Concentration (Mean \pm standard deviation) of elements in wine samples from Huși and Drăgășani vineyards and Halmeu Wine Center

Location	Huși Vineyard			Drăgășani Vineyard			Halmeu Wine Center		
Element	Org	Conv	Home	Org	Conv	Home	Org	Conv	Home
²³ Na (mg/L)	40.28 \pm 3.76	39.04 \pm 4.62	37.84 \pm 8.61	39.23 \pm 3.19	44.04 \pm 11.04	35.93 \pm 11.04	33.49 \pm 9.48	34.46 \pm 2.92	22.22 \pm 1.28
²⁴ Mg (mg/L)	102.28 \pm 28.43	100.81 \pm 30.07	97.35 \pm 41.48	118.16 \pm 57.04	124.91 \pm 24.62	115.14 \pm 31.45	96.95 \pm 1.67	97.29 \pm 2.64	111.86 \pm 2.51
⁴³ Ca (mg/L)	58.81 \pm 20.79	67.11 \pm 18.44	68.57 \pm 22.70	57.46 \pm 3.00	56.25 \pm 9.12	52.33 \pm 4.27	61.83 \pm 4.19	59.88 \pm 6.64	59.98 \pm 6.46
¹⁹ K (mg/L)	399.09 \pm 70.35	493.51 \pm 180.35	500.29 \pm 155.23	568.01 \pm 449.60	547.39 \pm 432.33	599.99 \pm 371.57	270.96 \pm 6.48	318.10 \pm 18.20	272.56 \pm 16.80
⁷ Li (μg/L)	17.62 \pm 9.12	9.01 \pm 2.09	8.87 \pm 2.71	26.54 \pm 18.98	24.49 \pm 15.98	14.05 \pm 3.29	7.52 \pm 1.89	3.97 \pm 1.67	4.38 \pm 2.69
⁶⁴ Cu (mg/L)	0.33 \pm 0.14	0.51 \pm 0.14	0.30 \pm 0.08	0.44 \pm 0.09	0.70 \pm 0.18	0.58 \pm 0.36	0.43 \pm 0.05	0.49 \pm 0.05	0.23 \pm 0.11
⁵⁵ Mn (mg/L)	0.49 \pm 0.16	0.69 \pm 0.19	0.68 \pm 0.19	0.56 \pm 0.23	0.64 \pm 0.31	0.95 \pm 0.47	0.58 \pm 0.18	0.60 \pm 0.04	0.71 \pm 0.16
⁵⁶ Fe (mg/L)	1.25 \pm 0.41	2.87 \pm 1.74	0.63 \pm 0.18	1.78 \pm 0.92	0.95 \pm 0.31	0.73 \pm 0.53	0.97 \pm 0.02	2.26 \pm 0.06	0.56 \pm 0.06
²⁷ Al (μg/L)	254.18 \pm 104.73	368.07 \pm 173.77	272.46 \pm 50.65	272.92 \pm 66.76	344.68 \pm 93.86	289.55 \pm 76.23	244.18 \pm 6.58	537.87 \pm 9.45	137.86 \pm 12.76
⁵² Cr (μg/L)	528.68 \pm 233.28	322.02 \pm 8.31	295.77 \pm 24.27	402.72 \pm 31.78	318.11 \pm 14.74	390.03 \pm 112.10	383.96 \pm 5.02	238.05 \pm 3.33	451.93 \pm 32.32
⁵⁹ Co (μg/L)	7.56 \pm 2.30	11.57 \pm 4.30	10.04 \pm 1.25	5.45 \pm 1.14	6.78 \pm 2.35	6.08 \pm 4.09	5.40 \pm 0.69	6.51 \pm 0.76	9.85 \pm 1.06
⁶⁰ Ni (μg/L)	47.20 \pm 27.79	36.72 \pm 16.13	26.02 \pm 4.93	68.06 \pm 28.61	73.97 \pm 3.32	49.44 \pm 9.87	317.34 \pm 3.45	328.83 \pm 4.00	306.52 \pm 16.16
⁶⁵ Zn (mg/L)	1488.37 \pm 257.76	2509.57 \pm 461.96	2038.68 \pm 57.50	2529.11 \pm 632.48	2543.46 \pm 5.96	2301.89 \pm 945.15	2652.94 \pm 64.94	3147.53 \pm 20.46	3219.49 \pm 218.58
⁵¹ V (μg/L)	459.72 \pm 71.79	397.14 \pm 122.75	371.54 \pm 103.95	222.35 \pm 98.73	224.77 \pm 152.02	227.47 \pm 92.67	213.38 \pm 54.59	274.33 \pm 39.15	276.27 \pm 45.06
¹⁰⁸ Ag (μg/L)	2.41 \pm 1.38	2.77 \pm 1.07	1.66 \pm 0.71	14.70 \pm 70 \pm 5.95	16.29 \pm 3.53	14.53 \pm 4.57	14.03 \pm 4.14	20.69 \pm 0.73	22.63 \pm 2.44
⁹ Be (μg/L)	5.47 \pm 1.10	5.72 \pm 1.62	4.08 \pm 1.34	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
²⁰⁹ Bi (μg/L)	2.12 \pm 1.75	0.22 \pm 0.05	2.27 \pm 0.37	LOQ	LOQ	0.94 \pm 0.12	2.18 \pm 0.18	1.04 \pm 0.17	140 \pm 0.17
¹³³ Cs (μg/L)	9.23 \pm 1.72	6.66 \pm 2.12	8.13 \pm 0.98	LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
¹³⁷ Ba (μg/L)	412.45 \pm 148.18	434.15 \pm 118.00	310.87 \pm 124.84	196.21 \pm 101.51	239.01 \pm 130.50	220.67 \pm 88.18	191.66 \pm 27.03	208.41 \pm 8.34	203.08 \pm 13.47
⁷⁰ Ga (μg/L)	2.89 \pm 1.02	2.66 \pm 0.84	3.35 \pm 0.83	LOQ	LOQ	LOQ	2.11 \pm 0.22	3.22 \pm 1.83	2.73 \pm 1.64
⁸⁸ Sr (μg/L)	498.83 \pm 53.30	575.19 \pm 75.50	534.26 \pm 116.50	462.78 \pm 341.90	502.03 \pm 274.21	539.42 \pm 241.32	965.22 \pm 48.89	748.85 \pm 390.58	960.15 \pm 44.62
⁸⁵ Rb (μg/L)	631.41 \pm 123.89	677.23 \pm 163.30	621.34 \pm 162.94	643.58 \pm 324.20	755.31 \pm 227.52	773.08 \pm 187.97	476.93 \pm 58.05	392.30 \pm 44.18	365.78 \pm 79.30
⁷⁹ Se (μg/L)	10.58 \pm 4.87	15.34 \pm 3.00	14.03 \pm 4.39	2.85 \pm 1.85	3.26 \pm 1.61	2.15 \pm 0.44	3.08 \pm 1.28	4.30 \pm 1.01	5.86 \pm 2.77
²⁰⁴ Tl (μg/L)	1.89 \pm 2.34	2.20 \pm 0.98	1.89 \pm 0.10	0.59 \pm 0.64	0.42 \pm 0.07	0.28 \pm 0.11	LOQ	LOQ	LOQ
¹¹¹ Cd (μg/L)	0.13 \pm 0.17	0.27 \pm 0.19	0.22 \pm 0.04	LOQ	LOQ	LOQ	0.22 \pm 0.07	0.32 \pm 0.04	0.19 \pm 0.07
²⁰⁸ Pb (μg/L)	19.89 \pm 3.61	40.48 \pm 12.23	11.29 \pm 12.38	26.48 \pm 7.91	26.76 \pm 6.64	24.51 \pm 9.98	27.10 \pm 4.57	35.21 \pm 2.96	35.09 \pm 7.38

Average value \pm standard deviation. M.P.L. (Maximum Permissible Limit) for Na 60 mg/L; M.P.L. for Cu 1 mg/L; M.P.L. for Zn 5 mg/L; M.P.L. for As 0.2 mg/L; M.P.L. for Cd 0.01 mg/L; M.P.L. for Pb 0.15 mg/L. LOQ = Limit of Quantitation (lower than the limit of quantification); LOQ for As 0.7776 μg/L; LOQ for Be 0.0030 μg/L; LOQ for Bi

0.0223 µg/L; LOQ for Cs 0.0040 µg/L; LOQ for Ga 0.035 µg/L; LOQ for In 0.010 µg/L; LOQ for Tl 0.006 µg/L; LOQ for Cd 0.067 µg/L; LOQ for Pb 0.0053 µg/L; LOQ for Hg 0.137 µg/L; LOQ for U 0.084 µg/L.

Table S13. The mean and median value in wine samples from all vineyards of estimated dietary intake (EDI) (mg/kg birth weight per day) based on a 250 mL (0.25 L) wine per day per capita consumption (average values)

Location / Vineyard	N	EDI ²³ Na	EDI ²⁴ Mg	EDI ⁴³ Ca	EDI ⁷ Li	EDI ⁷ Li	EDI ⁶⁵ Zn
Dealu Bujorului	43	0.14	0.42	0.20	2.15	0.05	0.01
Târnava	36	0.20	0.39	0.16	1.06	0.03	0.01
Murfatlar	33	0.20	0.34	0.19	1.89	0.04	0.01
Cotnari	33	0.14	0.45	0.27	0.93	0.05	0.01
Sarica Niculițel	33	0.13	0.35	0.14	1.73	0.04	0.01
Panciu	17	0.13	0.27	0.18	2.26	0.05	0.01
Huși	11	0.14	0.36	0.23	1.66	0.04	0.01
Drăgășani	12	0.14	0.28	0.19	1.39	0.04	0.01
Halmeu	17	0.11	0.36	0.22	1.03	0.02	0.01

Table S14. The mean and median value in wine samples from all vineyards of estimated target hazard quotients (THQ) based on a 250 mL (0.25 L) wine per day per capita consumption (average values)

Location / Vineyard	N	THQ ⁷ Li	THQ ⁶⁴ Cu	THQ ⁵⁵ Mn	THQ ⁵⁶ Fe	THQ ²⁷ Al	THQ ⁵⁹ Co	THQ ⁶⁰ Ni
Dealu Bujorului	43	0.02	0.03	0.08	0.01	0.001	0.09	0.01
Târnava	36	0.02	0.05	0.05	0.005	0.001	0.05	0.01
Murfatlar	33	0.02	0.04	0.03	0.05	0.002	0.05	0.005
Cotnari	33	0.02	0.03	0.06	0.01	0.002	0.05	0.01
Sarica Niculițel	33	0.02	0.06	0.10	0.01	0.001	0.05	0.01
Panciu	17	0.02	0.03	0.08	0.004	0.002	0.05	0.01
Huși	11	0.02	0.03	0.09	0.01	0.001	0.11	0.01
Drăgășani	12	0.04	0.05	0.10	0.01	0.001	0.07	0.01
Halmeu	17	0.01	0.03	0.09	0.01	0.001	0.08	0.05

Location / Vineyard	N	THQ ⁶⁵ Zn	EDI ⁵¹ V	THQ ¹⁰⁸ Ag	THQ ¹³⁷ Ba	THQ ⁸⁸ Sr	THQ ¹¹¹ Cd
Dealu Bujorului	43	0.03	0.10	N/A	0.004	0.004	0.001
Târnava	36	0.04	0.45	N/A	0.003	0.004	0.001
Murfatlar	33	0.02	0.13	N/A	0.002	0.003	0.003
Cotnari	33	0.04	0.15	0.002	0.002	0.001	0.001
Sarica Niculițel	33	0.02	0.17	N/A	0.003	0.002	N/A
Panciu	17	0.04	0.06	N/A	0.008	0.003	0.004
Huși	11	0.01	0.28	0.001	0.007	0.003	0.001
Drăgășani	12	0.03	0.16	0.01	0.004	0.003	N/A
Halmeu	17	0.03	0.18	0.01	0.003	0.005	0.001