

Table S1. Concentrations (mg L⁻¹) of volatile compounds in *Monastrell* young, aged and *Fondillón* wines.

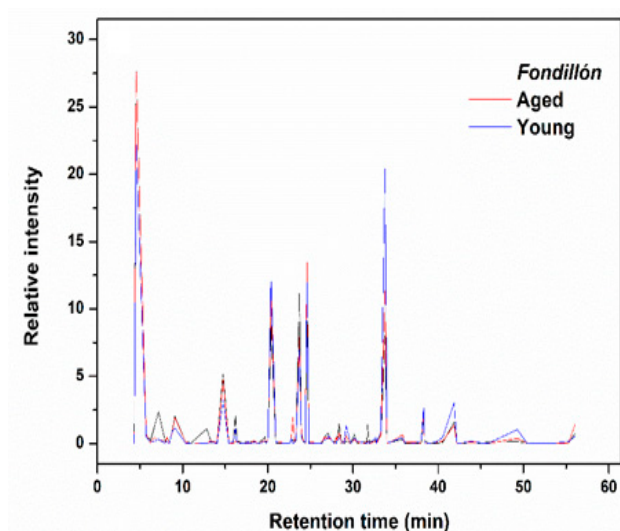
Code	Volatile compound	Retention Time (min)	Chemical Family	Odor Threshold [†] (µg L ⁻¹)	Odor Descriptor [‡]	Young	Aged	Fondillón	
						(mg L ⁻¹)			
						ANOVA [§]	Tukey Multiple Range Test [¶]		
V1	1,1-Diethoxyethane	4.333	Acetals	-	Honey, floral, green	***	0.00 b	0.00 b	0.13 a
V2	Isoamyl alcohol	4.541	Alcohols	30000	Cheese	NS	6.26	8.19	7.1
V3	2,3-Butanediol	5.689	Alcohols	150000	Buttery	NS	0.18	0.16	0.17
V4	Ethyl butanoate	6.240	Esters	20	Fruity	NS	0.02	0.02	0.04
V5	Ethyl Lactate	6.591	Esters	-	Butter, fruity	**	0.07 b	0.15 b	0.27 a
V6	Furfural	7.222	Aldehydes	14100	Almond, woody, sweet	***	0.00 b	0.09 b	0.60 a
V7	Ethyl 2-methylbutanoate	7.978	Esters	0.1	Apple, green, fruity	*	0.02 b	0.05 a	0.03 ab
V8	Ethyl 3-methylbutanoate	8.158	Esters	3	Fruity, sweet apple, cherry	**	0.05 b	0.13 a	0.13 a
V9	Ethyl Isovalerate	8.426	Esters	3	Apple	NS	0.00	0.01	0.01
V10	1-Hexanol	8.788	Alcohols	8000	Herbaceous, woody, sweet	NS	0.29	0.24	0.22
V11	Isoamyl acetate	9.111	Esters	30	Banana, pear	NS	0.35	0.56	0.45
V12	Butyrolactone	10.339	Lactones	-	Caramel	NS	0.02	0.03	0.03
V13	1,1-Diethoxy-2-methylpropane	10.898	Acetals	-	-	**	0.00 b	0.00 b	0.02 a
V14	Benzaldehyde	12.773	Aldehydes	2000	Almond, anise, vanilla	***	0.00 b	0.01 b	0.28 a
V15	1-(1-Ethoxyethoxy)-pentane	13.388	Acetals	-	-	**	0.00 b	0.00 b	0.03 a
V16	Hexanoic acid	14.056	Acids	420	Cheese, fatty, sour	NS	0.01	0.02	0.02
V17	Ethyl hexanoate	14.744	Esters	14	Fruity, floral, tropical fruit	NS	0.94	1.32	1.32
V18	Hexyl acetate	15.414	Esters	400	Fruity, sweet floral	NS	0.01	0.02	0.02
V19	<i>p</i> -Cymene	15.941	Terpenes	-	Citrus	NS	0.02	0.01	0.01
V20	Limonene	16.206	Terpenes	200	Herbaceous, citrus, sweet	NS	0.17	0.15	0.4
V21	Benzyl alcohol	16.352	Alcohols	200000	Berry, cherry, citrus	NS	0.04	0.04	0.05
V22	Phenyl acetaldehyde	16.817	Aldehydes	-	-	*	0.01 b	0.01 ab	0.02 a
V23	Ethyl 2-hexenoate	16.966	Esters	-	-	NS	0.01	0.02	0.01
V24	Ethyl 2-furoate	17.239	Esters	-	Floral, plum	***	0.00 b	0.01 b	0.02 a

V25	γ -Terpinene	17.643	Terpenes		Herbaceous, citrus	NS	0.02	0.00	0.00
V26	1-(5-Methyl-2-furyl)-2-propanone [§]	17.755	Furans	-	-	***	0.00 b	0.00 b	0.03 a
V27	Acetophenone	17.873	Ketones	0.24 - 590	Almond, sweet, floral	***	0.00 b	0.01 b	0.01 a
V28	Isoamyl butyrate	18.126	Esters	-	Apricot, banana, pineapple	**	0.00 b	0.00 b	0.04 a
V29	1-Octanol	18.343	Alcohols	120	Citrus, fatty, woody	NS	0.04	0.07	0.04
V30	Guaiacol	18.897	Phenols	9.5	Medicinal, smoky	**	0.00 b	0.00 b	0.01 a
V31	Ethyl sorbate	19.651	Esters	-	Fruity	***	0.00 b	0.00 b	0.13 a
V32	Linalool	19.753	Terpenes	25.2	Lemon, orange, sweet	**	0.01 a	0.01 b	0.01 b
V33	Nonanal	20.005	Aldehydes	1	Apple, coconut, grape	***	0.00 b	0.00 b	0.11 a
V34	Phenylethyl Alcohol	20.349	Alcohols	14000	Honey, rose	NS	3.28	3.17	2.23
V35	Methyl octanoate	20.949	Esters	200	Fruity, green, citrus	**	0.02 b	0.04 a	0.01 b
V36	3-Ethylphenol	23.052	Phenols	-	-	***	0.01 b	0.59 a	0.06 b
V37	Ethyl benzoate	23.122	Esters	575	Anise, banana, grape, floral	***	0.02 b	0.02 b	0.05 a
V38	1-Nonanol	23.339	Alcohols	58	Citrus, rose	*	0.12 a	0.12 a	0.05 b
V39	Diethyl butanedioate	23.768	Esters	-	Fruity	**	1.86 b	1.90 b	2.80 a
V40	Octanoic acid	23.899	Acids	500	Rancid, cheese, oily	*	0.16 ab	0.24 a	0.13 b
V41	Methyl salicylate	24.179	Esters	-	Spicy, minty, sweet	NS	0.04	0.04	0.04
V42	α -Terpineol	24.426	Terpenes	250	Lilac	NS	0.01	0.01	0.02
V43	Ethyl octanoate	24.589	Esters	5	Apricot, floral, pear	NS	3.12	3.65	2.31
V44	Diethyl methylsuccinate	24.875	Esters	-	-	***	0.00 b	0.00 b	0.01 a
V45	Decanal	24.968	Aldehydes	1000	Floral, citrus, sweet	NS	0.02	0.02	0.04
V46	Citronellol	26.000	Terpenes	-	Geranium, rose	*	0.02 a	0.01 ab	0.00 b
V47	Neral	26.393	Terpenes	-	Sweet, citral, lemon, peel	NS	0.01	0.01	0.03
V48	Ethyl phenyl acetate	26.573	Esters	-	Anise, apple, honey	NS	0.07	0.13	0.12
V49	Linalyl acetate	27.082	Esters	-	Floral, fruity, sweet	NS	0.12	0.13	0.19
V50	Phenethyl acetate	27.128	Esters	250	Caramel, honey, fruity	NS	0.14	0.14	0.12
V51	Ethyl salicylate	27.796	Esters	-	Floral, fruity, minty	*	0.01 b	0.01 ab	0.02 a
V52	Geranial	27.803	Terpenes	-	Lemon, orange, sweet	NS	0.00	0.01	0.03
V53	4-Ethylguaiacol	28.022	Phenols	33	Smoky, meaty	**	0.00 b	0.00 b	0.02 a
V54	1-Decanol	28.104	Alcohols	400	Fatty, fruity, rose	NS	0.06	0.07	0.06

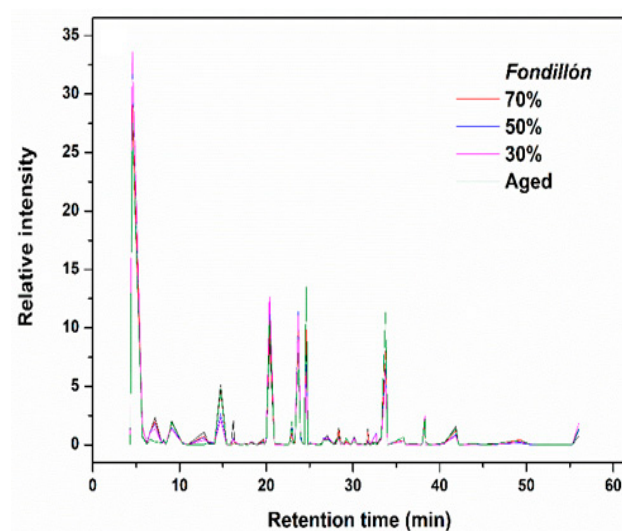
V55	Vitispirane	28.372	Norisoprenoid	-	Woody, spicy	***	0.12 c	0.22 b	0.37 a
V56	Geraniol	28.596	Terpenes	20 - 30	Apple, berry, sweet, floral	***	0.04 a	0.03 a	0.00 b
V57	<i>trans</i> -Whiskey lactone	28.701	Lactones	67	Coconut, green	*	0.02 b	0.05 a	0.06 a
V58	Ethyl nonanoate	29.184	Esters	-	Oily, fruity. Nutty	***	0.35 a	0.15 b	0.05 b
V59	Undecanal	29.719	Aldehydes	-	Orange, fatty, rose	NS	0.00	0.00	0.01
V60	<i>cis</i> -Whiskey lactone	30.139	Lactones	67	Coconut, green	**	0.11 b	0.09 b	0.17 a
V61	Methyl decanoate	30.448	Esters	-	Oily, wine-like, fruity	**	0.05 a	0.03 a	0.01 b
V62	Ethyl 3-phenyl propionate	31.403	Esters	-	-	**	0.01 b	0.01 b	0.02 a
V63	Isobutyl caprylate	31.511	Esters	-	-	***	0.01 b	0.02 a	0.00 b
V64	Eugenol	31.603	Phenols	5 - 6	Cinnamon, clove, spicy	*	0.00 b	0.01 a	0.01 a
V65	TDN	31.677	Norisoprenoid	2 - 50	Kerosene	***	0.00 b	0.04 b	0.35 a
V66	2(3H)-Furanone, dihydro-5-pentyl [§]	31.888	Lactones	-	-	***	0.03 a	0.02 b	0.01 c
V67	Geranyl acetate	31.978	Esters	-	Fruity, floral, rose, sweet	NS	0.00	0.00	0.023
V68	Decanoic acid	32.423	Acids	1000	Fatty, citrus	***	0.16 a	0.04 b	0.05 b
V69	Damascenone	32.833	Ketones	0.05	Apple, woody, nutty	NS	0.06	0.03	0.03
V70	Ethyl 9-decenoate	33.249	Esters	-	Fruity	NS	0.25	0.17	0.17
V71	Ethyl decanoate	33.673	Esters	200	Grape, oily, pear	**	5.17 a	2.96 b	2.00 b
V72	Tetradecane	33.951	Alkanes	-	-	**	0.03 a	0.01 b	0.01 b
V73	Dodecanal	34.242	Aldehydes	-	Herbaceous, floral, sweet	NS	0.02	0.02	0.04
V74	Isoamyl octanoate	35.824	Esters	125	Coconut, fruity, sweet	*	0.12 ab	0.17 a	0.08 b
V75	Isoamyl caprylate	35.934	Terpenes	-	Woody, spicy	NS	0.03	0.07	0.06
V76	<i>trans</i> -Caryophyllene	36.104	Terpenes	-	Herbal	*	0.02 a	0.02 a	0.00 b
V77	α -Curcumene	37.231	Esters	-	Coconut	NS	0.02	0.02	0.02
V78	Ethyl undecanoate	37.843	Terpenes	-	-	**	0.03 a	0.01 b	0.01 b
V79	α -Muurolene [§]	37.972	Phenols	-	-	NS	0.22	0.03	0.01
V80	2,4-Di-tert-butylphenol [§]	38.269	Terpenes	-	Balsamic, woody	NS	0.50	0.63	0.48
V81	β -Bisabolene	38.375	Terpenes	-	Woody	NS	0.02	0.02	0.05
V82	β -Cadinene [§]	38.792	Terpenes	-	-	NS	0.01	0.01	0.01
V83	α -Calacorene [§]	39.652	Norisoprenoid	-	Earthy	NS	0.05	0.02	0.01
V84	2,3,5-Trimethylnaphthalene	40.461	Norisoprenoid	-	Earthy	NS	0.30	0.05	0.02

V85	Ethyl dodecanoate	41.845	Esters	1500	Coconut, creamy, soapy	NS	0.59 a	0.30 b	0.37 b
V86	Hexadecane	42.171	Alkanes	-	-	NS	0.01	0.08	0.01
V87	Tetradecanal	42.572	Aldehydes	-	Fatty, waxy, creamy	NS	0.02	0.01	0.02
V88	Isoamyl decanoate	43.799	Esters	-	Fruity banana green	NS	0.04	0.03	0.02
V89	1-Tetradecanol	45.026	Alcohols	-	-	NS	0.00	0.01	0.01 a
V90	Ethyl tetradecanoate	49.266	Esters	-	Waxy, soapy	***	0.33 a	0.06 b	0.04 b
V91	Isopropyl myristate	50.370	Esters	-	Cheese, cherry, cinnamon	NS	0.02	0.01	0.01
V92	Ethyl 9-hexadecenoate	55.284	Esters	-	Fruity	**	0.05 a	0.01 b	0.01 b
V93	Ethyl hexadecanoate	56.033	Esters	-	Fruity	NS	0.19	0.28	0.15

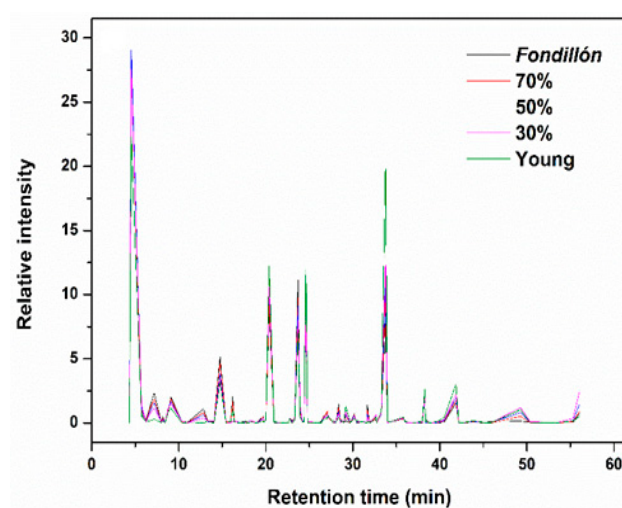
[†] References: Ferreira, V.; López, R.; Cacho, J.F. Quantitative determination of the odorants of young red wines from different grape varieties. *J. Sci. Food Agric.* 2000, 80, 1659–1667. Gómez-Míguez, M.J.; Cacho, J.F.; Ferreira, V.; Vicario, I.M.; Heredia, F.J. Volatile components of Zalema white wines. *Food Chem.* 2007, 100, 1464–1473. Jiang, B.; Xi, Z.; Luo, M.; Zhang, Z. Comparison on aroma compounds in Cabernet Sauvignon and Merlot wines from four wine grape-growing regions in China. *Food Res. Int.* 2013, 51, 482–489. [‡]Reference: Sigma-Aldrich. *Flavors & Fragrances*; Sigma-Aldrich: Saint Louis, MO, USA, 2012. [¥] NS = not significant at $p > 0.05$; *, **, ***, significant at $p < 0.05$, 0.01, and 0.001, respectively. [£] Values (mean of 3 replications) followed by the same letter, within the same row, were not significantly different ($p > 0.05$), according to Tukey's least significant difference test. [§] Tentatively identified (no standard was available).



(a)



(b)



(c)

Figure S1. Plot of GC-MS chromatogram of (a) pure *Monastrell Fondillón*, aged and young wines, and adulterated *Fondillón* by the addition of (b) aged *Monastrell* wine, and (c) young *Monastrell* wine.