

Supplementary material

of

Exploring Influence of Production Area and Harvest Time on Specialized Metabolite Content of *Glycyrrhiza glabra* Leaves and Evaluation of Antioxidant and Anti-Ageing Properties

Teresa Docimo ¹, Rita Celano ^{2,3,*}, Alessia Lambiase ^{3,4}, Rosa Di Sanzo ⁵, Simona Serio ^{2,6}, Valentina Santoro ^{2,3}, Paola Coccetti ^{3,4}, Mariateresa Russo ⁵, Luca Rastrelli ^{2,3} and Anna Lisa Piccinelli ^{2,3}

¹ Institute of Bioscience and BioResources, National Research Council, 80055 Portici, Italy; teresa.docimo@ibbr.cnr.it

² Department of Pharmacy, University of Salerno, Via Giovanni Paolo II 132, 84084 Fisciano, Italy; sserio@unisa.it (S.S.); vsantoro@unisa.it (V.S.); rastrelli@unisa.it (L.R.); apiccinelli@unisa.it (A.L.P.)

³ National Biodiversity Future Center (NBFC), 90133 Palermo, Italy; a.lambiase1@campus.unimib.it (A.L.); paola.coccetti@unimib.it (P.C.)

⁴ Department of Biotechnology and Biosciences, University of Milano-Bicocca, 20126 Milano, Italy

⁵ Department of Agriculture Science, Food Chemistry, Safety and Sensoromic Laboratory (FoCuSS Lab), University of Reggio Calabria, Via Salita Melissari, 89124 Reggio Calabria, Italy; rosa.disanzo@unirc.it (R.D.S.); mariateresa.russo@unirc.it (M.R.)

⁶ PhD Program in Drug Discovery and Development, University of Salerno, Via Giovanni Paolo II 132, 84084 Fisciano, Italy

* Correspondence: rcelano@unisa.it

Table S1. Level of the main *G. glabra* leaves according to the production area (P) and harvesting time (HT) on metabolite content of *G. glabra* leaves.

	GGL compound ^{1,2} (mg/g of dry leaf)													
	1	2 ³	L11	L12	L17 ⁴	L29	L36	L35 ⁵	L46	L48 ⁶	L33	L44	L28 ⁷	L41 ⁸
GGL-A*1	34.7 ^a	15.4 ^a	6.7 ^a	4.1 ^{ab}	6.0 ^b	29.2 ^{bc}	26.0 ^{bc}	4.5 ^b	21.8 ^{bc}	4.9 ^{de}	26.7 ^b	33.2 ^a	11.0 ^b	17.6 ^a
GGL-A*2	35.3 ^a	14.9 ^a	4.5 ^b	2.8 ^c	4.9 ^{bc}	54.5 ^a	42.1 ^a	3.5 ^c	31.0 ^a	7.7 ^c	34.8 ^a	29.6 ^a	12.8 ^a	8.8 ^{bc}
GGL-A*3	22.6 ^c	8.1 ^{bc}	3.4 ^c	2.8 ^c	4.5 ^c	19.9 ^{de}	17.6 ^{de}	2.4 ^d	7.8 ^{fg}	6.8 ^{cd}	4.8 ^{fg}	3.9 ^{cd}	2.8 ^e	0.5 ^{ef}
GGL-B*1	30.0 ^b	15.1 ^a	6.8 ^a	4.2 ^a	7.5 ^a	23.2 ^{cd}	26.7 ^{bc}	4.8 ^{ab}	16.9 ^{cd}	3.5 ^e	22.1 ^c	27.1 ^{ab}	10.5 ^b	11.8 ^b
GGL-B*2	36.3 ^a	15.2 ^a	5.3 ^b	3.6 ^b	5.6 ^{bc}	51.3 ^a	45.6 ^a	5.4 ^a	25.6 ^b	26.6 ^a	31.4 ^a	26.2 ^{ab}	11.7 ^{ab}	5.9 ^{cd}
GGL-B*3	23.2 ^c	10.1 ^b	2.2 ^d	2.1 ^d	2.4 ^d	33.3 ^b	32.0 ^b	3.2 ^{cd}	11.2 ^{ef}	13.7 ^b	8.6 ^{ef}	6.5 ^{cd}	4.2 ^{cd}	2.3 ^{def}
GGL-C*1	13.3 ^d	7.1 ^c	2.2 ^d	1.5 ^e	2.6 ^d	13.4 ^{ef}	14.0 ^e	1.5 ^e	7.3 ^{fg}	7.3 ^c	9.4 ^e	11.0 ^c	3.2 ^{de}	2.8 ^{def}
GGL-C*2	20.5 ^c	8.2 ^{bc}	1.9 ^d	1.7 ^{de}	3.1 ^d	23.8 ^{cd}	22.3 ^{cd}	2.9 ^{cd}	14.4 ^{de}	14.5 ^b	15.9 ^d	19.9 ^b	5.0 ^c	4.3 ^{de}
GGL-C*3	9.6 ^e	3.9 ^d	0.9 ^e	0.8 ^f	1.1 ^e	7.6 ^f	4.8 ^f	1.2 ^e	3.8 ^g	4.0 ^e	1.3 ^g	1.4 ^d	1.1 ^f	0.3 ^f
Analysis of Variance (F-ratio, * p < 0.01)														
P (2) ⁹	493 *	212 *	285 *	348 *	146 *	210 *	211 *	155 *	101 *	286 *	216 *	41 *	493 *	56 *
HT (2) ⁹	223 *	127 *	207 *	136 *	100 *	250 *	171 *	69 *	168 *	521 *	531 *	158 *	634 *	120 *
P x HT (4) ⁹	10 *	5 *	25 *	26 *	22 *	26 *	13 *	14 *	11 *	179 *	25 *	10 *	47 *	25 *

¹ vincenin 2 (1), iso/shaftoside (2), rutin (L11), isoquercitrin (L12), astragalin (L17), pinocembrin (L29), licoflavanone (L36), 8/6-prenylnaringenin (L35), glabranin (L46), glabranin isomer (L48), dihydro-3,3',4'-trihydroxy-5-O-prenylstilbene (L33), dihydro-3,5,4'-trihydroxy-4,5'-diprenylstilbene (L44), dihydro-3,5,3',4'-tetrahydroxy-5'-prenylstilbene (L28), dihydro-3,5,3',4'-tetrahydroxy-4,5'-diprenylstilbene (L41); ² for a given compound, different superscript letters in the same column indicate significantly different values ($P \leq 0.05$ by a post-hoc Tukey's HSD test); ³ levels of 2 are expressed as *vincenin* equivalent; ⁴ levels of L17 are expressed as *vincenin* equivalent; ⁵ L35 levels are expressed as *licoflavanone* equivalent; ⁶ L48 levels are expressed as *glabranin* equivalent; ⁷ L28 levels are expressed as *stilbene* L33 equivalent; ⁸ L41 levels are expressed as *stilbene* L44; ⁹ degrees of freedom in brackets.

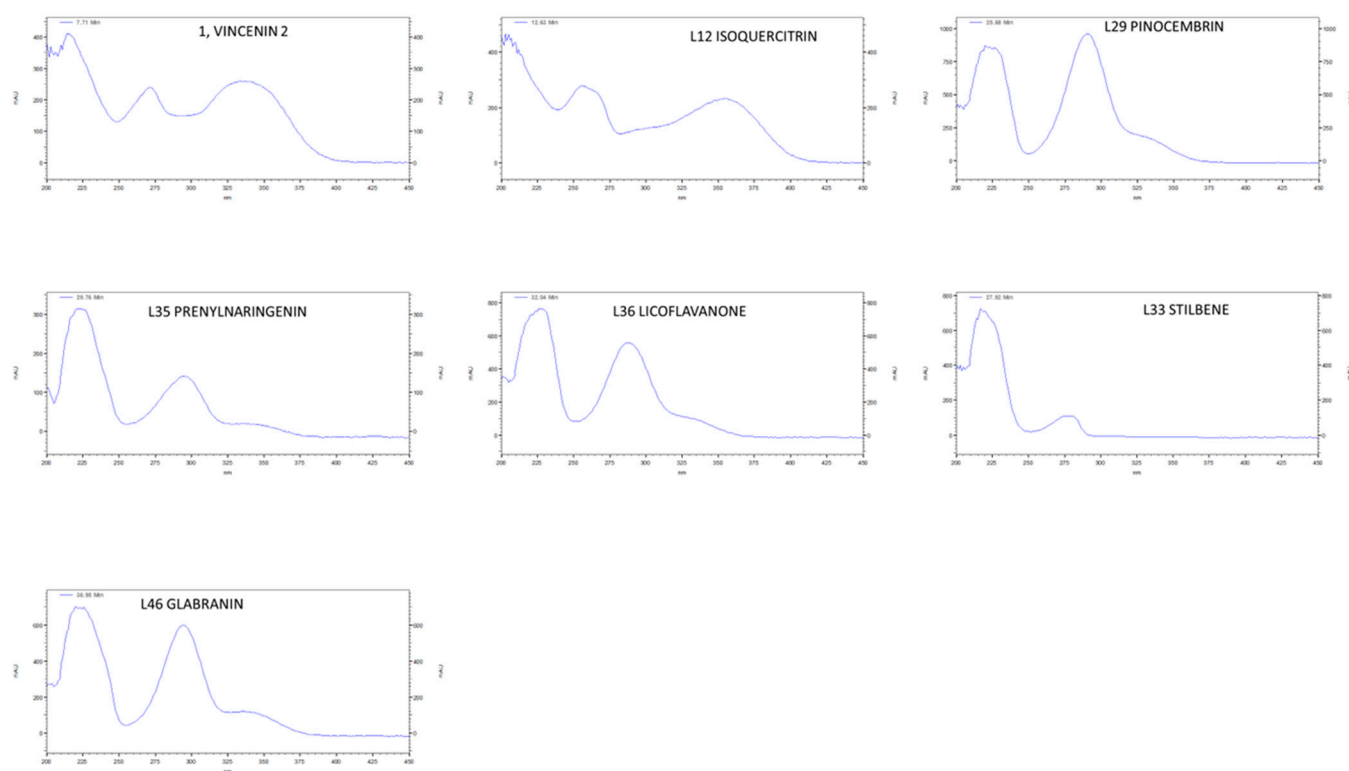
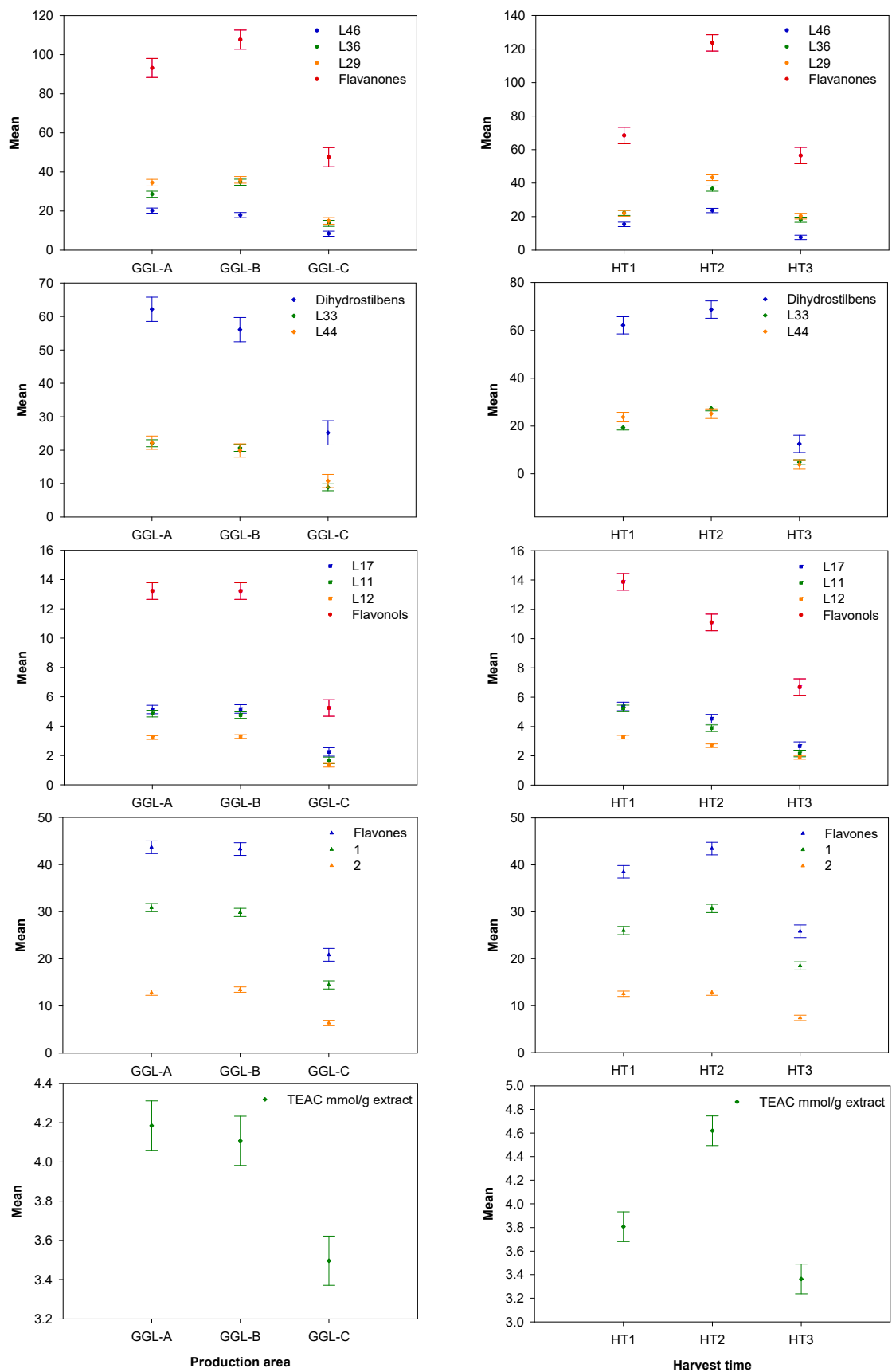


Figure S1. UV spectra of GGL markers.



^a Bars display the confidence intervals for the level means using the mean squared error from the ANOVA. A pair of intervals that do not overlap indicates a statistically significant difference between the means at the selected confidence level ($p < 0.05$).

Figure S2. Means plot of metabolite contents and TEAC of *G. glabra* leaves according to the production area (P) and harvesting time (HT). ^a