

Supplementary data

Influence of harvest time and malaxation conditions on the concentration of individual phenols in extra virgin olive oil related to its healthy properties

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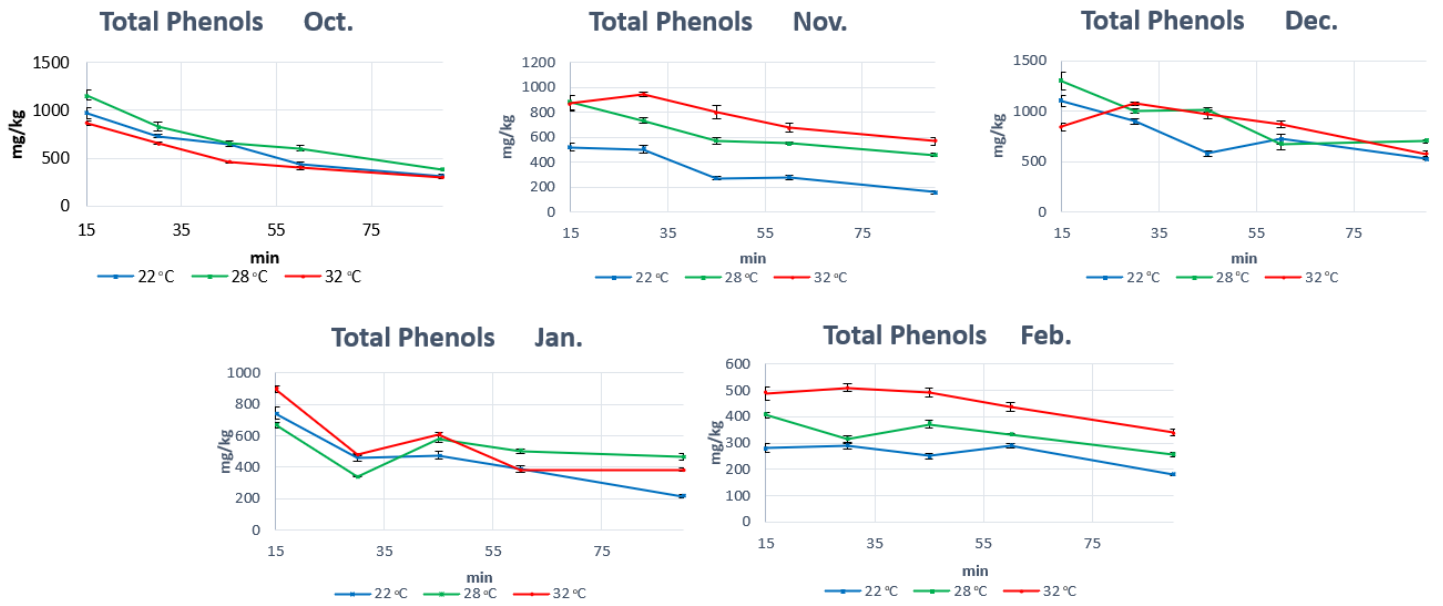


Figure S1. The concentration of Total Phenols in three different malaxation temperatures (22,28,32 °C) for 5 different harvest months

Table S1. Quantitation data for Oleocanthal in Koroneiki variety in 5 different harvest months, 3 different malaxation temperatures and 5 different malaxation times.

| | | cv. Koroneiki | | | | | |
|-----------------|-----------------|----------------------|-------|------------------|-------|------------------|-------|
| | | T=22 °C | | T=28 °C | | T=32 °C | |
| October | Malaxation time | Oleocanthal mean | SD | Oleocanthal mean | SD | Oleocanthal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 90 | 8 | 213 | 9 | 208 | 18 |
| | 30 | 117 | 2 | 254 | 26 | 254 | 18 |
| | 45 | 139 | 7 | 264 | 9 | 237 | 9 |
| | 60 | 147 | 14 | 252 | 17 | 237 | 21 |
| | 90 | 129 | 5 | 204 | 6 | 185 | 6 |
| November | Malaxation time | Oleocanthal mean | SD | Oleocanthal mean | SD | Oleocanthal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 53 | 3 | 150 | 11 | 136 | 11 |
| | 30 | 99 | 4 | 188 | 9 | 254 | 23 |
| | 45 | 106 | 2 | 195 | 18 | 267 | 20 |
| | 60 | 132 | 8 | 234 | 14 | 306 | 14 |
| | 90 | 117 | 8 | 254 | 10 | 314 | 22 |
| December | Malaxation time | Oleocanthal mean | SD | Oleocanthal mean | SD | Oleocanthal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 44 | 2 | 96 | 9 | 144 | 11 |
| | 30 | 88 | 5 | 150 | 12 | 168 | 12 |
| | 45 | 114 | 2 | 190 | 10 | 201 | 20 |
| | 60 | 134 | 7 | 221 | 19 | 252 | 9 |
| | 90 | 136 | 8 | 237 | 16 | 218 | 18 |
| January | Malaxation time | Oleocanthal mean | SD | Oleocanthal mean | SD | Oleocanthal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 39 | 2 | 68 | 3 | 116 | 6 |
| | 30 | 67 | 6 | 67 | 8 | 106 | 9 |
| | 45 | 83 | 6 | 124 | 8 | 160 | 9 |
| | 60 | 85 | 3 | 108 | 4 | 117 | 4 |
| | 90 | 91 | 6 | 137 | 7 | 183 | 7 |
| February | Malaxation time | Oleocanthal mean | SD | Oleocanthal mean | SD | Oleocanthal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | min | mg/Kg |
| | 15 | 21 | 0 | 52 | 4 | 78 | 3 |
| | 30 | 42 | 2 | 63 | 5 | 72 | 0 |
| | 45 | 45 | 3 | 53 | 4 | 85 | 4 |
| | 60 | 60 | 1 | 89 | 3 | 116 | 5 |
| | 90 | 73 | 0 | 104 | 9 | 127 | 10 |

Table S2. Quantitation data for Oleacein in Koroneiki variety in 5 different harvest months, 3 different malaxation temperatures and 5 different malaxation times

| | | cv. Koroneiki | | | | | |
|-----------------|-----------------|----------------------|-------|---------------|-------|---------------|-------|
| | | T=22 °C | | T=28 °C | | T=32 °C | |
| October | Malaxation time | Oleacein mean | SD | Oleacein mean | SD | Oleacein mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 59 | 4 | 112 | 10 | 95 | 10 |
| | 30 | 56 | 4 | 68 | 6 | 56 | 1 |
| | 45 | 36 | 2 | 42 | 3 | 24 | 3 |
| | 60 | 25 | 2 | 30 | 2 | 7 | 0 |
| | 90 | 7 | 0 | 7 | 0 | 7 | 0 |
| November | Malaxation time | Oleacein mean | SD | Oleacein mean | SD | Oleacein mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 48 | 1 | 135 | 3 | 130 | 11 |
| | 30 | 51 | 4 | 138 | 10 | 201 | 13 |
| | 45 | 53 | 2 | 119 | 2 | 188 | 15 |
| | 60 | 42 | 3 | 109 | 3 | 116 | 8 |
| | 90 | 18 | 0 | 61 | 2 | 65 | 2 |
| December | Malaxation time | Oleacein mean | SD | Oleacein mean | SD | Oleacein mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 56 | 1 | 123 | 11 | 147 | 11 |
| | 30 | 80 | 6 | 147 | 7 | 198 | 16 |
| | 45 | 92 | 3 | 169 | 11 | 195 | 11 |
| | 60 | 89 | 7 | 162 | 12 | 186 | 11 |
| | 90 | 66 | 6 | 130 | 7 | 73 | 7 |
| January | Malaxation time | Oleacein mean | SD | Oleacein mean | SD | Oleacein mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 49 | 3 | 58 | 3 | 114 | 10 |
| | 30 | 42 | 1 | 53 | 1 | 109 | 8 |
| | 45 | 48 | 3 | 89 | 8 | 107 | 8 |
| | 60 | 39 | 3 | 77 | 2 | 82 | 2 |
| | 90 | 25 | 0 | 83 | 7 | 53 | 0 |
| February | Malaxation time | Oleacein mean | SD | Oleacein mean | SD | Oleacein mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | min | mg/Kg |
| | 15 | 29 | 2 | 70 | 4 | 112 | 10 |
| | 30 | 51 | 0 | 73 | 4 | 126 | 3 |
| | 45 | 49 | 3 | 87 | 8 | 133 | 6 |
| | 60 | 53 | 4 | 90 | 5 | 143 | 5 |
| | 90 | 58 | 0 | 68 | 0 | 92 | 8 |

Table S3. Quantitation data for Oleokoronal in Koroneiki variety in 5 different harvest months, 3 different malaxation temperatures and 5 different malaxation times

| | | cv. Koroneiki | | | | | |
|----------|-----------------|------------------|-------|------------------|-------|------------------|-------|
| | | T=22 °C | | T=28 °C | | T=32 °C | |
| October | Malaxation time | Oleokoronal mean | SD | Oleokoronal mean | SD | Oleokoronal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 520 | 36 | 476 | 22 | 353 | 21 |
| | 30 | 371 | 11 | 306 | 13 | 241 | 15 |
| | 45 | 353 | 22 | 250 | 9 | 139 | 2 |
| | 60 | 204 | 4 | 260 | 10 | 102 | 8 |
| | 90 | 148 | 9 | 120 | 2 | 48 | 4 |
| November | Malaxation time | Oleokoronal mean | SD | Oleokoronal mean | SD | Oleokoronal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 297 | 13 | 343 | 29 | 343 | 23 |
| | 30 | 213 | 16 | 232 | 1 | 269 | 14 |
| | 45 | 64 | 5 | 139 | 6 | 195 | 14 |
| | 60 | 64 | 5 | 100 | 9 | 127 | 9 |
| | 90 | n.d. | 0 | 64 | 6 | 111 | 10 |
| December | Malaxation time | Oleokoronal mean | SD | Oleokoronal mean | SD | Oleokoronal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 576 | 35 | 613 | 38 | 269 | 26 |
| | 30 | 455 | 14 | 399 | 12 | 371 | 18 |
| | 45 | 185 | 16 | 362 | 22 | 278 | 15 |
| | 60 | 334 | 24 | 139 | 17 | 204 | 14 |
| | 90 | 288 | 3 | 204 | 1 | 181 | 5 |
| January | Malaxation time | Oleokoronal mean | SD | Oleokoronal mean | SD | Oleokoronal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 300 | 17 | 240 | 9 | 295 | 8 |
| | 30 | 200 | 21 | 100 | 9 | 100 | 10 |
| | 45 | 200 | 11 | 180 | 9 | 160 | 5 |
| | 60 | 150 | 12 | 150 | 7 | 62 | 1 |
| | 90 | 60 | 9 | 70 | 0 | 60 | 0 |
| February | Malaxation time | Oleokoronal mean | SD | Oleokoronal mean | SD | Oleokoronal mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | min | mg/Kg |
| | 15 | 102 | 7 | 120 | 2 | 120 | 9 |
| | 30 | 64 | 2 | 46 | 4 | 120 | 9 |
| | 45 | 69 | 2 | 83 | 4 | 102 | 10 |
| | 60 | 64 | 4 | 74 | 4 | 64 | 0 |
| | 90 | 27 | 1 | 36 | 0 | 64 | 0 |

Table S4. Quantitation data for Oleomissional in Koroneiki variety in 5 different harvest months, 3 different malaxation temperatures and 5 different malaxation times

| | | cv. Koroneiki | | | | | |
|----------|-----------------|--------------------|-------|--------------------|-------|--------------------|-------|
| | | T=22 °C | | T=28 °C | | T=32 °C | |
| October | Malaxation time | Oleomissional mean | SD | Oleomissional mean | SD | Oleomissional mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 264 | 11 | 288 | 18 | 137 | 4 |
| | 30 | 157 | 1 | 135 | 4 | 40 | 1 |
| | 45 | 79 | 5 | 35 | 3 | n.d. | 0 |
| | 60 | 23 | 2 | n.d. | 0 | n.d. | 0 |
| | 90 | n.d. | 0 | n.d. | 0 | n.d. | 0 |
| November | Malaxation time | Oleomissional mean | SD | Oleomissional mean | SD | Oleomissional mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 89 | 19 | 176 | 15 | 215 | 18 |
| | 30 | 98 | 2 | 98 | 8 | 128 | 6 |
| | 45 | n.d. | 8 | 50 | 1 | 52 | 5 |
| | 60 | n.d. | 6 | 35 | 4 | 16 | 0 |
| | 90 | n.d. | 0 | n.d. | 0 | n.d. | 0 |
| December | Malaxation time | Oleomissional mean | SD | Oleomissional mean | SD | Oleomissional mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 381 | 11 | 371 | 40 | 176 | 11 |
| | 30 | 215 | 7 | 215 | 13 | 215 | 2 |
| | 45 | 108 | 7 | 176 | 11 | 137 | 8 |
| | 60 | 101 | 6 | 50 | 3 | 79 | 2 |
| | 90 | n.d. | 0 | 50 | 0 | n.d. | 0 |
| January | Malaxation time | Oleomissional mean | SD | Oleomissional mean | SD | Oleomissional mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 290 | 7 | 205 | 23 | 210 | 11 |
| | 30 | 80 | 6 | 50 | 1 | 50 | 2 |
| | 45 | 70 | 2 | 80 | 10 | 70 | 1 |
| | 60 | 60 | 1 | 80 | 5 | 30 | 1 |
| | 90 | n.d. | 0 | 80 | 5 | 5 | 0 |
| February | Malaxation time | Oleomissional mean | SD | Oleomissional mean | SD | Oleomissional mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | min | mg/Kg |
| | 15 | 118 | 7 | 118 | 9 | 118 | 9 |
| | 30 | 108 | 7 | 96 | 5 | 118 | 9 |
| | 45 | 64 | 3 | 95 | 5 | 118 | 9 |
| | 60 | 89 | 6 | 30 | 3 | 40 | 4 |
| | 90 | 11 | 0 | n.d. | 0 | n.d. | 0 |

Table S5. Quantitation data for Total Phenols in Koroneiki variety in 5 different harvest months, 3 different malaxation temperatures and 5 different malaxation times

| cv. Koroneiki | | | | | | | |
|-----------------|-----------------|--------------------|-------|--------------------|-------|--------------------|-------|
| | | T=22 °C | | T=28 °C | | T=32 °C | |
| October | Malaxation time | Total Phenols mean | SD | Total Phenols mean | SD | Total Phenols mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 973 | 60 | 1320 | 60 | 867 | 25 |
| | 30 | 732 | 21 | 1106 | 40 | 654 | 11 |
| | 45 | 647 | 29 | 1081 | 51 | 457 | 6 |
| | 60 | 435 | 26 | 1000 | 35 | 406 | 29 |
| | 90 | 313 | 15 | 835 | 26 | 295 | 5 |
| November | Malaxation time | Total Phenols mean | SD | Total Phenols mean | SD | Total Phenols mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 520 | 29 | 878 | 60 | 871 | 59 |
| | 30 | 502 | 31 | 732 | 20 | 941 | 16 |
| | 45 | 271 | 10 | 569 | 27 | 798 | 55 |
| | 60 | 276 | 14 | 552 | 6 | 675 | 32 |
| | 90 | 157 | 10 | 457 | 16 | 568 | 31 |
| December | Malaxation time | Total Phenols mean | SD | Total Phenols mean | SD | Total Phenols mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 1102 | 56 | 1301 | 88 | 845 | 38 |
| | 30 | 901 | 28 | 1003 | 20 | 1075 | 19 |
| | 45 | 580 | 26 | 1015 | 22 | 969 | 49 |
| | 60 | 722 | 49 | 673 | 53 | 867 | 31 |
| | 90 | 528 | 6 | 700 | 16 | 574 | 28 |
| January | Malaxation time | Total Phenols mean | SD | Total Phenols mean | SD | Total Phenols mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| | 15 | 745 | 37 | 670 | 18 | 896 | 20 |
| | 30 | 463 | 25 | 342 | 5 | 480 | 3 |
| | 45 | 475 | 24 | 579 | 19 | 609 | 11 |
| | 60 | 391 | 20 | 502 | 17 | 379 | 10 |
| | 90 | 214 | 10 | 466 | 19 | 385 | 8 |
| February | Malaxation time | Total Phenols mean | SD | Total Phenols mean | SD | Total Phenols mean | SD |
| | min | mg/Kg | mg/Kg | mg/Kg | mg/Kg | min | mg/Kg |
| | 15 | 281 | 16 | 406 | 12 | 489 | 24 |
| | 30 | 289 | 11 | 315 | 14 | 511 | 13 |
| | 45 | 251 | 11 | 371 | 15 | 491 | 17 |
| | 60 | 290 | 9 | 333 | 3 | 438 | 18 |
| | 90 | 180 | 3 | 256 | 10 | 341 | 13 |

Table S6. Quantitation data for cv. Athenolia in 4 different harvest months, 5 different malaxation times at 28 °C

| | Mal. Time (min) | Oleocanthal | | Oleacein | | Oleokoronal | | Oleomissional | | Ligstroside Ag. | | Oleuropein Ag. | | Total Phenols | |
|-----|-----------------|-------------|----|----------|----|-------------|----|---------------|----|-----------------|----|----------------|----|---------------|----|
| | | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD |
| Nov | 15 | 99 | 4 | 80 | 10 | 687 | 33 | 371 | 18 | 41 | 3 | 42 | 0 | 1320 | 60 |
| | 30 | 150 | 9 | 92 | 4 | 492 | 11 | 284 | 18 | 43 | 3 | 45 | 2 | 1106 | 40 |
| | 45 | 195 | 13 | 99 | 9 | 427 | 34 | 264 | 10 | 53 | 3 | 43 | 2 | 1081 | 51 |
| | 60 | 224 | 17 | 95 | 9 | 427 | 13 | 147 | 3 | 57 | 2 | 50 | 3 | 1000 | 35 |
| | 90 | 270 | 10 | 82 | 8 | 297 | 11 | 60 | 0 | 76 | 3 | 50 | 2 | 835 | 26 |
| Dec | 15 | 67 | 5 | 61 | 2 | 632 | 38 | 352 | 13 | 20 | 0 | 30 | 1 | 1162 | 55 |
| | 30 | 152 | 6 | 83 | 10 | 315 | 10 | 69 | 4 | 22 | 1 | 35 | 0 | 676 | 27 |
| | 45 | 119 | 5 | 80 | 6 | 353 | 10 | 64 | 4 | 18 | 1 | 16 | 1 | 650 | 13 |
| | 60 | 106 | 13 | 75 | 9 | 436 | 16 | 137 | 11 | 22 | 2 | 16 | 1 | 792 | 42 |
| | 90 | 142 | 11 | 51 | 3 | 213 | 8 | 0 | 0 | 32 | 1 | 14 | 0 | 452 | 15 |
| Jan | 15 | 63 | 5 | 37 | 2 | 362 | 4 | 98 | 3 | 20 | 0 | 25 | 1 | 605 | 6 |
| | 30 | 78 | 6 | 39 | 0 | 334 | 12 | 88 | 9 | 27 | 1 | 30 | 0 | 596 | 20 |
| | 45 | 98 | 5 | 29 | 0 | 278 | 8 | 36 | 10 | 22 | 1 | 16 | 1 | 479 | 19 |
| | 60 | 99 | 7 | 30 | 2 | 120 | 4 | 25 | 11 | 27 | 2 | 18 | 1 | 319 | 12 |
| | 90 | 104 | 11 | 24 | 2 | 129 | 11 | 16 | 0 | 27 | 1 | 18 | 1 | 318 | 24 |
| Feb | 15 | 52 | 2 | 36 | 0 | 55 | 3 | n.d. | 0 | n.d. | 0 | 11 | 0 | 154 | 4 |
| | 30 | 55 | 3 | 32 | 2 | 27 | 0 | n.d. | 0 | n.d. | 0 | n.d. | 0 | 114 | 5 |
| | 45 | 57 | 2 | 30 | 2 | 27 | 3 | n.d. | 0 | n.d. | 0 | n.d. | 0 | 114 | 6 |
| | 60 | 60 | 4 | 20 | 2 | 29 | 3 | n.d. | 0 | n.d. | 0 | n.d. | 0 | 108 | 9 |
| | 90 | 60 | 3 | 7 | 0 | 22 | 0 | n.d. | 0 | n.d. | 0 | n.d. | 0 | 89 | 3 |

Table S7. Quantitation data for cv Throubolia in three different malaxation times at 28 °C

| Malaxation Time | Oleocanthal | | Oleacein | | Oleokoronal | | Oleomissional | | Ligstroside Ag. | | Oleuropein Ag. | | Total Phenols | |
|-----------------|-------------|------|----------|------|-------------|------|---------------|------|-----------------|------|----------------|------|---------------|------|
| | (min) | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean |
| 15 | 20 | 0 | 22 | 1 | 833 | 18 | 599 | 21 | 35 | 3 | 41 | 3 | 1550 | 36 |
| 30 | 34 | 2 | 28 | 2 | 600 | 26 | 521 | 28 | 95 | 6 | 46 | 3 | 1324 | 63 |
| 60 | 40 | 3 | 32 | 2 | 507 | 26 | 248 | 5 | 79 | 3 | 65 | 2 | 972 | 36 |

Table S8. Quantitation data for cv. Kalamata variety in three different malaxation times at 28 °C

| Malaxation Time | Oleocanthal | | Oleacein | | Oleokoronal | | Oleomissional | | Ligstroside Ag. | | Oleuropein Ag. | | Total Phenols | |
|-----------------|-------------|------|----------|------|-------------|------|---------------|------|-----------------|------|----------------|------|---------------|------|
| | (min) | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean |
| 15 | 748 | 52 | 202 | 9 | 20 | 1 | 20 | 1 | 5 | 0 | 5 | 0 | 1000 | 67 |
| 30 | 972 | 48 | 153 | 6 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1130 | 66 |
| 60 | 947 | 27 | 98 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1045 | 35 |

Table S9. Quantitation data for cv. Olympia in three different malaxation times at 28 °C

| Malaxation Time (min) | Oleocanthal | | Oleacein | | Oleokoronol | | Oleomissional | | Ligstroside Ag. | | Oleuropein Ag. | | Total Phenols | |
|--------------------------|-------------|----|----------|----|-------------|----|---------------|----|-----------------|----|----------------|----|---------------|----|
| | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD |
| 15 | 40 | 3 | 15 | 1 | 422 | 31 | 387 | 21 | 7 | 1 | 9 | 0 | 880 | 40 |
| 30 | 88 | 4 | 45 | 2 | 390 | 9 | 250 | 10 | 8 | 0 | 10 | 0 | 791 | 24 |
| 60 | 70 | 12 | 40 | 23 | 285 | 17 | 198 | 5 | 11 | 0 | 10 | 0 | 614 | 11 |

Table S10. Quantitation data for cv. Koroneiki variety in three different malaxation times at 28 °C

| Malaxation Time (min) | Oleocanthal | | Oleacein | | Oleokoronol | | Oleomis-sional | | Ligstroside Ag. | | Oleuropein Ag. | | Total Phenols | |
|--------------------------|-------------|----|----------|----|-------------|----|----------------|----|-----------------|----|----------------|----|---------------|----|
| | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD | mean | SD |
| 15 | 101 | 3 | 82 | 1 | 299 | 31 | 140 | 21 | 9 | 1 | 9 | 0 | 640 | 40 |
| 30 | 230 | 4 | 170 | 2 | 128 | 13 | 68 | 12 | 10 | 0 | 10 | 0 | 616 | 29 |
| 60 | 242 | 12 | 150 | 5 | 14 | 9 | 0 | 9 | 11 | 0 | 10 | 0 | 427 | 17 |

Table S11. The regression b coefficients and their statistically significance levels as R^2 of the linear regression model Total phenols = a + b*(malaxation time).

| Month | Malaxation Temperature | | |
|----------|------------------------|------------------------|------------------------|
| | 22°C | 28°C | 32°C |
| October | b= -8.667 *** | b= -9.587 *** | b= -7.355 *** |
| | R ² = 0.926 | R ² = 0.895 | R ² = 0.895 |
| November | b= -5.136 *** | b= -5.417 *** | b= -4.841 *** |
| | R ² = 0.857 | R ² = 0.852 | R ² = 0.814 |
| December | b= -7.052 *** | b= -7.975 *** | b= -4.694 *** |
| | R ² = 0.723 | R ² = 0.766 | R ² = 0.510 |
| January | b= -6.205 *** | b= -1.323 ns | b= -5.801 *** |
| | R ² = 0.862 | R ² = 0.095 | R ² = 0.606 |
| February | b= -1.258 *** | b= -1.632 *** | b= -2.171 *** |
| | R ² = 0.582 | R ² = 0.661 | R ² = 0.789 |

Table S12. The results of the analysis of variance (ANOVA) and Duncan's MRT at $p= 0.05$ for oleocanthal.

| Month | Malaxation Temperature | Malaxation Time | | |
|----------|------------------------|------------------|------------------|------------------|
| | | 15 min | 30 min | 45 min |
| October | 32 | 208 ^a | 254 ^a | 237 ^b |
| | 28 | 213 ^a | 254 ^a | 264 ^a |
| | 22 | 90 ^b | 117 ^b | 139 ^c |
| | p | *** | *** | *** |
| November | 32 | 136 ^a | 254 ^a | 267 ^a |
| | 28 | 150 ^a | 188 ^b | 195 ^b |
| | 22 | 53 ^b | 99 ^c | 106 ^c |
| | p | *** | *** | *** |
| December | 32 | 144 ^a | 168 ^a | 201 ^a |
| | 28 | 96 ^b | 150 ^a | 190 ^a |
| | 22 | 44 ^c | 88 ^b | 114 ^b |
| | p | *** | *** | *** |
| January | 32 | 116 ^a | 106 ^a | 160 ^a |
| | 28 | 68 ^b | 67 ^b | 124 ^b |
| | 22 | 39 ^c | 67 ^b | 83 ^c |
| | p | *** | ** | *** |
| February | 32 | 78 ^a | 72 ^a | 85 ^a |
| | 28 | 52 ^b | 63 ^b | 53 ^b |
| | 22 | 21 ^c | 42 ^c | 45 ^c |
| | p | *** | *** | *** |

The means followed by the same letter in each month (a, b and c as superscript) are not statistically different.

Table S13. The results of the analysis of variance (ANOVA) and Duncan's MRT at $p= 0.05$ for Oleacein.

| Month | Malaxation Temperature | Malaxation Temperature | | |
|----------|------------------------|------------------------|------------------|------------------|
| | | 15 min | 30 min | 45 min |
| October | 32 | 95 ^b | 56 ^b | 24 ^c |
| | 28 | 112 ^a | 68 ^a | 42 ^a |
| | 22 | 59 ^c | 56 ^b | 36 ^b |
| | p | ** | * | ** |
| November | 32 | 130 ^a | 201 ^a | 188 ^a |
| | 28 | 135 ^a | 138 ^b | 119 ^b |
| | 22 | 48 ^b | 51 ^c | 53 ^c |
| | p | *** | *** | *** |
| December | 32 | 147 ^a | 198 ^a | 195 ^a |
| | 28 | 123 ^b | 147 ^b | 169 ^b |
| | 22 | 56 ^c | 80 ^c | 92 ^c |
| | p | *** | *** | *** |
| January | 32 | 114 ^a | 109 ^a | 107 ^a |
| | 28 | 58 ^b | 53 ^b | 89 ^b |
| | 22 | 49 ^b | 42 ^c | 48 ^c |
| | p | *** | *** | *** |
| February | 32 | 112 ^a | 126 ^a | 133 ^a |
| | 28 | 70 ^b | 73 ^b | 87 ^b |
| | 22 | 29 ^c | 51 ^c | 49 ^c |
| | p | *** | *** | *** |

The means followed by the same letter in each month (a, b and c as superscript) are not statistically different.

TableS14. Sampling and experimental planning

| Cultivar | Region | Harvest Month | Malaxation Temperature (°C) | Malaxation Time (min) |
|-------------------|---------------|----------------------|------------------------------------|------------------------------|
| Koroneiki | Molaoi | October | 22,28,32 | 15,30,45,60,90 |
| | | November | 22,28,33 | 15,30,45,60,90 |
| | | December | 22,28,34 | 15,30,45,60,90 |
| | | January | 22,28,35 | 15,30,45,60,90 |
| | | February | 22,28,36 | 15,30,45,60,90 |
| | | | | |
| Athenolia | Molaoi | November | 28 | 15,30,45,60,90 |
| | | December | 28 | 15,30,45,60,90 |
| | | January | 28 | 15,30,45,60,90 |
| | | February | 28 | 15,30,45,60,90 |
| | | | | |
| Throubolia | Naxos | October | 28 | 15,30,60 |
| | | | | |
| Olympia | Ilia | October | 28 | 15,30,60 |
| | | | | |
| Koroneiki | Kalamata | October | 28 | 15,30,60 |
| | | | | |
| Kalamata | Sparta | October | 28 | 15,30,60 |