

Table S1. Comprehensive dataset of the results obtained from *Medicago truncatula* seeds subjected to hydropriming, quercetin-priming or rutin-priming followed by accelerated aging. UP, unprimed control conditions; HP, hydropriming; QP, quercetin-priming; RP, rutin-priming; UA, unaged control conditions; AA, artificial aging. ROS, reactive oxygen species as assessed by DCF-DA assay. Antiox., antioxidant potential as assessed by DPPH assay. Phenol., content in total phenolic compounds as assessed by Folin-Ciocalteu assay. SSA, specific antioxidant activity. TTC, seed viability percentage as assessed by TTC assay. G, germinability. PV, peak value. T₅₀, time required to reach 50% of final germination. MGT, mean germination time. Norm., percentage of normal seedlings. Aber., percentage of aberrant seedlings. NG, percentage of non-germinant seeds. Data are expressed as mean ± standard error of the mean. Means without a common letter are significantly (*p*-value < 0.05) different as analyzed by two-way ANOVA and Duncan test.

| Variable (unit) | UP | | HP | | QP | | RP | | p-value | | |
|--------------------------------------|-------------------|------------------|------------------|--------------------|------------------|------------------|-------------------|------------------|---------|--------|--------|
| | UA | AA | UA | AA | UA | AA | UA | AA | Prim. | Aging | Inter. |
| ROS (RFU) | 4.88 ± 0.107 bc | 7.42 ± 1.72 ab | 8.87 ± 1.1 a | 4.76 ± 0.737 bcd | 3.95 ± 1.24 cd | 1.84 ± 0.514 de | 3.23 ± 0.917 ce | 0.946 ± 0.154 e | <0.001 | 0.036 | 0.011 |
| Antiox. (µg AAE mg ⁻¹ FW) | 1.72 ± 0.0294 a | 1.12 ± 0.0574 d | 1.22 ± 0.0258 c | 0.274 ± 0.0154 f | 1.58 ± 0.0307 b | 0.467 ± 0.0173 e | 1.54 ± 0.0337 b | 0.457 ± 0.0155 e | <0.001 | <0.001 | <0.001 |
| Phenol. (µg GAE mg ⁻¹ FW) | 2.2 ± 0.153 a | 1.42 ± 0.0522 cd | 1.67 ± 0.0761 bc | 1.19 ± 0.145 de | 1.82 ± 0.069 b | 1.05 ± 0.0412 e | 1.97 ± 0.136 ab | 1.13 ± 0.0749 de | 0.002 | <0.001 | 0.316 |
| SSA (µg AAE µg GAE ⁻¹) | 0.795 ± 0.0537 ab | 0.79 ± 0.0208 ab | 0.737 ± 0.0352 b | 0.246 ± 0.0365 d | 0.874 ± 0.0273 a | 0.448 ± 0.022 c | 0.796 ± 0.0455 ab | 0.412 ± 0.0329 c | <0.001 | <0.001 | <0.001 |
| TTC (%) | 74 ± 5.1 a | 46 ± 6.78 bc | 78 ± 3.74 a | 40 ± 4.47 c | 78 ± 4.9 a | 56 ± 5.1 b | 82 ± 3.74 a | 42 ± 4.9 bc | 0.386 | <0.001 | 0.237 |
| G (%) | 92 ± 1.22 a | 52 ± 4.36 bc | 92 ± 8 a | 30 ± 3.16 d | 95 ± 2.24 a | 54 ± 4.85 b | 96 ± 1.87 a | 40 ± 5.24 cd | 0.024 | <0.001 | 0.039 |
| T ₅₀ (h) | 19 ± 0.338 c | 44.8 ± 2.71 b | 14.7 ± 0.901 d | 60.9 ± 0.933 a | 12.9 ± 0.25 d | 41.7 ± 1.11 b | 12.8 ± 0.212 d | 43.5 ± 2.41 b | <0.001 | <0.001 | <0.001 |
| MGT (h) | 18.4 ± 0.219 c | 45.1 ± 2.8 b | 18 ± 1.22 c | 60.6 ± 0.967 a | 14.6 ± 0.495 c | 42.3 ± 1.07 b | 15.4 ± 0.785 c | 44.2 ± 2.25 b | <0.001 | <0.001 | <0.001 |
| PV (N/h) | 0.902 ± 0.0159 bc | 0.168 ± 0.0221 d | 0.834 ± 0.0678 c | 0.0813 ± 0.00729 d | 1.03 ± 0.0691 a | 0.182 ± 0.0152 d | 0.991 ± 0.0572 ab | 0.137 ± 0.0182 d | 0.009 | <0.001 | 0.347 |
| Norm. (%) | 86 ± 2.45 a | 37 ± 4.36 b | 79 ± 5.1 a | 0 ± 0 d | 87 ± 2.55 a | 22 ± 5.15 c | 83 ± 5.15 a | 19 ± 1.87 c | <0.001 | <0.001 | 0.005 |
| Aber. (%) | 7 ± 2.55 c | 15 ± 5.24 bc | 15 ± 2.24 bc | 30 ± 3.16 a | 8 ± 1.22 c | 32 ± 4.06 a | 13 ± 5.39 bc | 22 ± 3.39 ab | 0.023 | <0.001 | 0.132 |
| N.G. (%) | 7 ± 1.22 d | 52 ± 4.36 bc | 6 ± 6 d | 70 ± 3.16 a | 5 ± 2.24 d | 46 ± 4.85 c | 4 ± 1.87 d | 59 ± 4.3 ab | 0.021 | <0.001 | 0.023 |