Supplementary Materials

Chemical characterization of AREs

AREs of *D. tenuifolia*, *E. vesicaria* and *R. raphanistrum* were made from plants grown in the field (natural conditions) and others grown in the greenhouse (under controlled conditions) to identify possible differences due to the herbaceous material´s source. The AREs´pH of was always acidic and ranged from the most acidic values of *R. raphanistrum* in the field (4.94) to the closest to neutral of *R. raphanistrum* in the greenhouse (6.21). The *D. tenuifolia* pH ranged between 5.11 in the greenhouse and 5.38 in the field. The *E. vesicaria* pH did not show statistically significant differences between provenances (5.59 in the field, 5.78 in the greenhouse). There was no significant correlation between the phenolic groups evaluated and the pH of the extract (Tukey´s test p> 0.05).

The AREs´ defensive chemical profile and their AA differed significantly among herbaceous species and plant sources (p <0.001, Table S1). The Tp were lower in *D. tenuifolia* (18.44 μg GAE/mg sample in the field, 36.56 μg GAE/mg sample in the greenhouse, Table S2) and higher in R. *raphanistrum* (46.26 μg GAE/mg sample in the field, 59.18 μg GAE/mg sample in greenhouse). The *E. vesicaria* values were intermediate (39.98 μg GAE/mg sample in the field, 38.66 μg GAE/mg sample in the greenhouse) and did not show statistically significant differences (Tukey's test p >0.05).

Table S1. Effect of AREs species (*D. tenuifolia*- D, *E. vesicaria*- E and *R. raphanistrum*- R), sources (field/greenhouse) and their interactions on chemical defences (total phenols Tp, total tannins Tt and condensed tannins Ct) and antioxidant activity (AA and IC_{50}).

	df	Tp	Tt	Ct	AA	IC_{50}
Source (field/greenhouse)	1	384.10*	4.49	210.76*	19.91*	749.16*
Herbaceous species (D, E, R)	2	830.08*	33.91*	886.78*	236.85*	2513.20*
Source*Species	1	132.12*	75.30*	2744.69*	12.83*	559.54*

F-values are shown along with statistical significance. *$p < 0.05$, ns $p > 0.05$.

The Tt were also lower in *D. tenuifolia* (0.76 μg TAE/mg sample in the field, 4.24 μg TAE/mg sample in greenhouse, Table S2) and higher in *R. raphanistrum* from the field (8.31 μg TAE/mg sample). However, the Tt of *R. raphanistrum* grown in a greenhouse showed low values (1.69 μg TAE/mg sample). *E. vesicaria* showed intermediate values (5.42 μg TAE/mg sample in the field, 6.84 μg TAE/mg sample in greenhouse) and there were no statistically significant differences between provenances for this species (Tukey´s test p >0.05).

The Ct were significantly high in *D. tenuifolia* from the field (95.66 μg PBE/mg sample) and very low in *D. tenuifolia* from the greenhouse (39.92 μg PBE/mg sample), *E. vesicaria* (37.69 μg PBE/mg sample in the field, 30.8 μg PBE/mg sample in greenhouse) and *R. raphanistrum* in the field (30.98 μg PBE/mg sample). In contrast, *R. raphanistrum* from greenhouse also showed high Ct (74.98 μg PBE/mg sample).

AA was significantly lower in *D. tenuifolia* ARE than in the other two species (0.11 μmol TE/mg sample in the field, 0.25 μmol TE/mg sample in the greenhouse, compared to 0.53 μmol TE/mg sample of *E. vesicaria* in the field and 0.5 μmol TE/mg sample in greenhouse, and compared to 0.42 μmol TE/mg sample of *R. raphanistrum* in the field and 0.48 μmol TE/mg sample in greenhouse). Among the latter, there were no significant differences (Tukey test p >0.05). Therefore, the IC_{50} showed the inverse pattern, with maximum and significant values in *D. tenuifolia* in the field (24872.60 μg/mL and 12560.00 μg/mL in the greenhouse). The IC_{50} was

lower in the other two species, although without significant differences between sources within them (in *E. vesicaria*, 8182.70 µg/mL in the field and 7420.00 µg/mL in the greenhouse, p> 0.05; in *R. raphanistrum*, 5466.04 µg/mL in the field and 5001.26 µg/mL in the greenhouse, p> 0.05).

Table S2. Chemical composition of aqueous root extracts according to species and source. Total phenols (Tp), total tannins (Tt), condensed tannins (Ct), antioxidant activity (AA) and the half maximal inhibitory concentration (IC_{50}). Means and standard deviation.

Species	Source	pH	Original concentration (mg/mL)	Concentration for analysis (mg/mL)	Tp (µg GAE/mg sample)	Tt (µg TAE/mg sample)	Ct (µg PBE/mg sample)	AA (µmol TE/mg sample)	IC_{50} (µg/mL)
D. tenuifolia	field	5.38	43	3.4	18.44±0.17	0.76±0.19	95.66±0.97	0.11±0.01	24872.60±894.00
D. tenuifolia	greenhouse	5.11	18.45	3.4	36.56±0.27	4.24±1.37	32.92±0.73	0.25±0.01	12560.00±795.00
E. vesicaria	field	5.59	9.95	3.4	39.98±0.57	5.42±0.00	37.69±0.81	0.53±0.01	8182.70±14.30
E. vesicaria	greenhouse	5.78	7.95	3.4	38.66±1.48	6.84±0.39	30.80±0.67	0.50±0.03	7420,00±112.10
R. raphanistrum	field	4.94	10.9	3.4	46.26±0.38	8.31±0.70	30.98±0.72	0.42±0.00	5466.04±101.19
R. raphanistrum	greenhouse	6.21	4.55	3.4	59.18±2.03	1.69±0.15	74.98±2.50	0.48±0.00	5001.26±118.57

Regarding the general characterization of the volatiles released by AREs, the GC/MS screening carried out by the Research Support Service of the University of Extremadura identified the presence of several compounds from the isothiocyanate family, among others: 3 -butenyl isothiocyanate, butyl isothiocyanate, n-pentyl isothiocyanate, 4-methylpentyl isothiocyanate and hexyl isothiocyanate. Only the butylisothiocyanate compound was common in the six AREs and in a higher proportion in *D. tenuifolia* than in *E. vesicaria*, and less in *R. raphanistrum*, although new tests would be necessary for its correct quantification.

Effects of the herbaceous species effect on Quercus *seedlings in Pc-infested soil*

Table S3. Chemical composition of phenolic extracts from *Quercus* leaves grown with allelopathic root exudates and *Phytophthora cinnamomi* infection. Total phenols (Tp), total tannins (Tt), condensed tannins (Ct), antioxidant activity (AA), the half maximal inhibitory concentration (IC_{50}) and the major low molecular weight compounds in phenolic extracts (gallic acid GA, vescalagine Vesc., castalagine Cast., Catechin and ellagic acid EA). Means are shown ± standard deviation.

Quercus species	Herbaceous species	Tp (mg GAE/mg sample)	Tt (mg TAE/mg sample)	Ct (µg PBE/mg sample)	AA (µmol TE/mg sample)	IC_{50} (µg/mL)	Low-molecular weight compounds (mg/L)				
							GA	Vesc.	Cast.	Catechin	EA
Q. suber	*E. sativa*	502.7±22.7	233.7±10.5	93.8±0.9	26.3±0.7	267.3±4.4	34.2±6.3	8341.9±197.8	663.1±24.2	487±9.2	29.6±2.4
Q. suber	*D. tenuifolia*	439.5±30.8	223.0±13.6	92.9±5.9	25.7±1.2	286.7±2.8	18.2±3.5	6654.2±219.1	596.9±21.9	302.3±9.2	32.9±1.3
Q. suber	*L. luteus*	1566.8±238.3	226.3±19.5	115.0±2.0	30.2±0.5	250.1±20.3	16.5±0.8	7912.7±104.2	494.7±9.1	356.9±5.6	38.1±0.9
Q. faginea	*E. sativa*	928.2±65.8	178.4±10.8	63.1±7.8	22.7±0.9	335.9±7.7	10.1±2.1	5542.3±132.4	503.1±11.7	29.1±0.5	70.4±1.3
Q. faginea	*D. tenuifolia*	954.7±135.6	180.5±9.6	39.8±8.3	23.2±0.4	312.3±9.3	19.2±7.2	7453.7±592.8	599.2±16.5	21.9±0.5	73.1±2.7

Q. faginea	*L. luteus*	797.4±56.7	158.6±9.0	104.2±10.6	20.1±0.4	368.6±9.2	18.4±9.1	4806.4±168.9	413.8±18.4	64.7±0.8	59.7±1.3
Q. suber	control	1266.7±81.8	612.9±19.0	171.0±4.4	30.1±1.8	241.2±6.3	22.6±1.7	4925.8±373.1	607.1±44.2	433.6±30.5	33.8±3.1
Q. faginea	control	1017.1±89.4	503.0±14.0	73.2±6.1	29.4±0.3	308.3±7.1	19.3±6.9	6468.6±461.7	636.6±27.9	57.7±6.4	74.5±4.5