Supplementary Materials:

Table S1. Coordinates and environmental factors for tested *C. paliurus* genotypes and test sites.

Site	Latitude (N)	Longitude (E)	Elevation (m)	Mean annual temperature (℃)	Mean annual precipitation (mm)	number of frost-free days (day)
Tested genotype (family code)						
Anji (AJ5)	30°41'	119°41'	400	14.5	1476	255
Hefeng (HF10)	29°48'	110°11'	747	15.8	1400	210
Jianhe (JH1, JH12, JH3)	26°31'	108°42'	920	14.5	1400	300
Kunming (KM4, KM5)	25°02'	102°44'	1913	14.5	1001	230
Lushan (LS1, LS4, LS6, LS9)	29°33'	116°30'	1000	16	1917	260
Shucheng (SC4)	31°02'	116°32'	704	15.5	1028	224
Zhangpu (ZP5)	24°07'	117°37'	750	21.0	1500	350
Test site						
Pingxiang	22°02'	106°49'	564	21.8	1620	361
Chuzhou	32°21'	117°58'	75	16.6	1002	322

Table S2. The significance level of factor (genotype, environment and their interaction) for tree growth and leaf phytochemical content of *C. paliurus.*

Factors	TH	DBH	F1	F2	F3	F4	F5	F6	F7	TF	T1	T2	T3	T4	T5	T6	TT
Genotype (G)	***	**	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Environment (E)	***	***	***	***	***	***	***	NS	***	***	***	***	***	***	***	***	***
G×E	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***

Note: TH: tree height; DBH: diameter at the breast height; F1: quercetin-3-*O*-glucuronide; F2: quercetin-3-*O*-galactoside; F3: isoquercitrin; F4: kaempferol-3-*O*-glucuronide; F5: kaempferol-3-*O*-glucoside; F6: quercetin-3-*O*-rhamnoside; F7: kaempferol-3-*O*-rhamnoside; TF: total flavonoid; T1: arjunolic acid; T2: cyclocaric acid B; T3: pterocaryoside B; T4: pterocaryoside A; T5: hederagenin; T6: oleanolic acid; TT: total triterpenoid. ** indicated significant at 0.05 levels.*** indicated significant at 0.001 levels. NS indicated no significant at 0.05 levels.

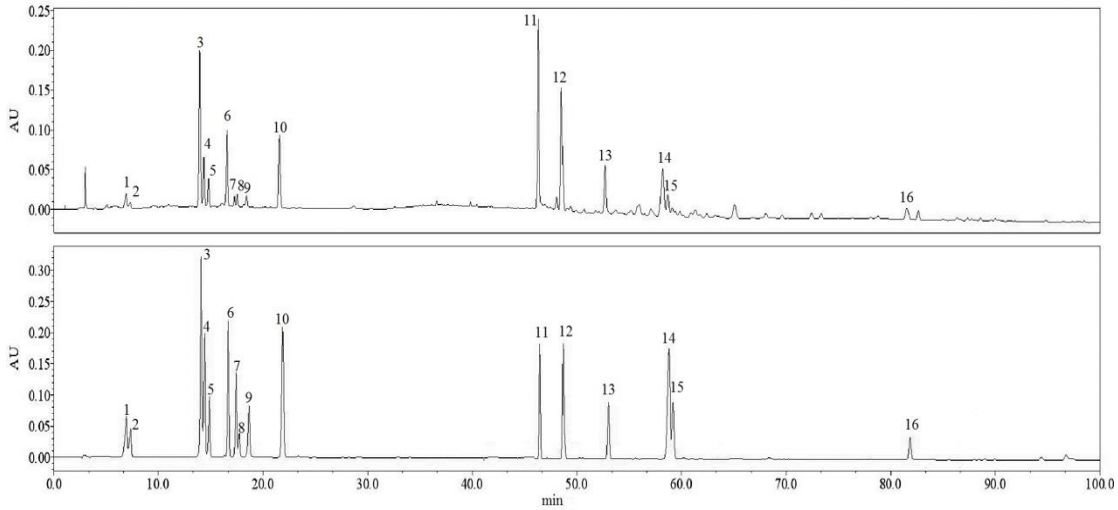

Figure S1. HPLC chromatograms of the representative sample solution (top) and the responding standard solution containing the triterpenoid compounds (bottom). 3: quercetin-3-*O*-glucuronide; 4: quercetin-3-*O*-galactoside; 5: isoquercitrin; 6: kaempferol-3-*O*-glucuronide; 7: kaempferol-3-*O*-glucoside; 8: quercetin-3-*O*-rhamnoside; 10: kaempferol-3-*O*-rhamnoside; 11: arjunolic acid; 12: cyclocaric acid B; 13: pterocaryoside B; 14: pterocaryoside A; 15: hederagenin; 16: oleanolic.