**Supplementary materials**

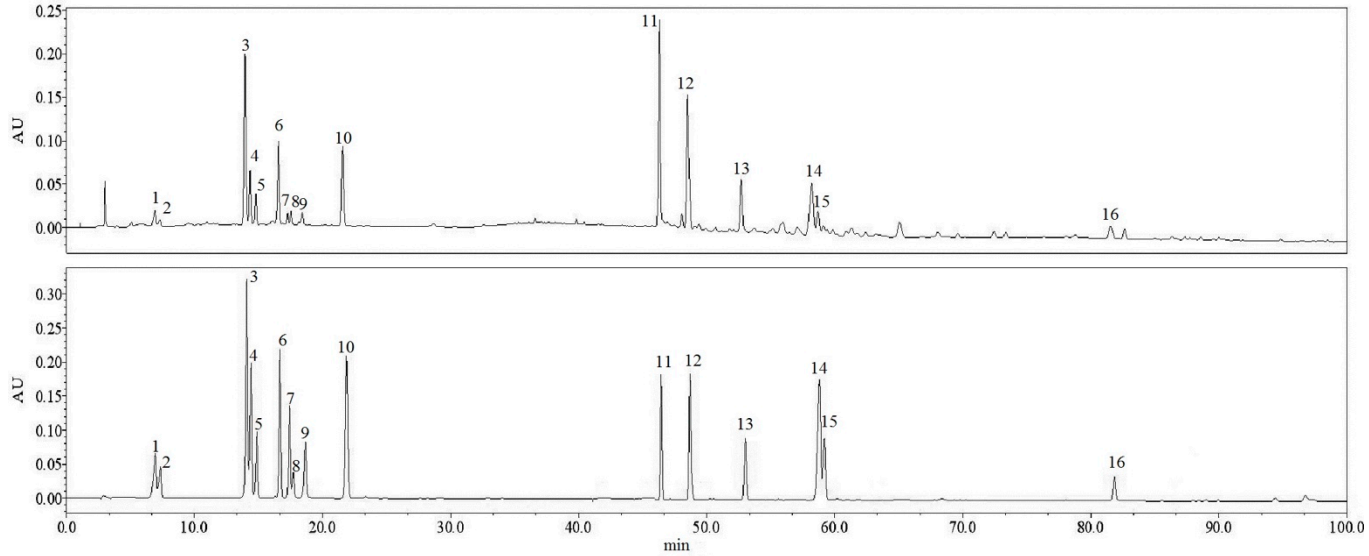


**Figure S1** HPLC chromatograms of the representative sample solution (top) and the responding standard solution containing the 16 quantitative compounds (bottom). 1: 3-*O*-caffeoyluinic acid; 2: 4-*O*-caffeoyluinic acid; 3: quercetin-3-*O*-glucuronide; 4: quercetin-3-*O*-galactoside; 5: isoquercitrin; 6: kaempferol-3-*O*-glucuronide; 7: kaempferol-3-*O*-glucoside; 8: quercetin-3-*O*-rhamnoside; 9: 4,5-di-*O*-caffeoyluinic acid; 10: kaempferol-3-*O*-rhamnoside; 11:arjunolic acid; 12: cyclocaric acid B; 13: pterocaryoside B; 14: pterocaryoside A; 15: hederagenin; 16: oleanolic acid.

**Table S1.** F-values and probability levels from the general linear model (GLM) analysis of bioactive metabolite contents in *C. paliurus* leaves

| Factors | df | Tp | Tf | Tt | P1 | P2 | P3 | F1 | F2 | F3 | F4 | F5 | F6 | F7 | T1 | T2 | T3 | T4 | T5 | T6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Solvent (S) | 1 | 6071.72*** | 9277.62*** | 32357.07*** | 166.19*** | 498.24*** | 4245.93*** | 370.50*** | 3488.35*** | 3661.28*** | 400.52*** | 3510.58*** | 1903.38*** | 3072.09*** | 3599.74*** | 2753.86*** | 2133.15*** | 2042.12*** | 3836.81*** | 3841.84*** |
| Population (P) | 14 | 712.28*** | 156.81*** | 344.09*** | 394.40*** | 179.97*** | 318.90*** | 654.95*** | 472.31*** | 470.79*** | 250.25*** | 781.60*** | 286.39*** | 230.95*** | 161.42*** | 184.06*** | 251.55*** | 195.66*** | 123.86*** | 181.03*** |
| S×P | 14 | 93.65*** | 28.49*** | 98.03*** | 22.11*** | 23.93*** | 234.48*** | 63.81*** | 205.26*** | 297.82*** | 52.81*** | 611.30*** | 101.93*** | 89.76*** | 154.92*** | 154.03*** | 251.55*** | 195.66*** | 124.27*** | 177.01*** |

Tp:total polyphenol; Tf: total flavonoid; Tt: total triterpenoid;P1: 3-*O*-caffeoyluinic acid; P2: 4-*O*-caffeoyluinic acid; P3: 4,5-di-*O*-caffeoyluinic acid; 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; T1:arjunolic acid; T2: cyclocaric acid B; T3: pterocaryoside B; T4: pterocaryoside A; T5: hederagenin; T6: oleanolic acid. *** indicated significant at 0.001 levels.

**Table S2.** F-values and probability levels from the general linear model (GLM) analysis of antioxidant and anticancer activities in *C. paliurus* leaves

| Factors | df | Antioxidant | | | Antiproliferation | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DPPH | ABTS | Reducing power | A549 | HCT-116 | HEK-293 | HeLa | HepG2 | MCF-7 | PANC-1 |
| Solvent (S) | 1 | 640.76*** | 366.82*** | 11262.38*** | 2042.82*** | 905.44*** | 3001.16*** | 1604.41*** | 841.13*** | 686.20*** | 726.61*** |
| Population (P) | 14 | 625.45*** | 328.45*** | 1311.94*** | 171.43*** | 173.48*** | 415.25*** | 226.74*** | 37.00*** | 188.42*** | 80.23*** |
| S×P | 14 | 60.90*** | 24.03*** | 182.50*** | 166.08*** | 169.46*** | 400.27*** | 225.73*** | 40.01*** | 191.93*** | 80.06*** |

DPPH: the $IC_{50}$ of DPPH; ABTS: the $IC_{50}$ of ABTS; Reducing power: the $EC_{50}$ of reducing power; A549, HCT-116, HEK-293, HeLa, HepG2, MCF-7, PANC-1: the $IC_{50}$ of cells; $IC_{50}$ (mg/mL): the sample concentration at which the radical or the growth of cell was inhibited by 50%; $EC_{50}$ (mg/mL): the absorbance was 0.5 for reducing power. *** indicated significant at 0.001 levels.