**Supplemental Material-2 Original HPLC-MS spectra**

**π -π Conjugation Enhances Oligostilbene’s Antioxidant Capacity: Evidence from α-Viniferin and Caraphenol A**

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**Note:**

The supplemental materials provide the original spectra for Fig. 5 of the main text. In general, the reaction of α-viniferin with DPPH radical gave four RAF peaks at 3.653, 4.496, 4.811, and 6.479 min. However, caraphenol A with DPPH radical gave no RAF peaks.

In UPLC−ESI−Q−TOF−MS/MS analysis, the molecular ion peak is usually called primary MS spectra (molecular ion peaks). When the molecular ion peak is broken by ESI, it further gives rise to several fragments which are usually called secondary MS spectra, or MS/MS spectra.

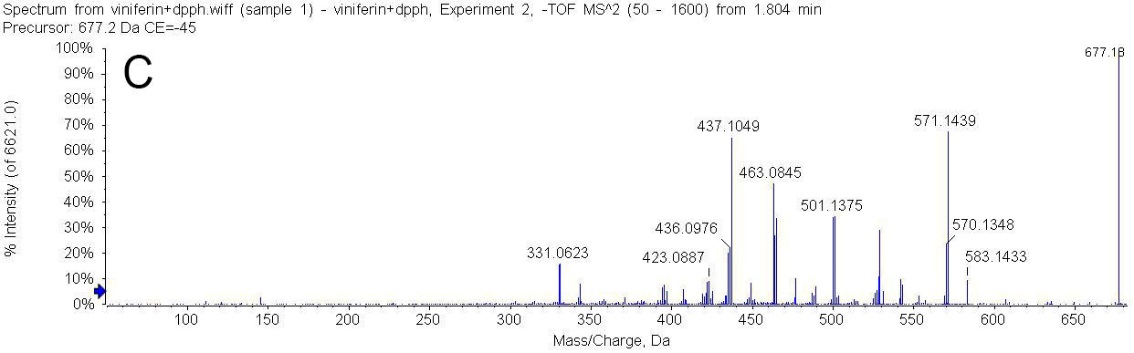
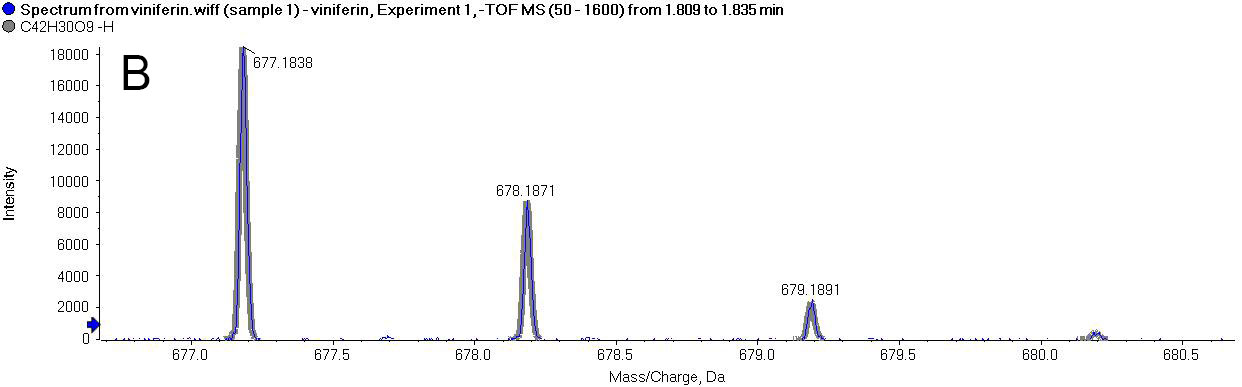
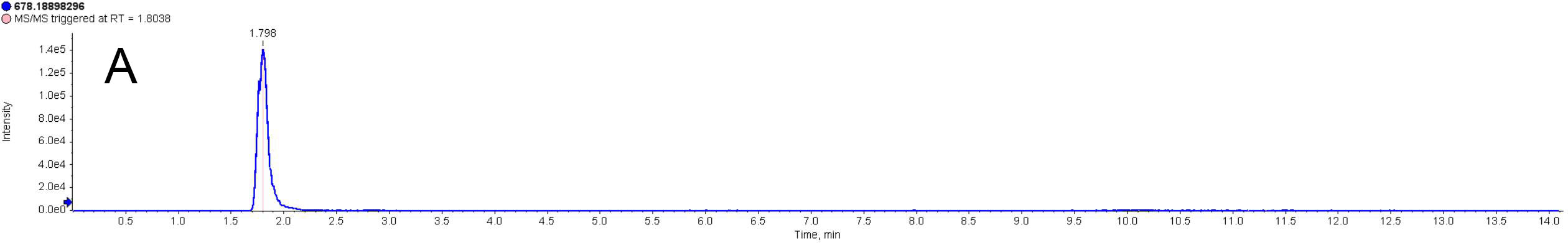


Fig. S 2.1 (A) Total ion chromatogram of α-viniferin standard extracted by corresponding chemical formula [C42H30O9-H]-; (B) Primary MS spectra (molecular ion peaks) of α-viniferin; (C) Secondary MS spectra of α-viniferin.

The determining conditions are detailed in Section 3.7 of main text.

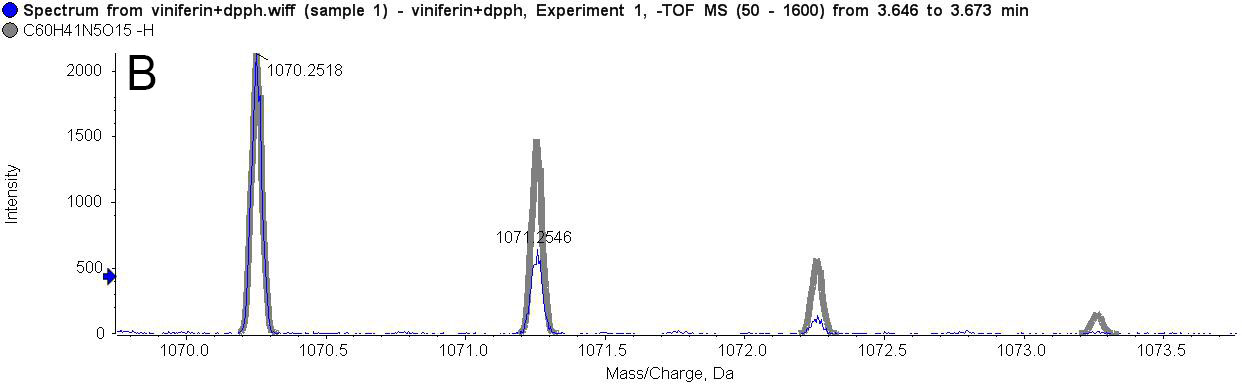
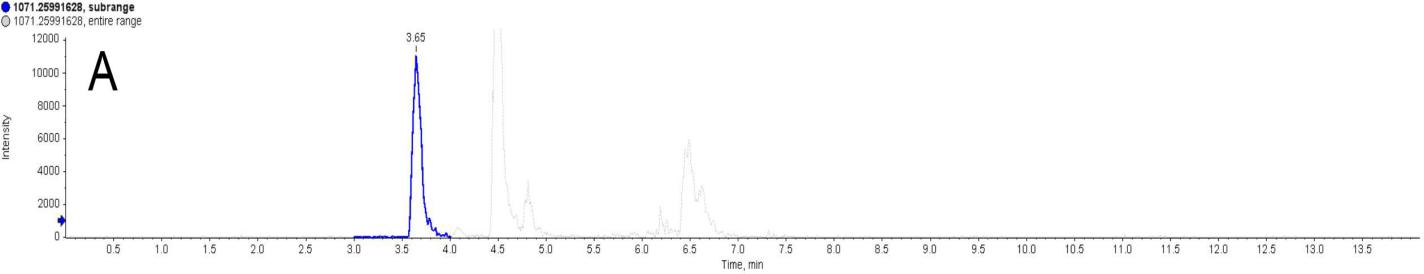


Fig. S 2.2 (A) [Ion chromatogram of](http://www.baidu.com/link?url=CF2kwqGsxR0oJevz0eMOkaKlSp5m3CP5azTuAPtPYQywgNd79FAccvr91aMdqMonPznhus0HQnaImc9imgKjcZGfDHgKz2a0BLH0fQFGHU8hiKdjXP7HKk5Oo13Brtbt)  reaction product of α-viniferin with DPPH• extracted by corresponding chemical formula [C60H42N5O15]. (B) Primary MS spectra (molecular ion peaks) of α-viniferin-DPPH

The peak was observed at 3.653 min. α-viniferin is C42H30O9; DPPH• is C18H12N5O6. Thus, [covalent](http://www.baidu.com/link?url=_NXpqH1Jy8-wYHBhYKz4OjCAE3JoN555TWPHLpcBZLLZRIaurfOQAmGBjgiSpGmKGQT_S1R2aAwmy80CmAIxxeLdfEfJ5extKEgaPUc1uAm) adduct should be C60H42N5O15, and the molecular weight should be 1070. The reaction was conducted by mixing acteoside and DPPH• (1:2, molar ratio). The reaction mixture was incubated for 24 h. However, the peak at 3.653 min is too weak to give rise to fragment peaks (Secondary MS spectra)

The determining conditions are detailed in Section 3.7 of main text.

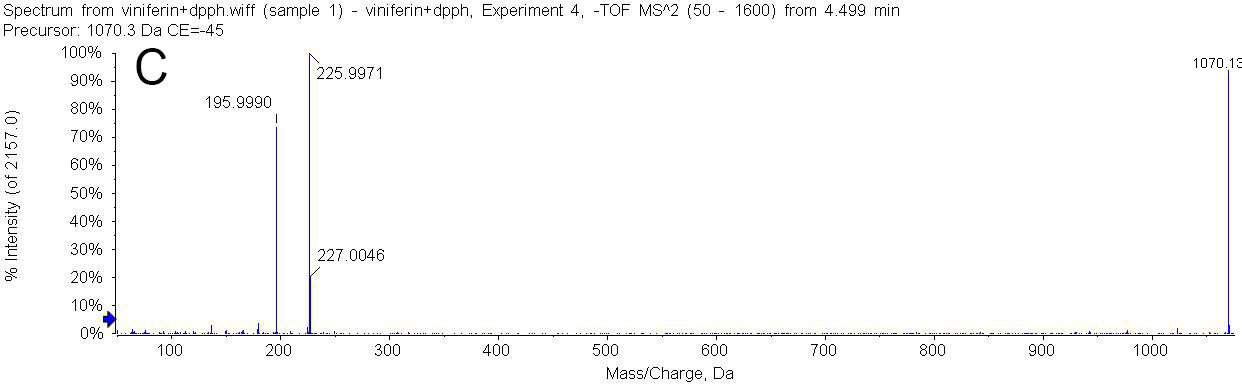
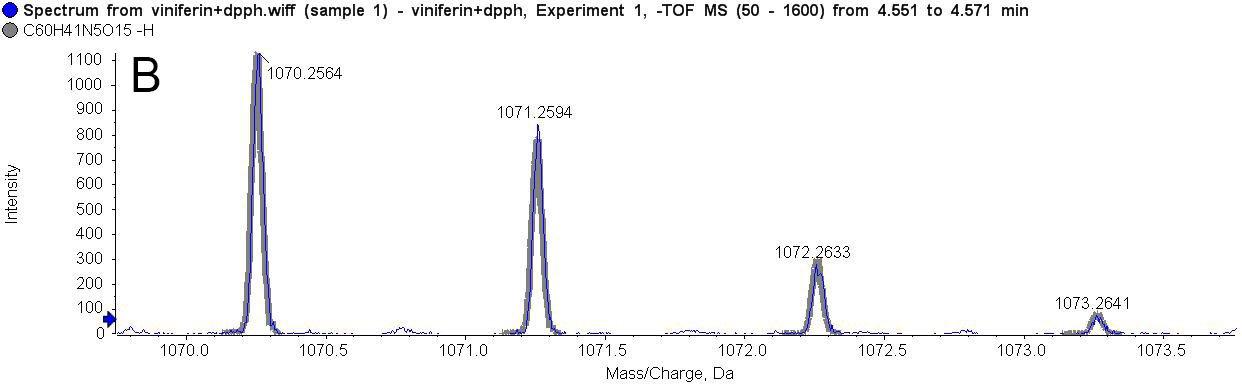
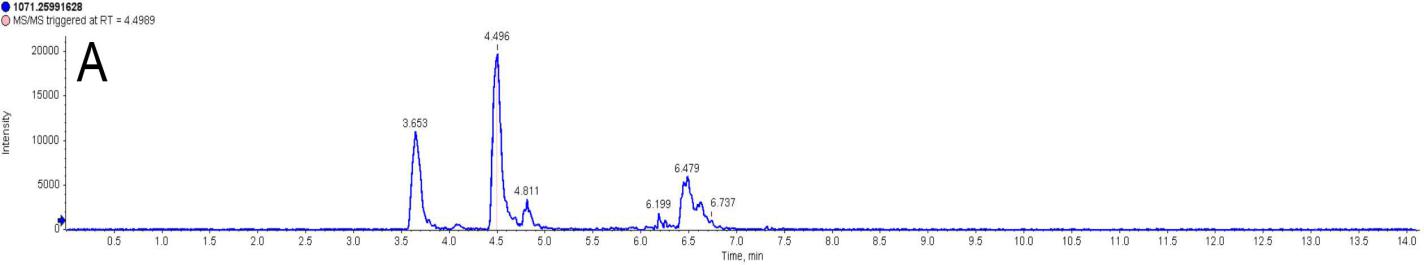


Fig. S 2.3 (A) [Ion chromatogram of](http://www.baidu.com/link?url=CF2kwqGsxR0oJevz0eMOkaKlSp5m3CP5azTuAPtPYQywgNd79FAccvr91aMdqMonPznhus0HQnaImc9imgKjcZGfDHgKz2a0BLH0fQFGHU8hiKdjXP7HKk5Oo13Brtbt)  reaction product of α-viniferin with DPPH• extracted by corresponding chemical formula [C60H42N5O15]. (B) Primary MS spectra (molecular ion peaks) of α-viniferin-DPPH. (C) Secondary MS spectra (molecular ion peaks) of α-viniferin-DPPH. The peak m/z 225 is thought to be a loss from DPPH moiety.

The peak was observed at 4.496 min. α-viniferin is C42H30O9; DPPH• is C18H12N5O6. Thus, [covalent](http://www.baidu.com/link?url=_NXpqH1Jy8-wYHBhYKz4OjCAE3JoN555TWPHLpcBZLLZRIaurfOQAmGBjgiSpGmKGQT_S1R2aAwmy80CmAIxxeLdfEfJ5extKEgaPUc1uAm) adduct should be C60H42N5O15, and the molecular weight should be 1070. The reaction was conducted by mixing acteoside and DPPH• (1:2, molar ratio). The reaction mixture was incubated for 24 h. However, the peak at 4.496 min further gave rise to fragment peaks (Secondary MS spectra, Fig. C).The determining conditions are detailed in Section 3.7 of main text.

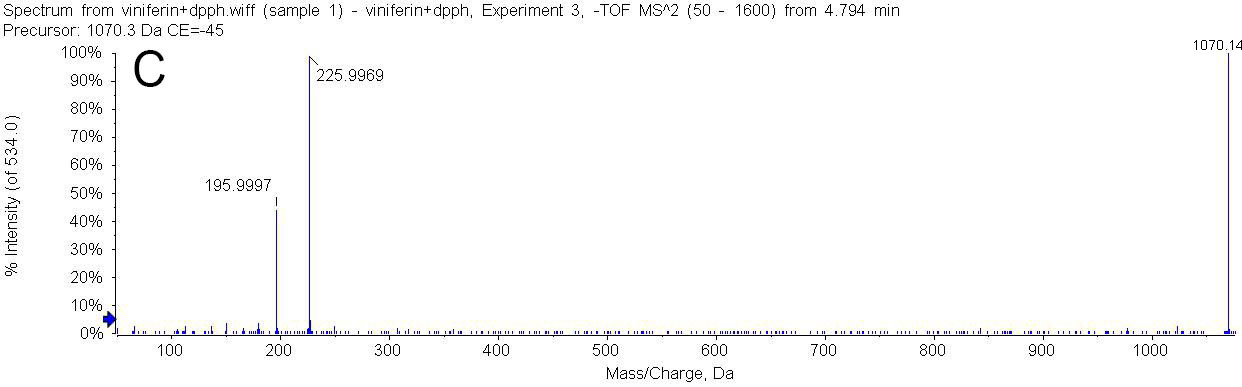
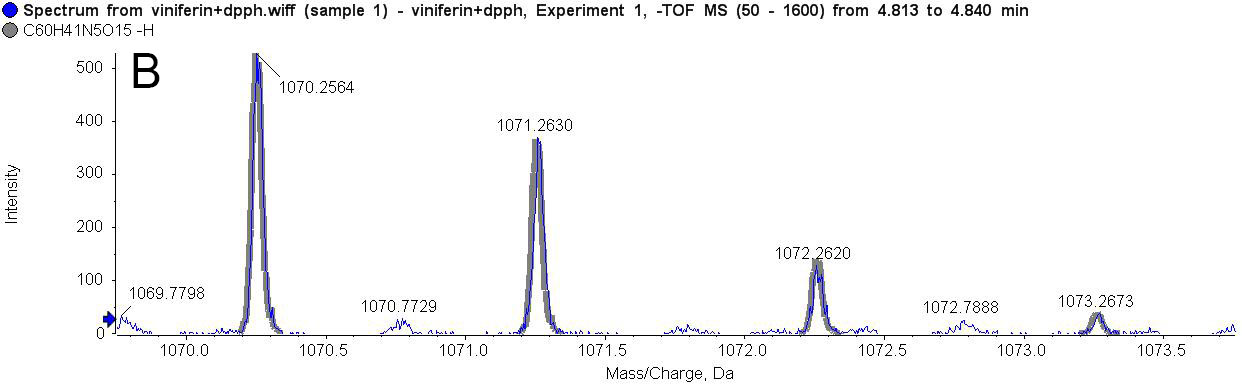
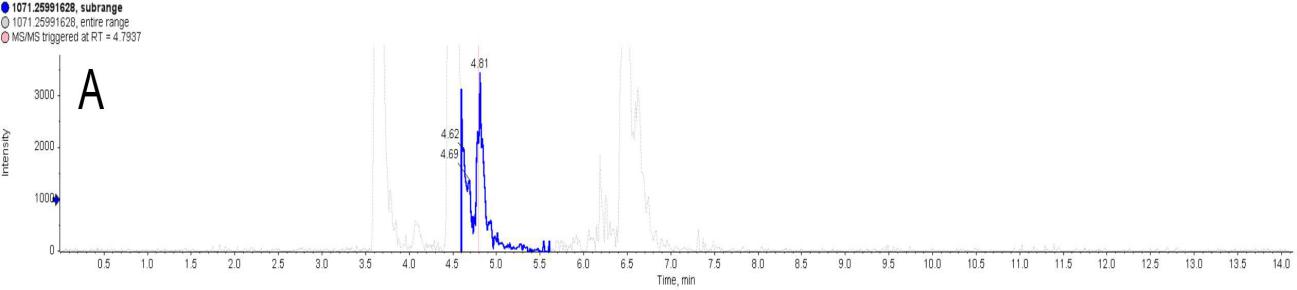


Fig. S 2.4 (A) [Ion chromatogram of](http://www.baidu.com/link?url=CF2kwqGsxR0oJevz0eMOkaKlSp5m3CP5azTuAPtPYQywgNd79FAccvr91aMdqMonPznhus0HQnaImc9imgKjcZGfDHgKz2a0BLH0fQFGHU8hiKdjXP7HKk5Oo13Brtbt)  reaction product of α-viniferin with DPPH• extracted by corresponding chemical formula [C60H42N5O15]. (B) Primary MS spectra (molecular ion peaks) of α-viniferin-DPPH. (C) Secondary MS spectra (molecular ion peaks) of α-viniferin-DPPH. The peak m/z 225 is thought to be a loss from DPPH moiety.

The peak was observed at 4.811 min. α-viniferin is C42H30O9; DPPH• is C18H12N5O6. Thus, [covalent](http://www.baidu.com/link?url=_NXpqH1Jy8-wYHBhYKz4OjCAE3JoN555TWPHLpcBZLLZRIaurfOQAmGBjgiSpGmKGQT_S1R2aAwmy80CmAIxxeLdfEfJ5extKEgaPUc1uAm) adduct should be C60H42N5O15, and the molecular weight should be 1070. The reaction was conducted by mixing acteoside and DPPH• (1:2, molar ratio). The reaction mixture was incubated for 24 h. However, the peak at 4.811 min further gave rise to fragment peaks (Secondary MS spectra, Fig. C).The determining conditions are detailed in Section 3.7 of main text.

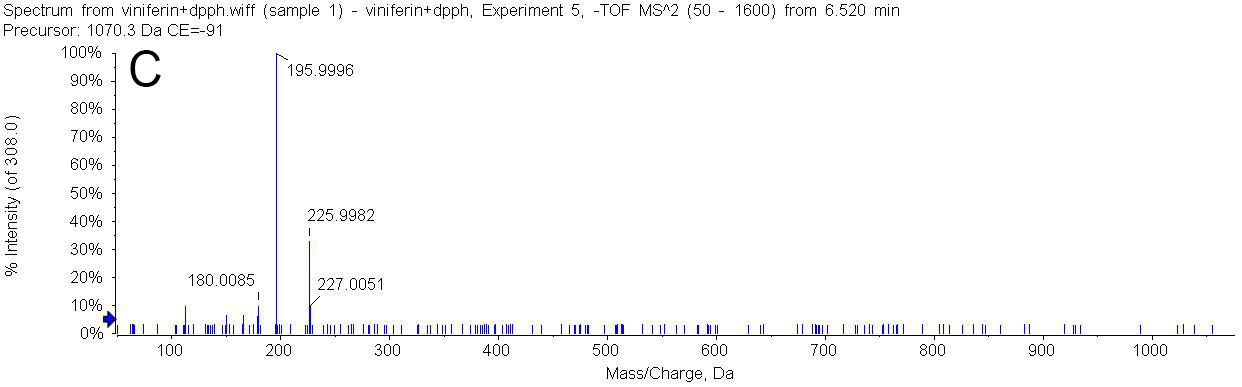
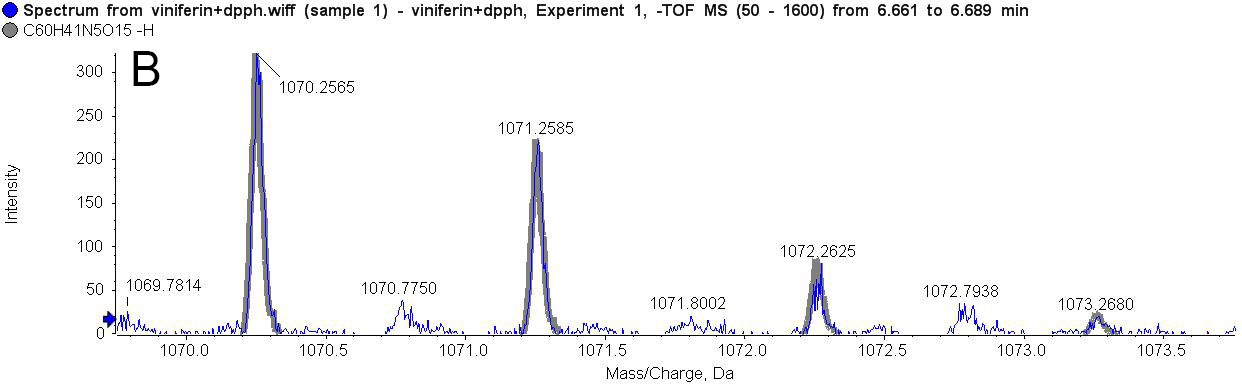
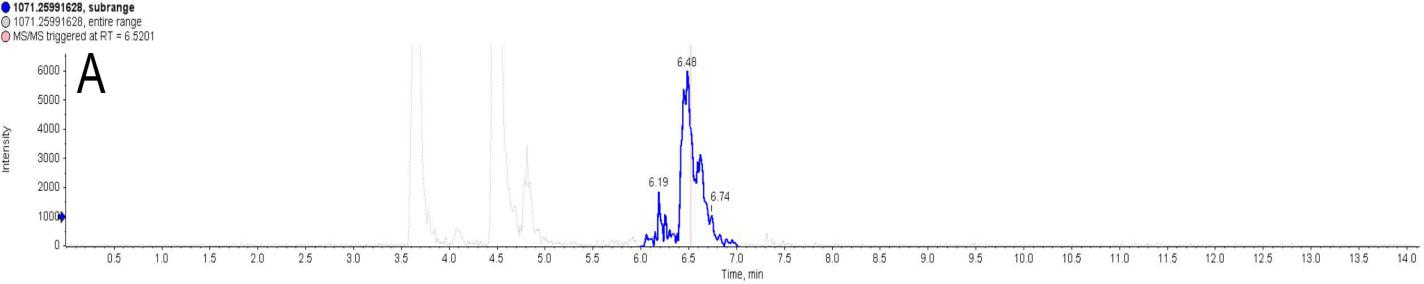
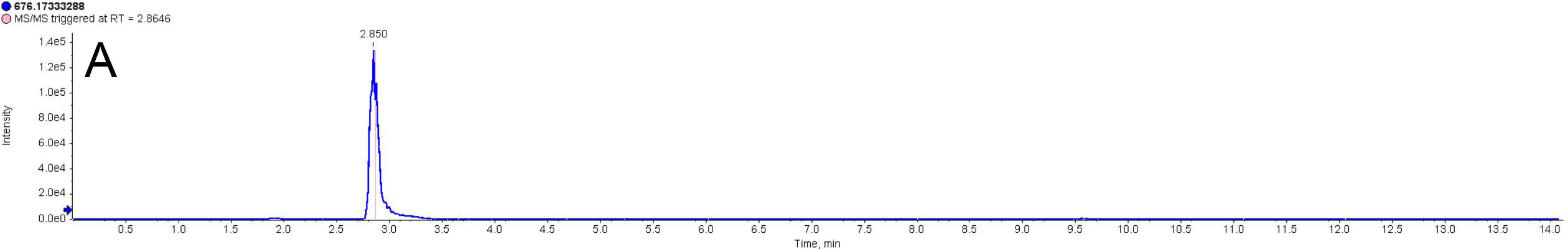


Fig. S 2.5 (A) [Ion chromatogram of](http://www.baidu.com/link?url=CF2kwqGsxR0oJevz0eMOkaKlSp5m3CP5azTuAPtPYQywgNd79FAccvr91aMdqMonPznhus0HQnaImc9imgKjcZGfDHgKz2a0BLH0fQFGHU8hiKdjXP7HKk5Oo13Brtbt)  reaction product of α-viniferin with DPPH• extracted by corresponding chemical formula [C60H42N5O15]. (B) Primary MS spectra (molecular ion peaks) of α-viniferin-DPPH. (C) Secondary MS spectra (molecular ion peaks) of α-viniferin-DPPH. The peak m/z 225 is thought to be a loss from DPPH moiety.

The peak was observed at 6.479 min. α-Viniferin is C42H30O9; DPPH• is C18H12N5O6. Thus, [covalent](http://www.baidu.com/link?url=_NXpqH1Jy8-wYHBhYKz4OjCAE3JoN555TWPHLpcBZLLZRIaurfOQAmGBjgiSpGmKGQT_S1R2aAwmy80CmAIxxeLdfEfJ5extKEgaPUc1uAm) adduct should be C60H42N5O15, and the molecular weight should be 1070. The reaction was conducted by mixing acteoside and DPPH• (1:2, molar ratio). The reaction mixture was incubated for 24 h. However, the peak at 6.479 min further gave rise to fragment peaks (Secondary MS spectra, Fig. C).The determining conditions are detailed in Section 3.7 of main text.



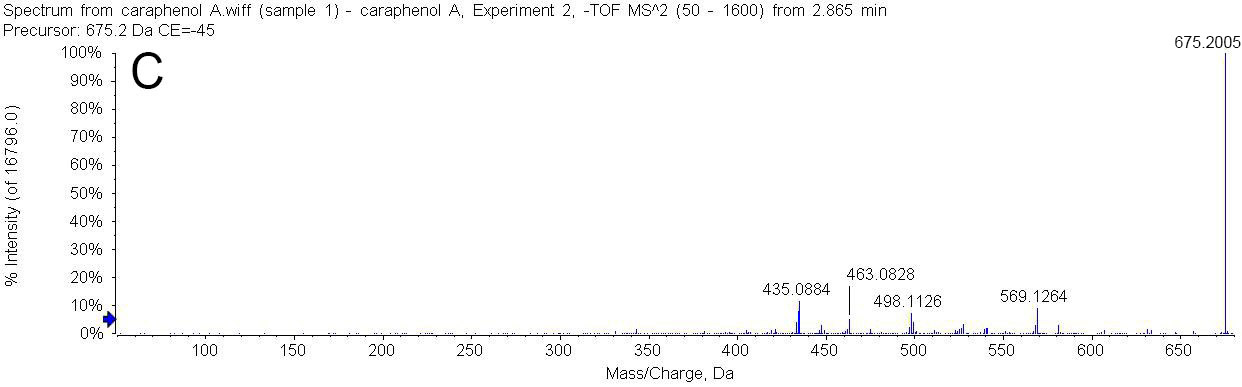
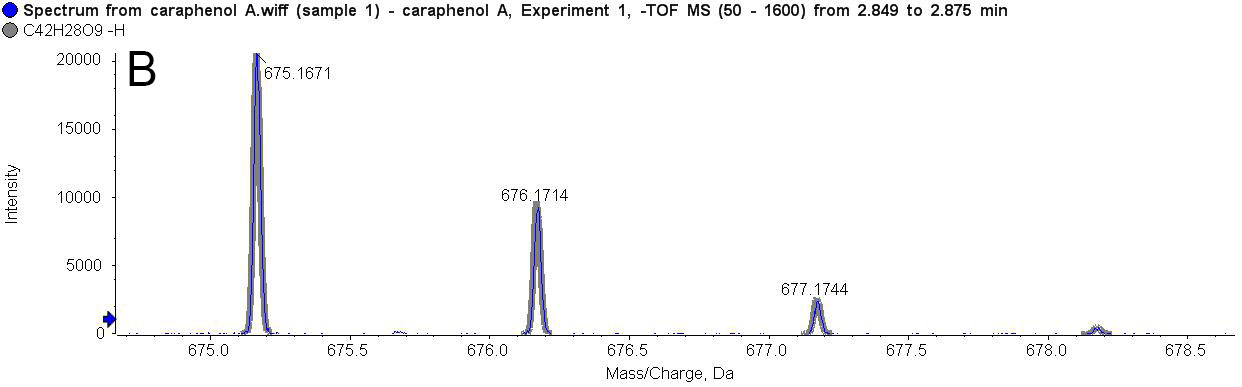


Fig. S 2.6 (A)Total ion chromatogram of caraphenol A standard when the formula [C42H28O9] was extracted; (B) Primary MS spectra (molecular ion peaks) of caraphenol A; (C) Secondary MS spectra of caraphenol A.

The peak was observed at 2.850 min. However, the peak at 2.850 min further gave rise to fragment peaks (Secondary MS spectra, Fig. C).The determining conditions are detailed in Section 3.7 of main text.

Fig. S 2.7 [Ion chromatogram of](http://www.baidu.com/link?url=CF2kwqGsxR0oJevz0eMOkaKlSp5m3CP5azTuAPtPYQywgNd79FAccvr91aMdqMonPznhus0HQnaImc9imgKjcZGfDHgKz2a0BLH0fQFGHU8hiKdjXP7HKk5Oo13Brtbt)  reaction product of caraphenol A with DPPH• extracted by [C60H40N5O15].

Caraphenol A is C42H28O9; DPPH• is C18H12N5O6. Thus, [covalent](http://www.baidu.com/link?url=_NXpqH1Jy8-wYHBhYKz4OjCAE3JoN555TWPHLpcBZLLZRIaurfOQAmGBjgiSpGmKGQT_S1R2aAwmy80CmAIxxeLdfEfJ5extKEgaPUc1uAm) adduct should be C60H40N5O15. However, no corresponding peak was found. All these peaks are noise.

The determining conditions are detailed in Section 3.7 of main text.