Supplementary Data

Enzymatic Glycosylation of 4′-Hydroxychalcones: Expanding the Scope of Nature's Catalytic Potential

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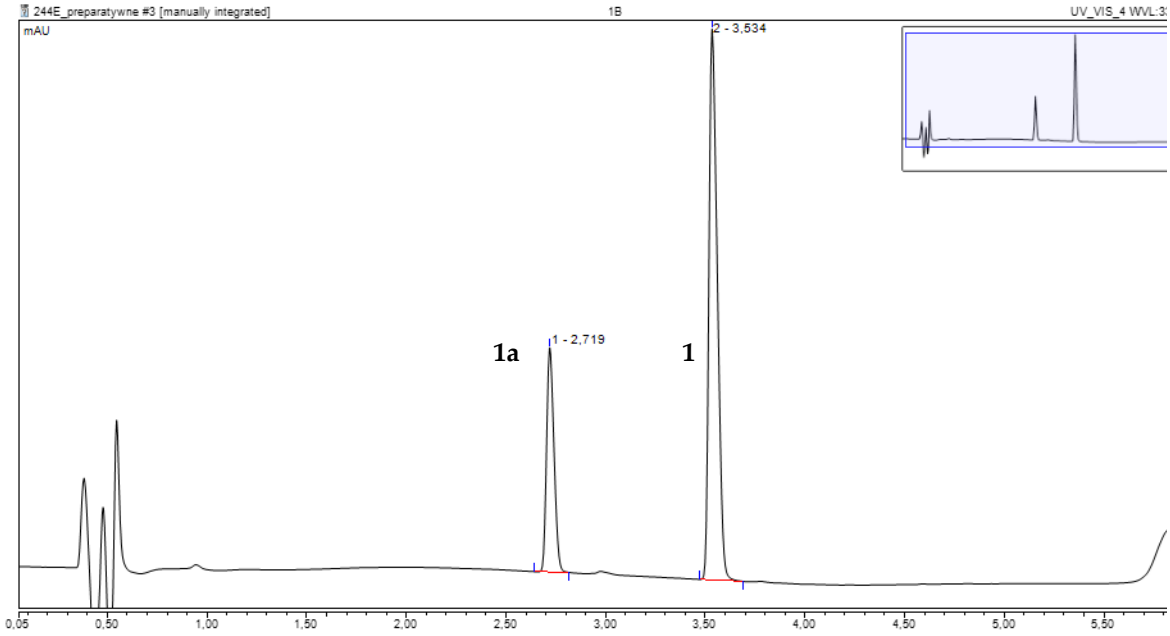

Figure S1 Chromatogram of reaction mixture of *trans*-4′-hydroxychalcone (**1**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (**1a**) before product purification.

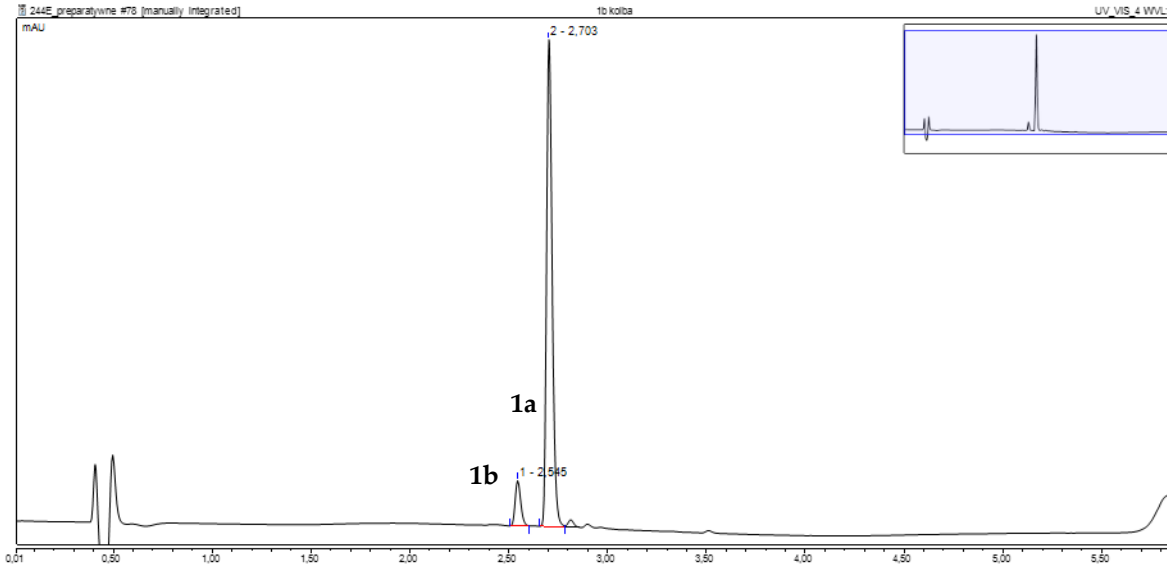

Figure S2 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (**1a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (**1b**) after NMR analysis.

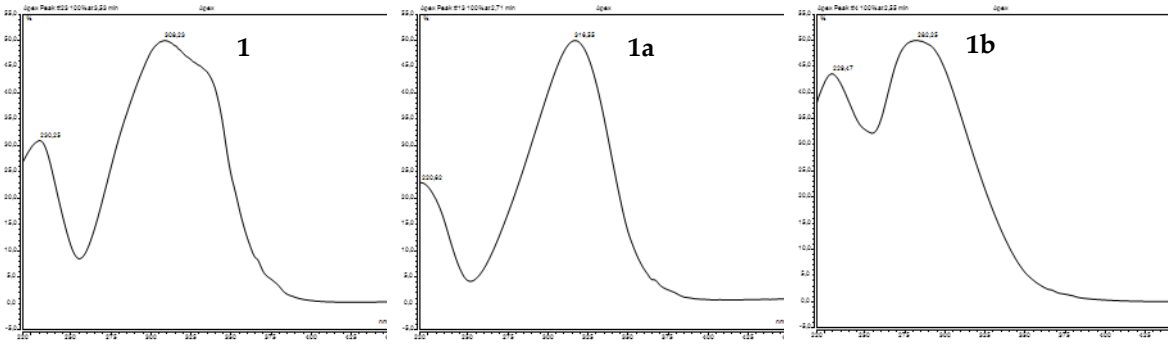

Figure S3 UV-VIS spectra of *trans*-4′-hydroxychalcone (**1**) *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (**1a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (**1b**)

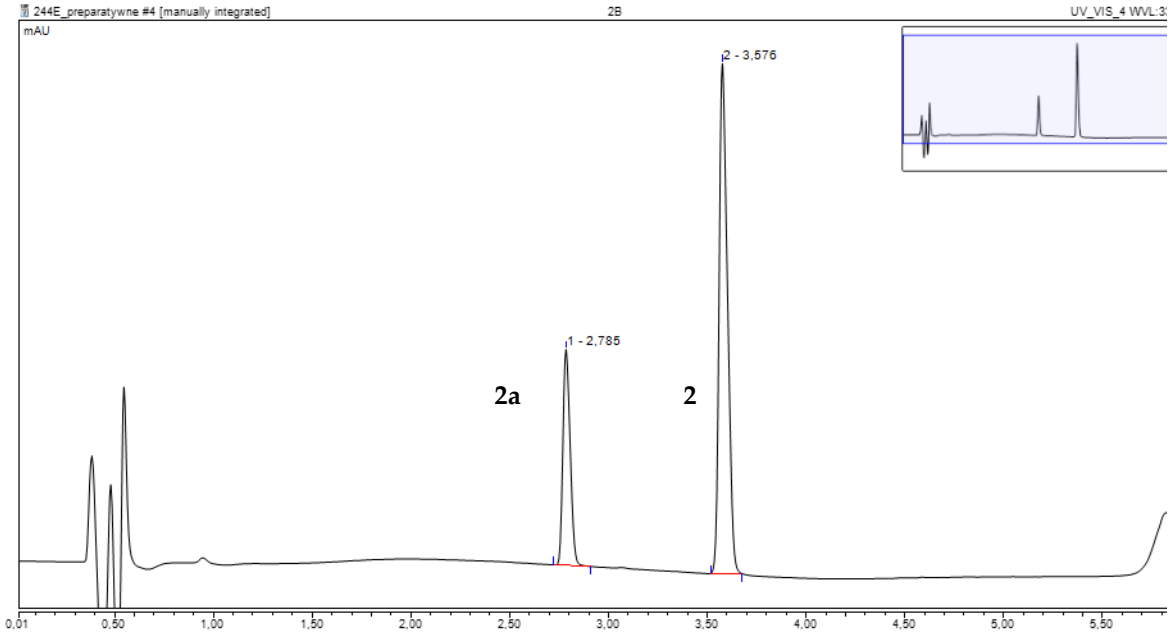

Figure S4 Chromatogram of reaction mixture of *trans*-4′-hydroxy-2-methoxychalcone (**2**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (**2a**) before product purification.

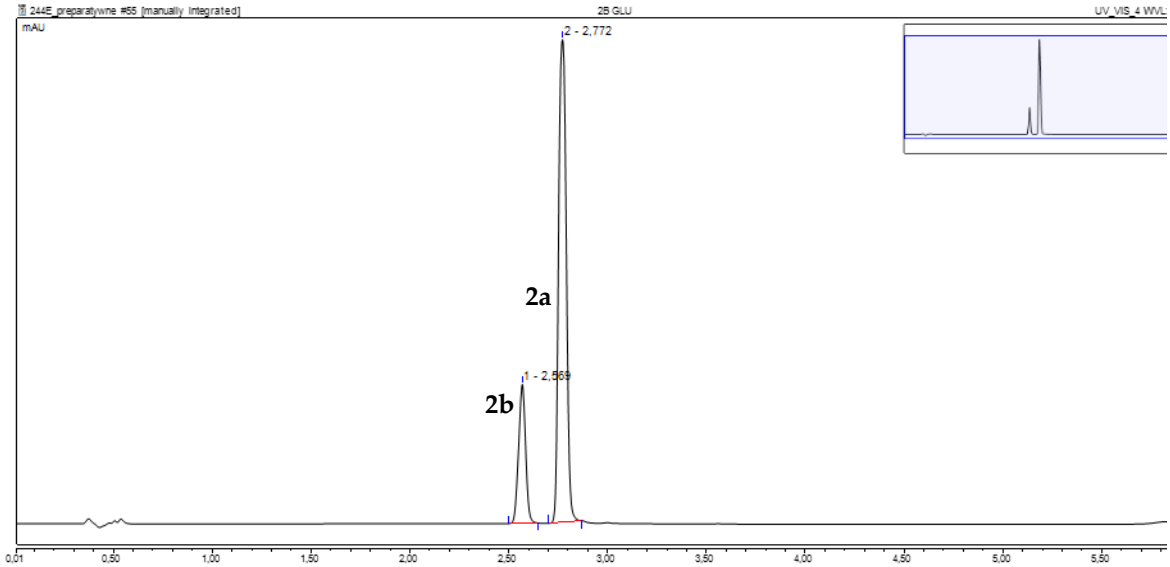

Figure S5 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (**2a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (**2b**) after NMR analysis.

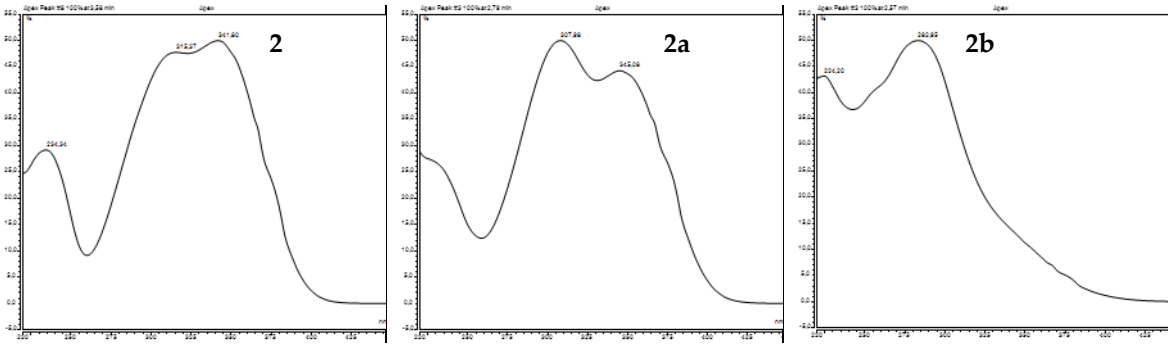

Figure S6 UV-VIS spectra of *trans*-4′-hydroxy-2-methoxychalcone (**2**) *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (**2a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (**2b**).

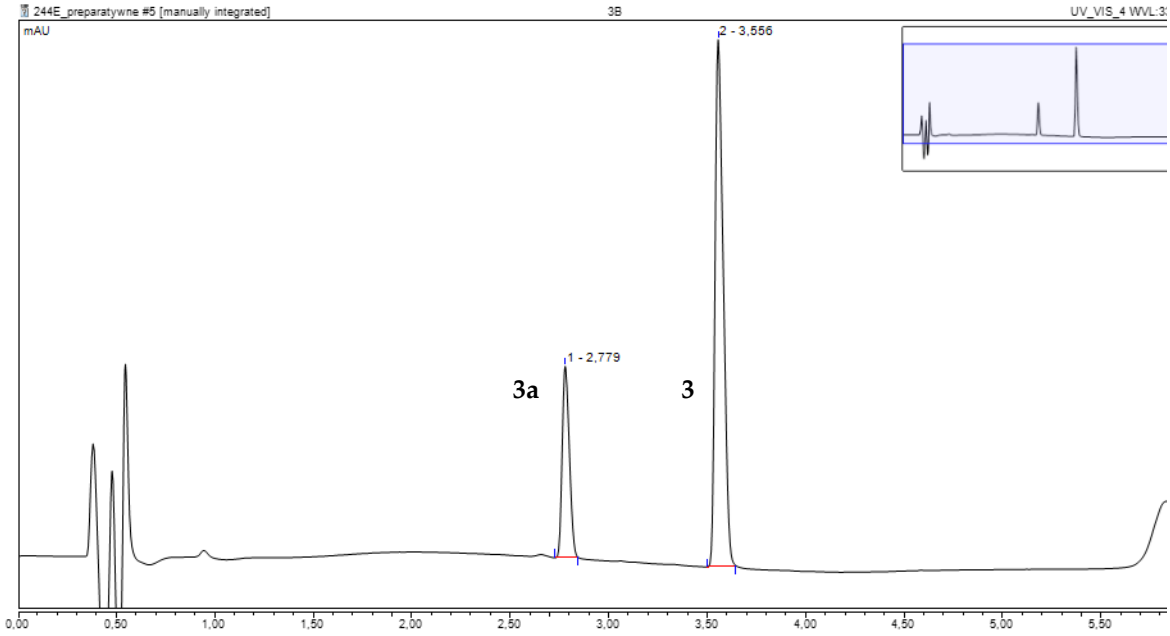

Figure S7 Chromatogram of reaction mixture of *trans*-4′-hydroxy-3-methoxychalcone (**3**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (**3a**) before product purification.

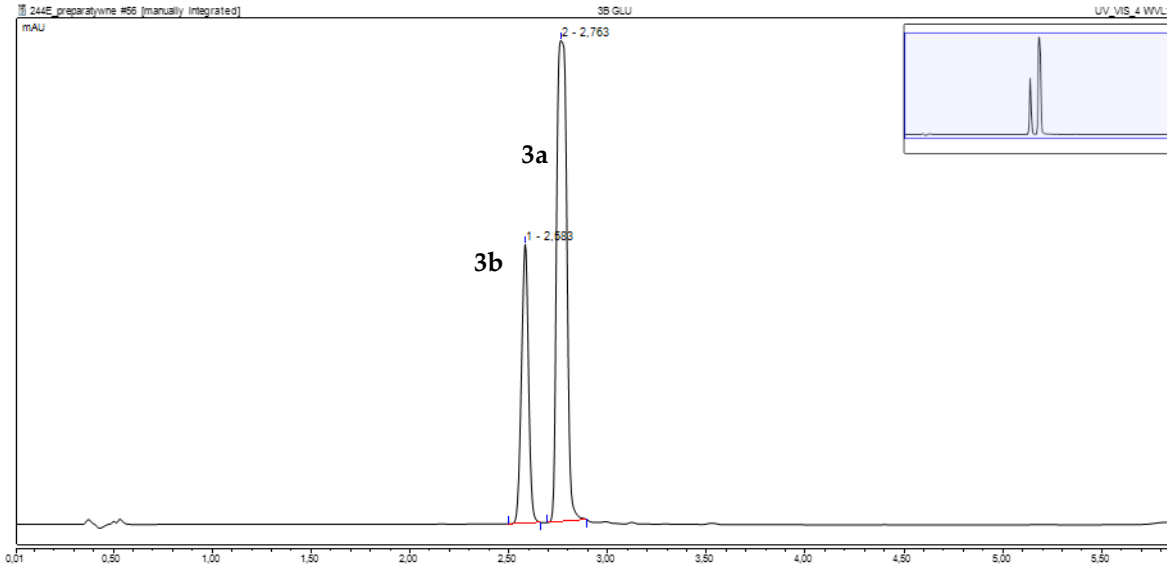

Figure S8 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (**3a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (**3b**) after NMR analysis.

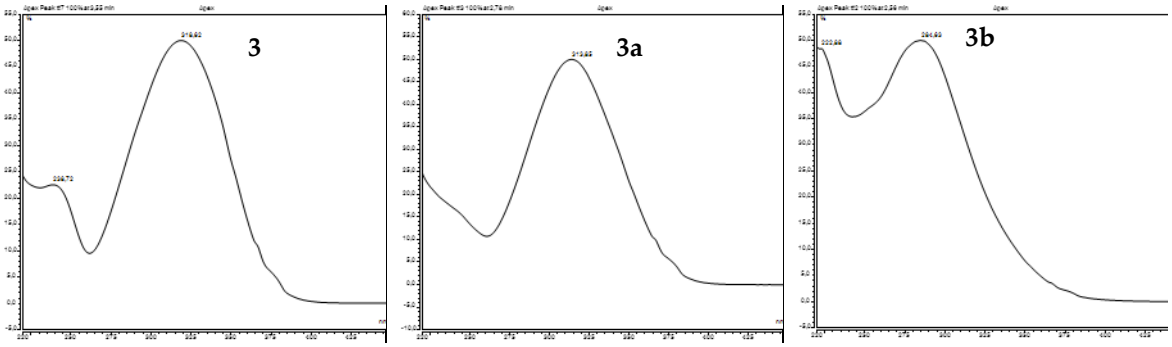

Figure S9 UV-VIS spectra of *trans*-4′-hydroxy-3-methoxychalcone (**3**) *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (**3a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (**3b**).

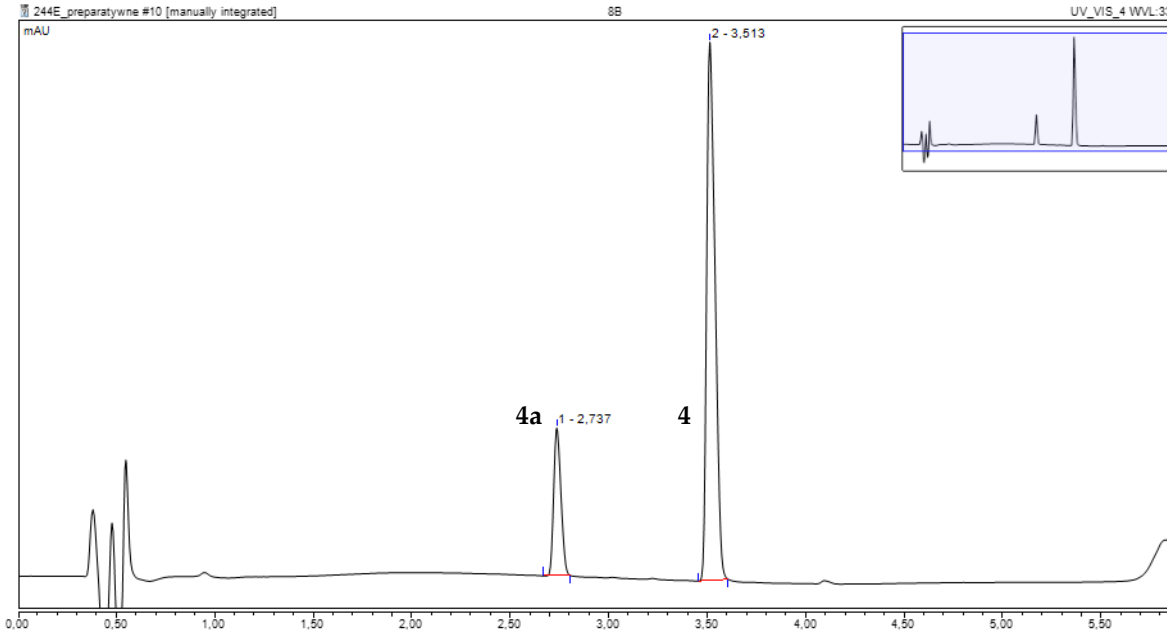

Figure S10 Chromatogram of reaction mixture of *trans*-4′-hydroxy-4-methoxychalcone (**4**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (**4a**) before product purification.

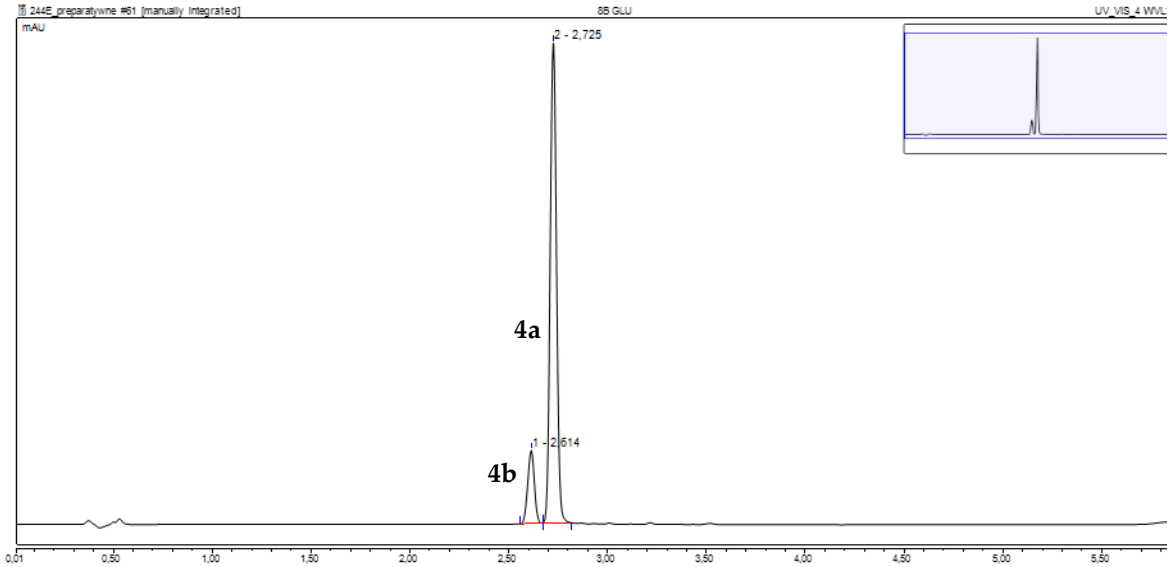

Figure S11 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (**4a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (**4b**) after NMR analysis.

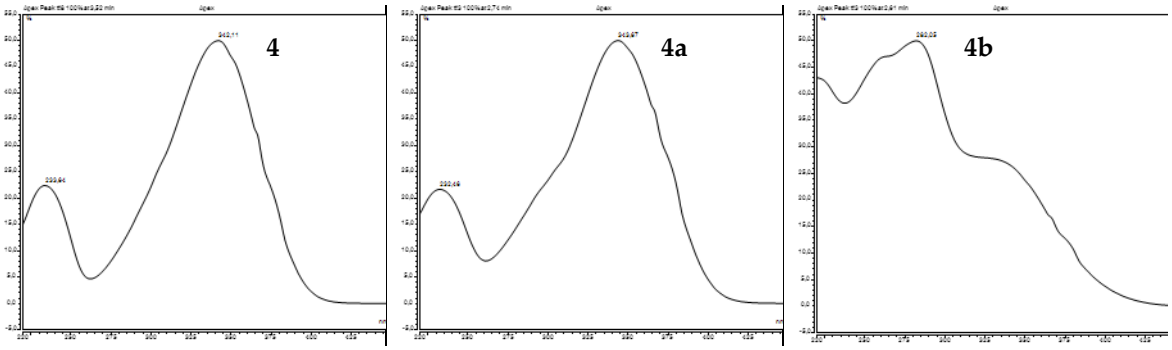

Figure S12 UV-VIS spectra of *trans*-4′-hydroxy-4-methoxychalcone (**4**) *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (**4a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (**4b**).

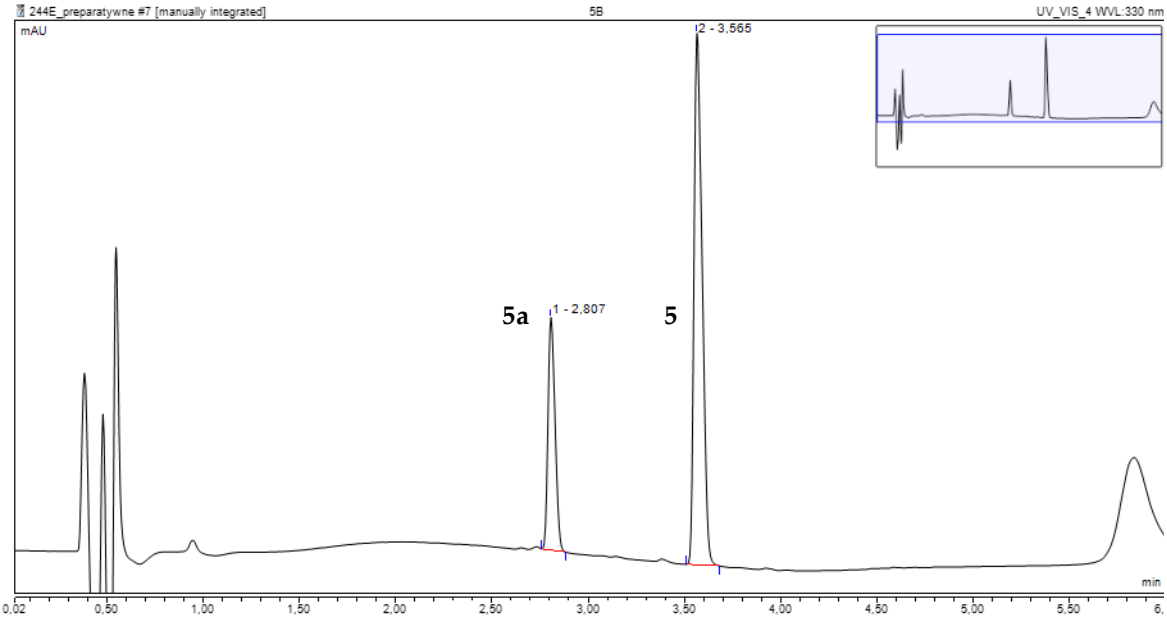

Figure S13 Chromatogram of reaction mixture of *trans*-4′-hydroxy-2,4-dimethoxychalcone (**5**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (**5a**) before product purification.

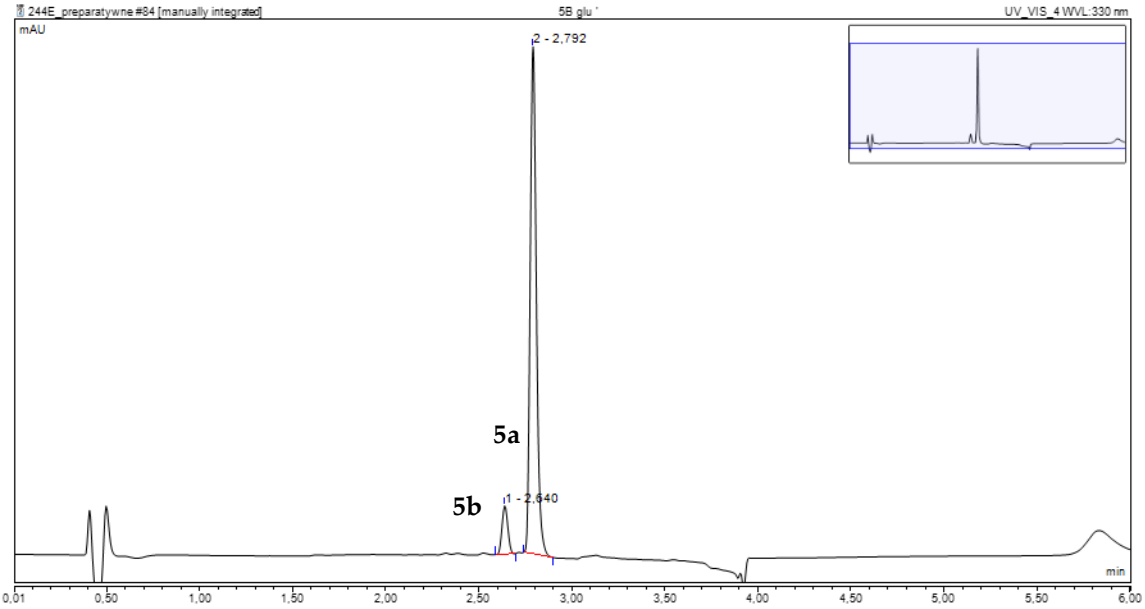

Figure S14 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (**5a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (**5b**) after NMR analysis.

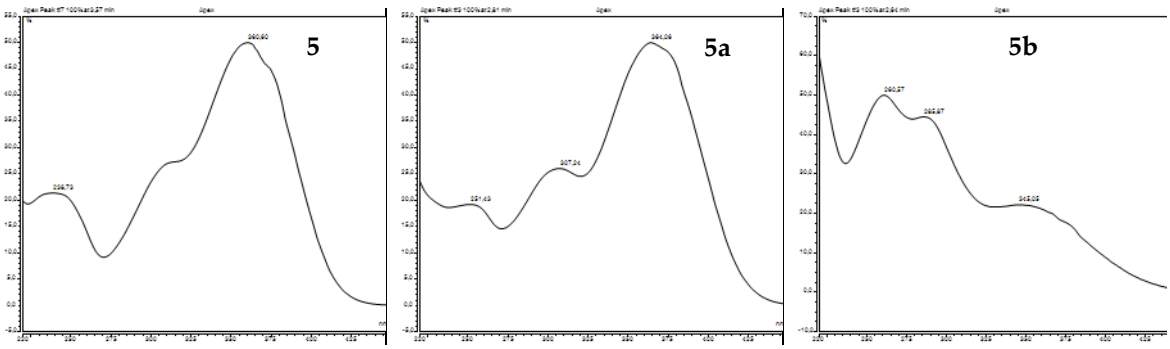

Figure S15 UV-VIS spectra of *trans*-4′-hydroxy-2,4-dimethoxychalcone (**5**) *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (**5a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (**5b**).

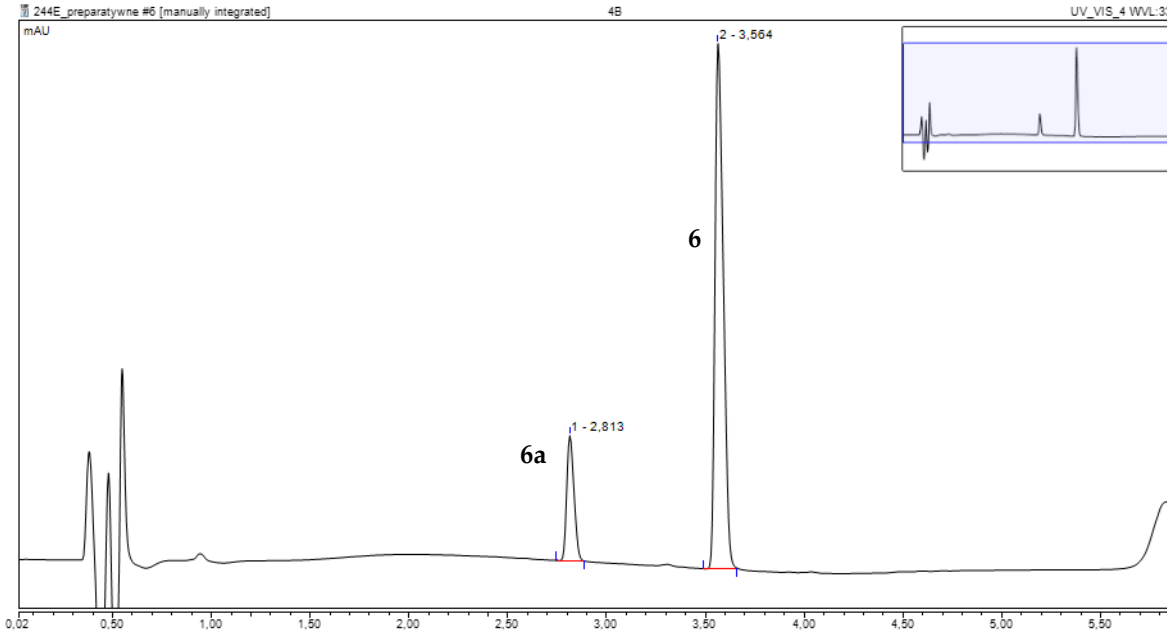

Figure S16 Chromatogram of reaction mixture of *trans*-4′-hydroxy-2,5-dimethoxychalcone (**6**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (**6a**) before product purification.

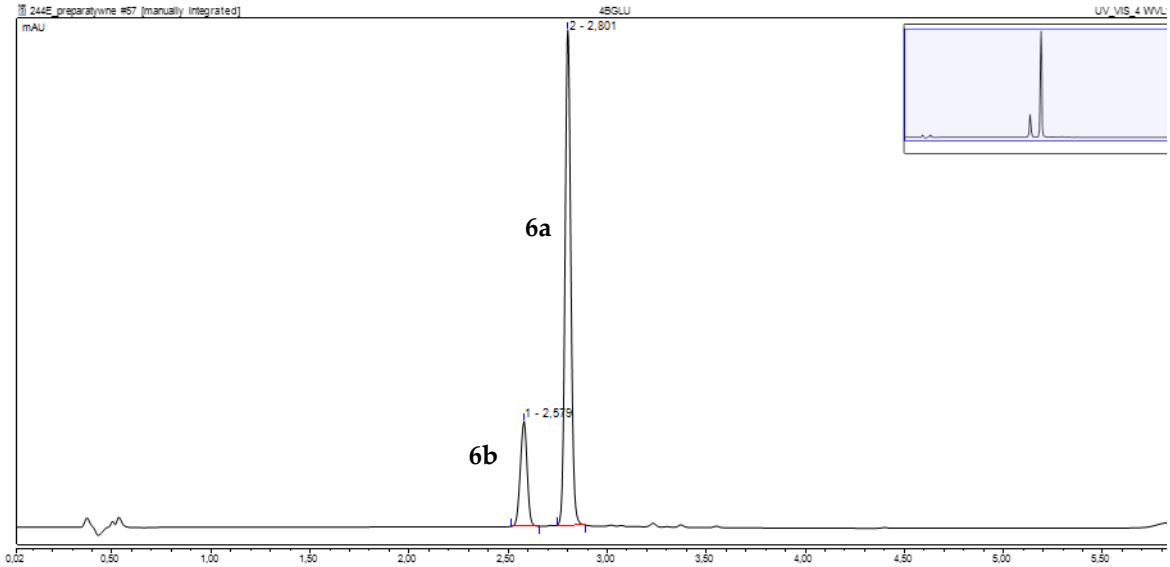

Figure S17 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (**6a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (**6b**) after NMR analysis.

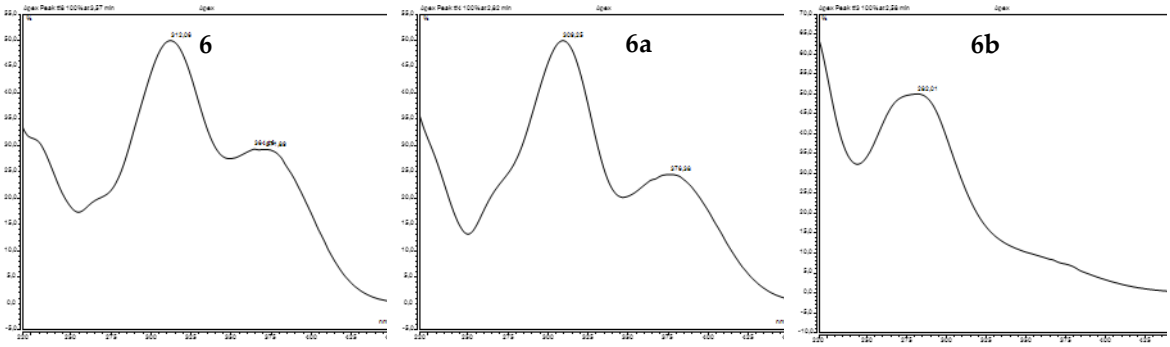

Figure S18 UV-VIS spectra of *trans*-4′-hydroxy-2,5-dimethoxychalcone (**6**) *trans*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (**6a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (**6b**).

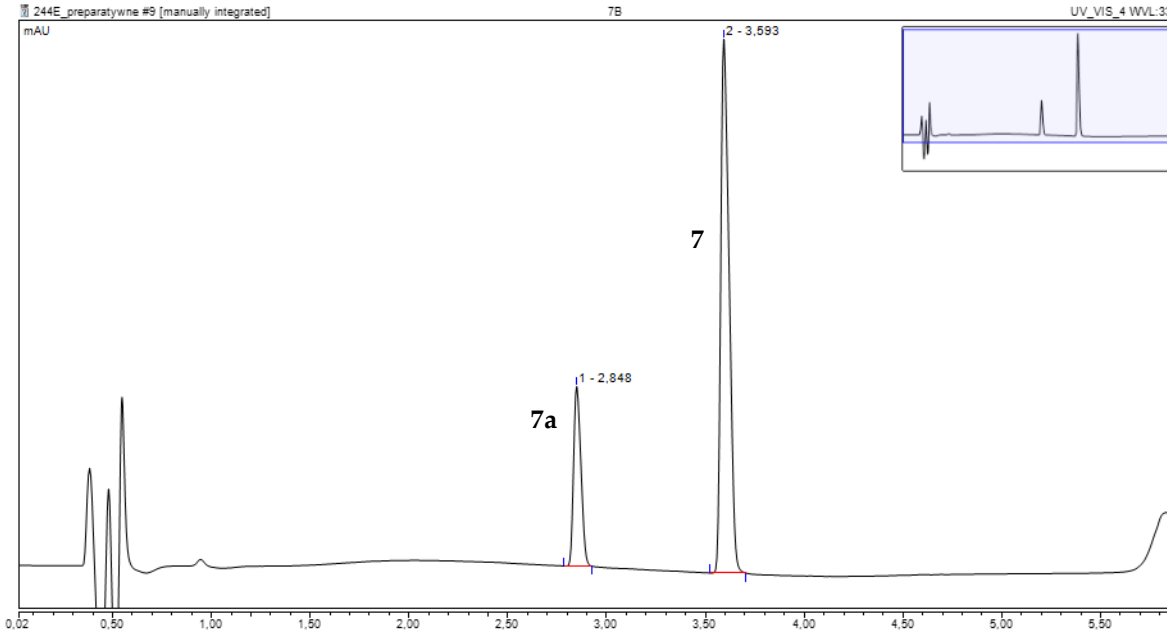

Figure S19 Chromatogram of reaction mixture of *trans*-4′-hydroxy-3,5-dimethoxychalcone (**7**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (**7a**) before product purification.

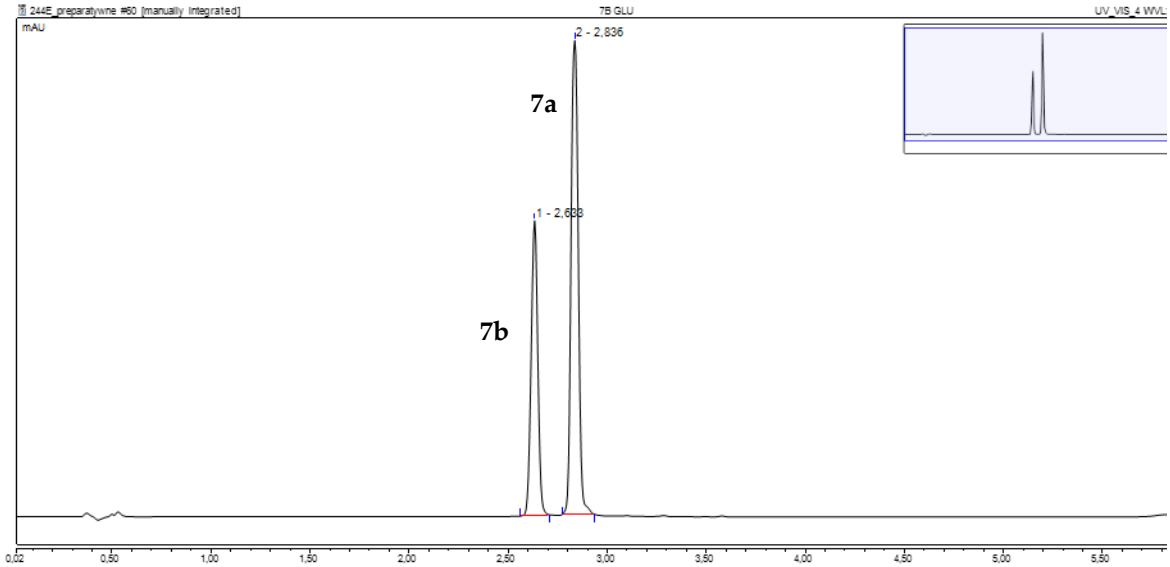

Figure S20 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (**7a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (**7b**) after NMR analysis.

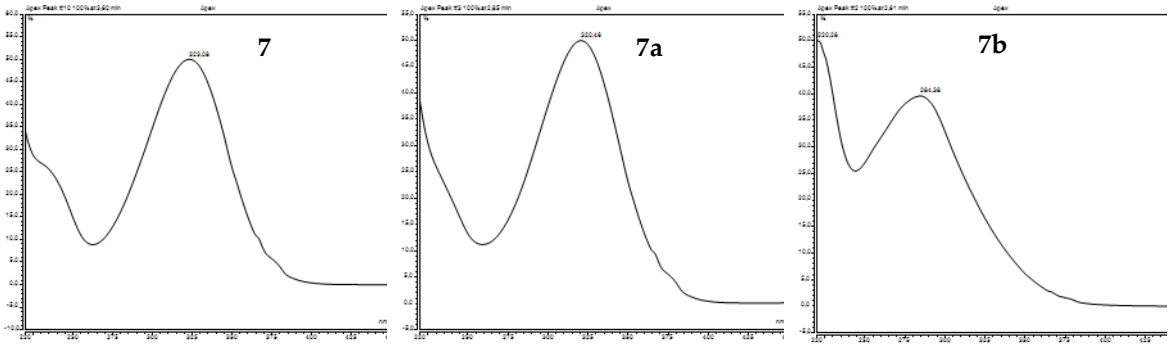

Figure S21 UV-VIS spectra of *trans*-4′-hydroxy-3,5-dimethoxychalcone (**7**) *trans*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (**7a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (**7b**).

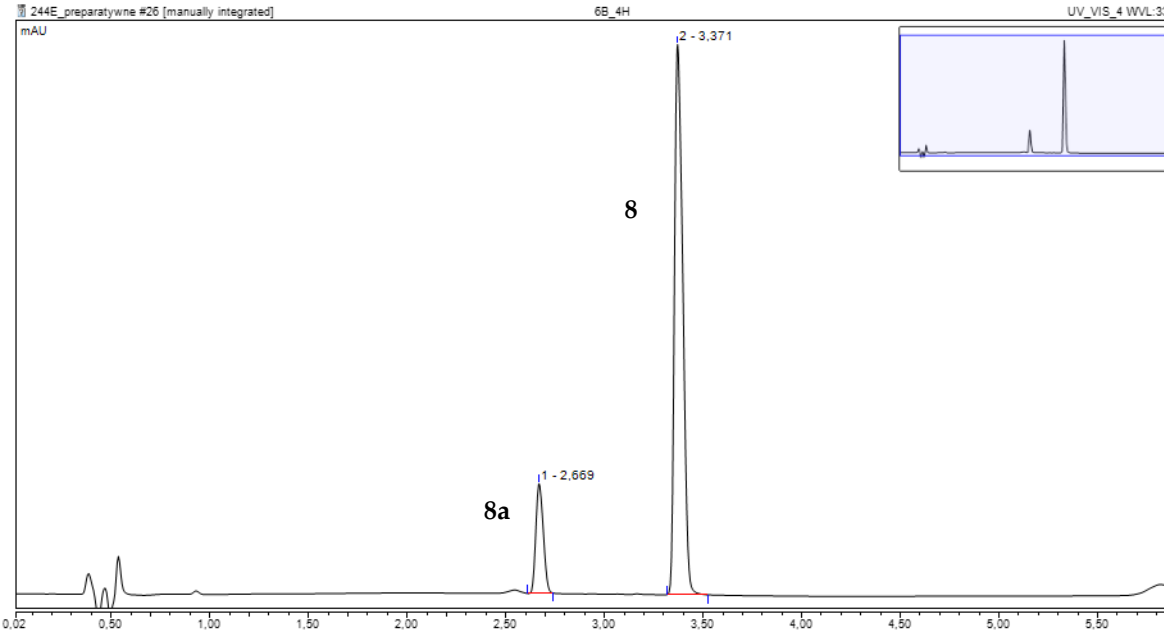

Figure S22 Chromatogram of reaction mixture of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (**8**) and *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (**8a**) before product purification.

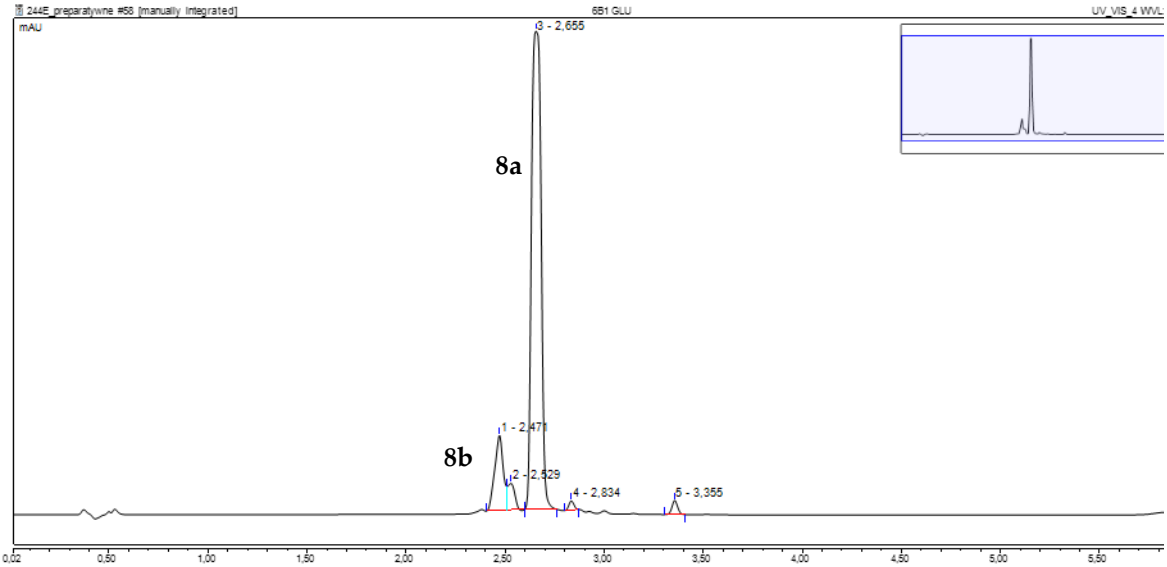

Figure S23 Chromatogram of mixture of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (**8a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (**8b**) after NMR analysis.

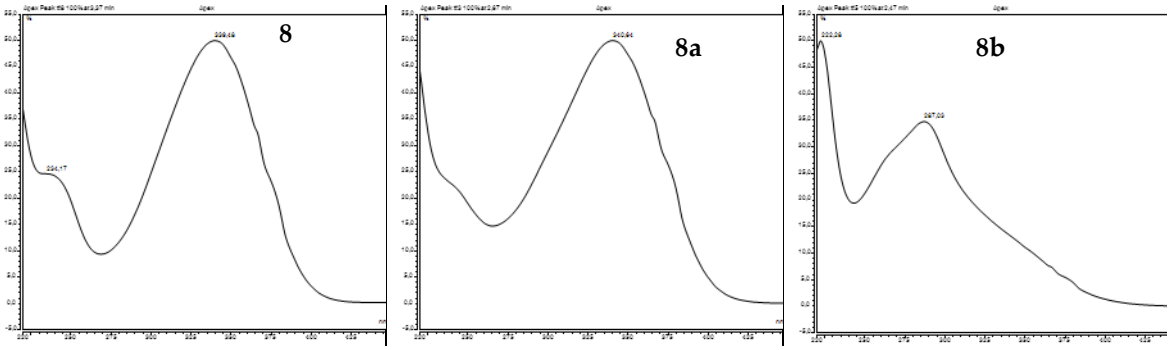

Figure S24 UV-VIS spectra of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (**8**) *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (**8a**) and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (**8b**).

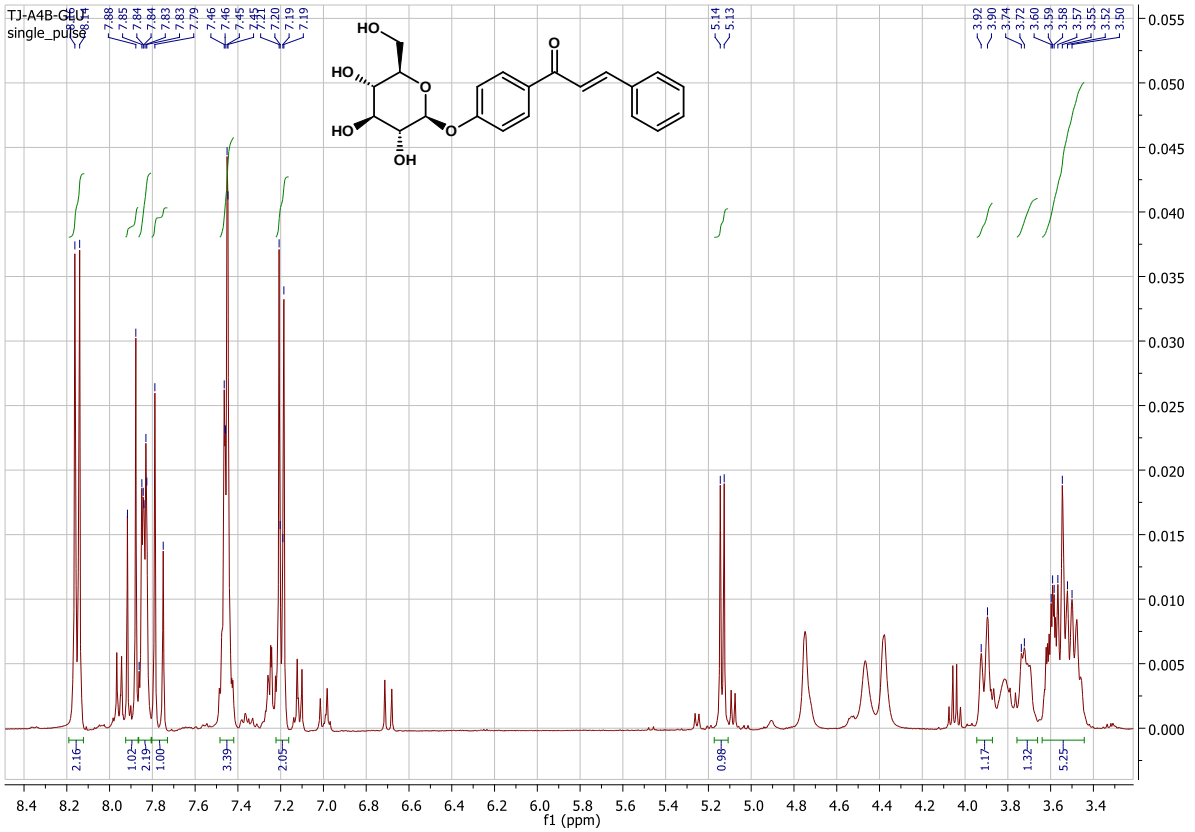

Figure S25 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

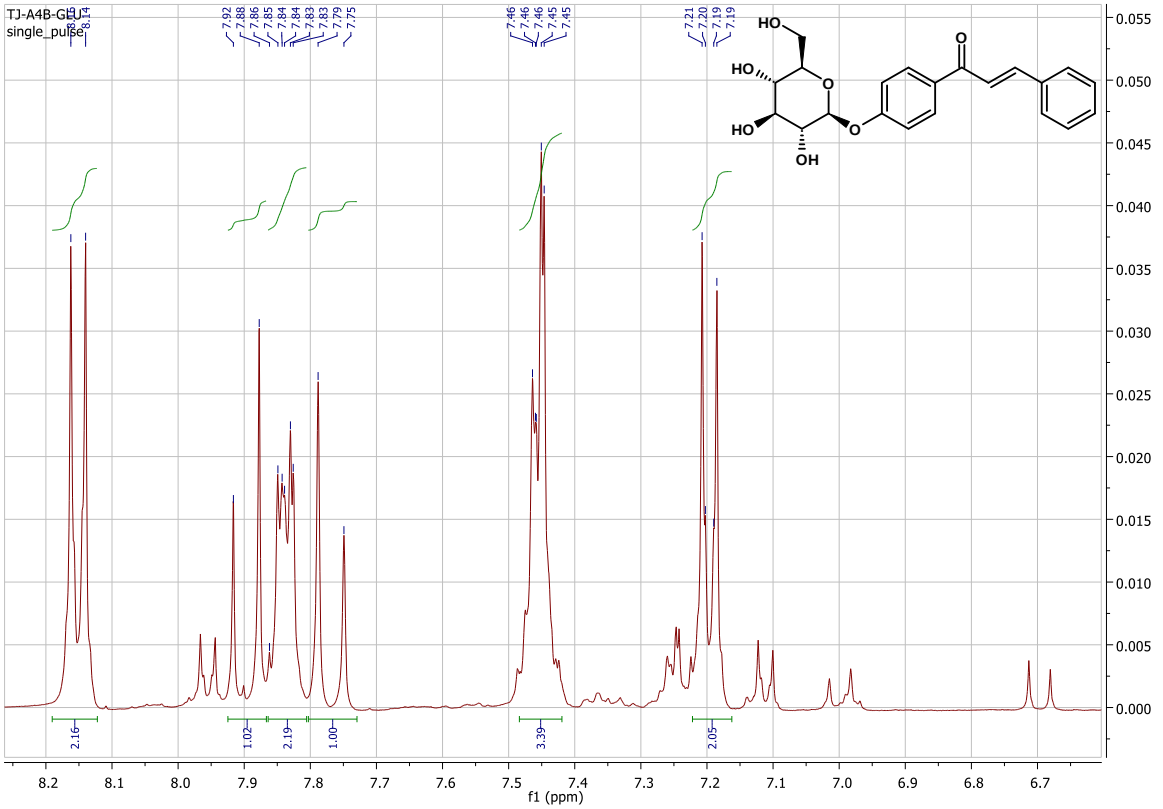

Figure S26 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

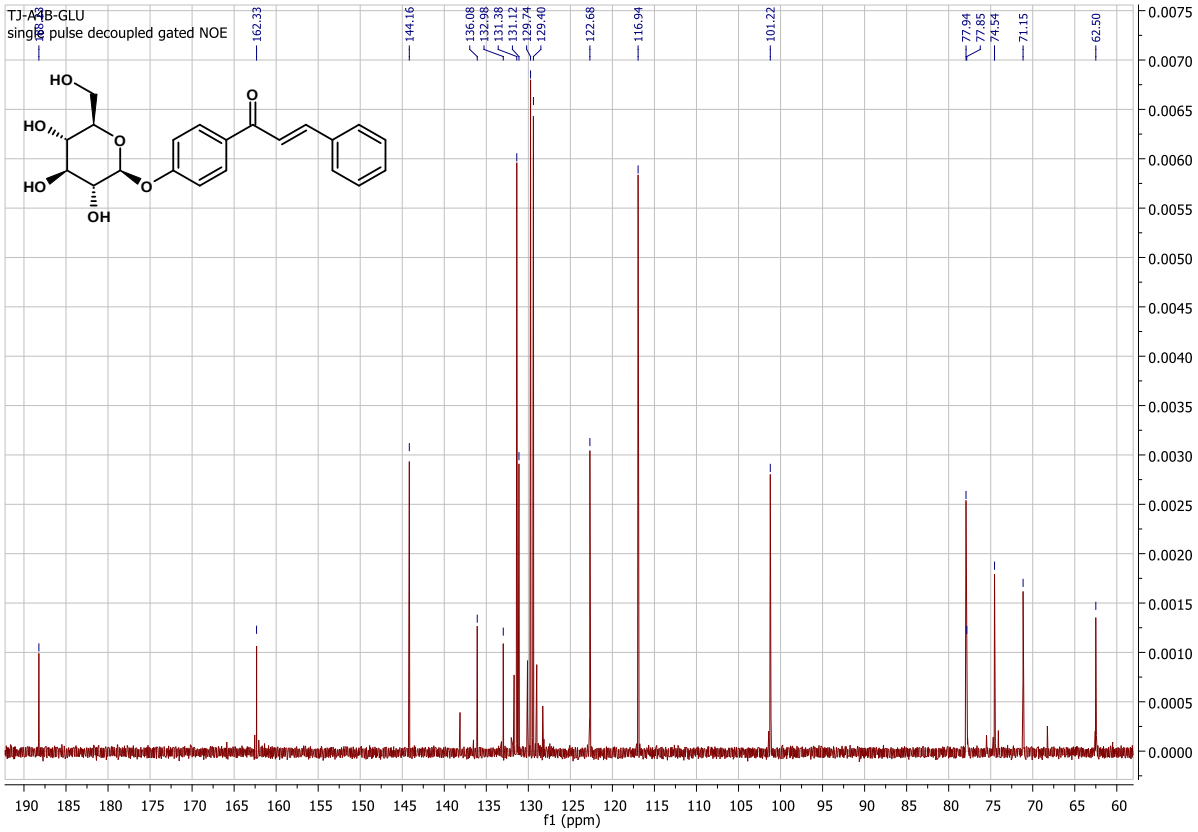

Figure S27 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (151MHz; Acetone-d$_6$)

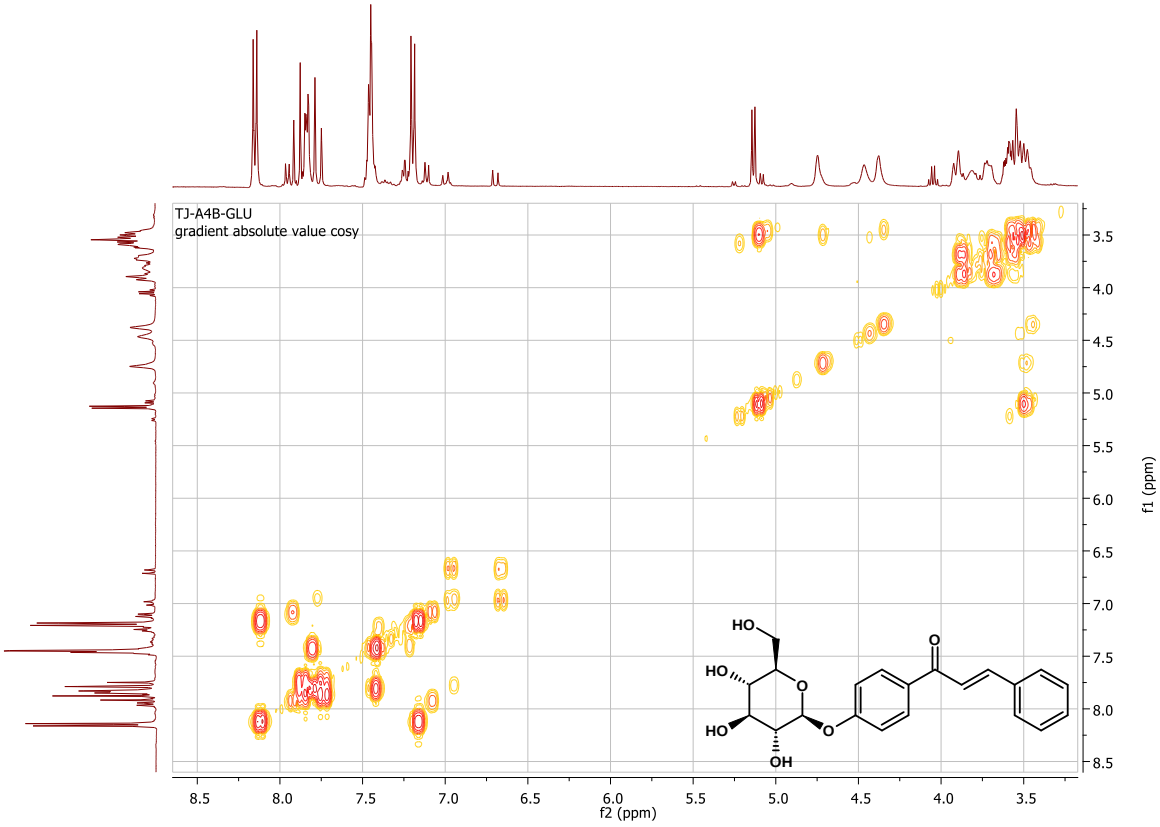

Figure S28 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

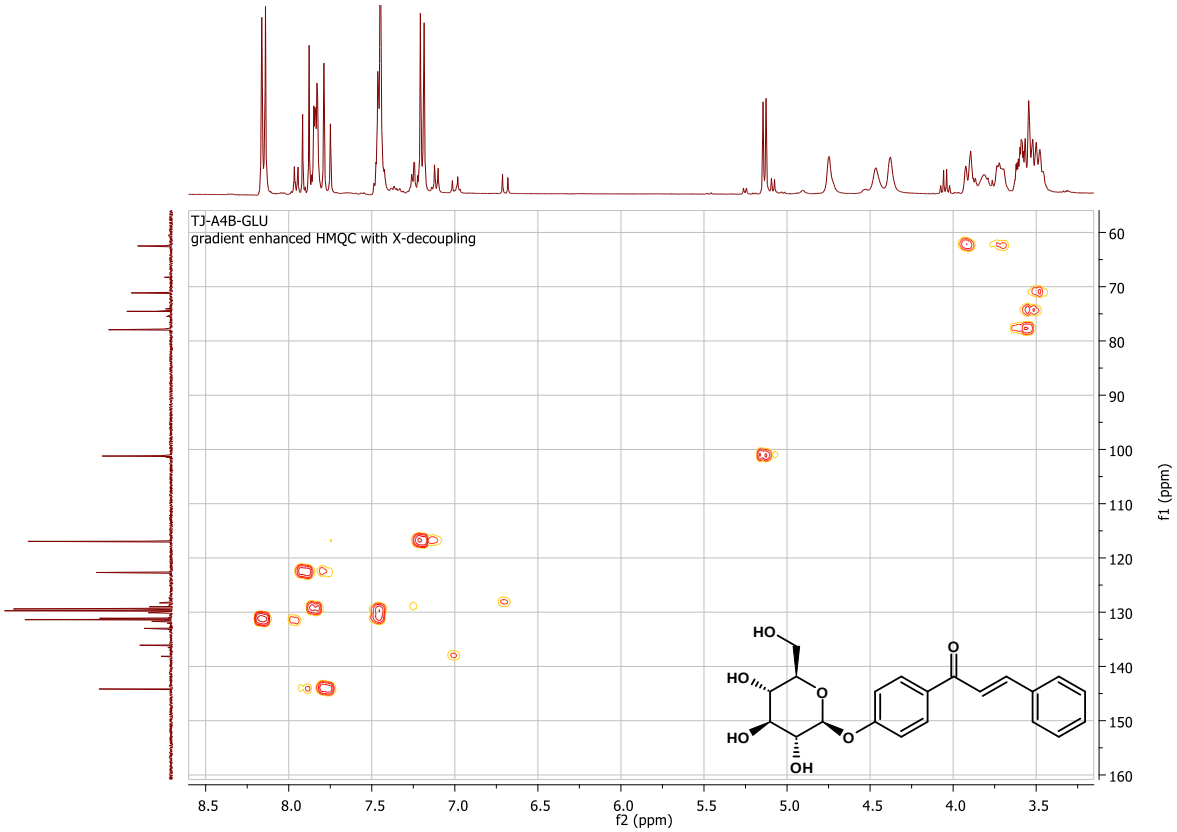

Figure S29 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d_6)

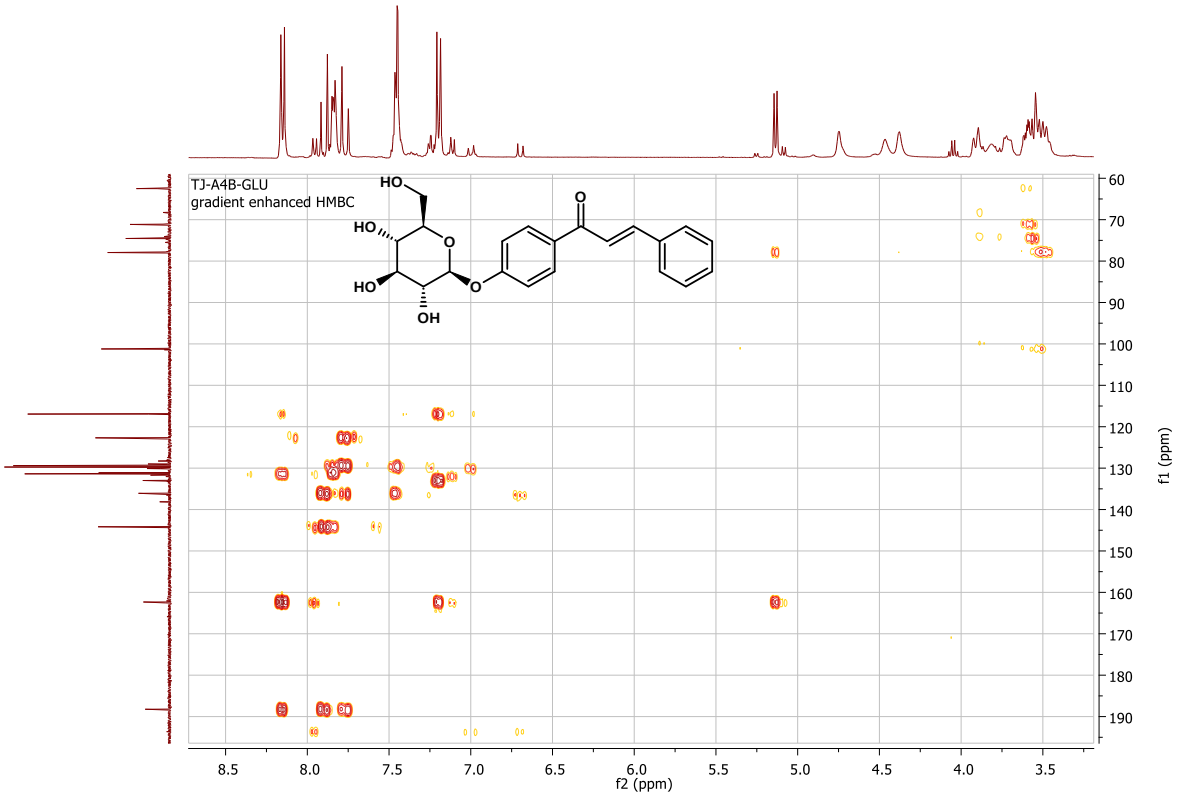

Figure S30 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d_6)

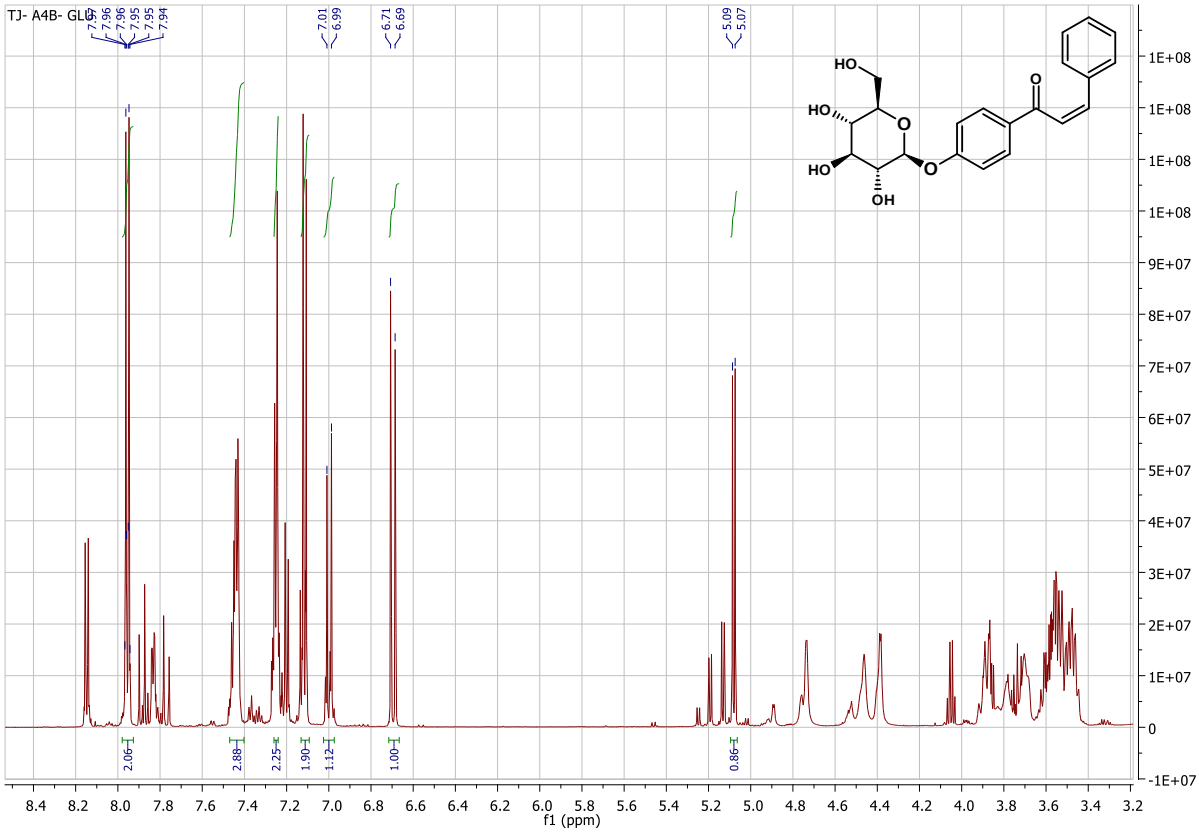

Figure S31 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

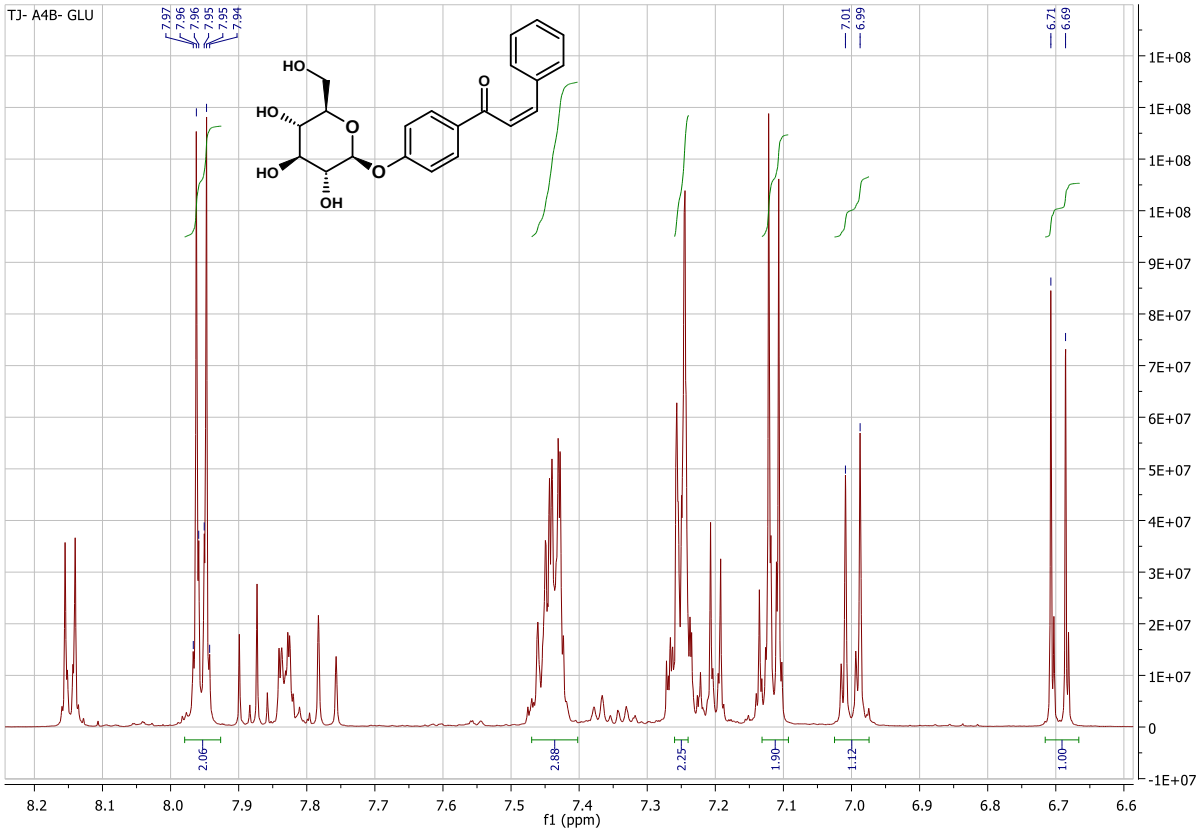

Figure S32 Flavonoid part of ^{1}H NMR spectra of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

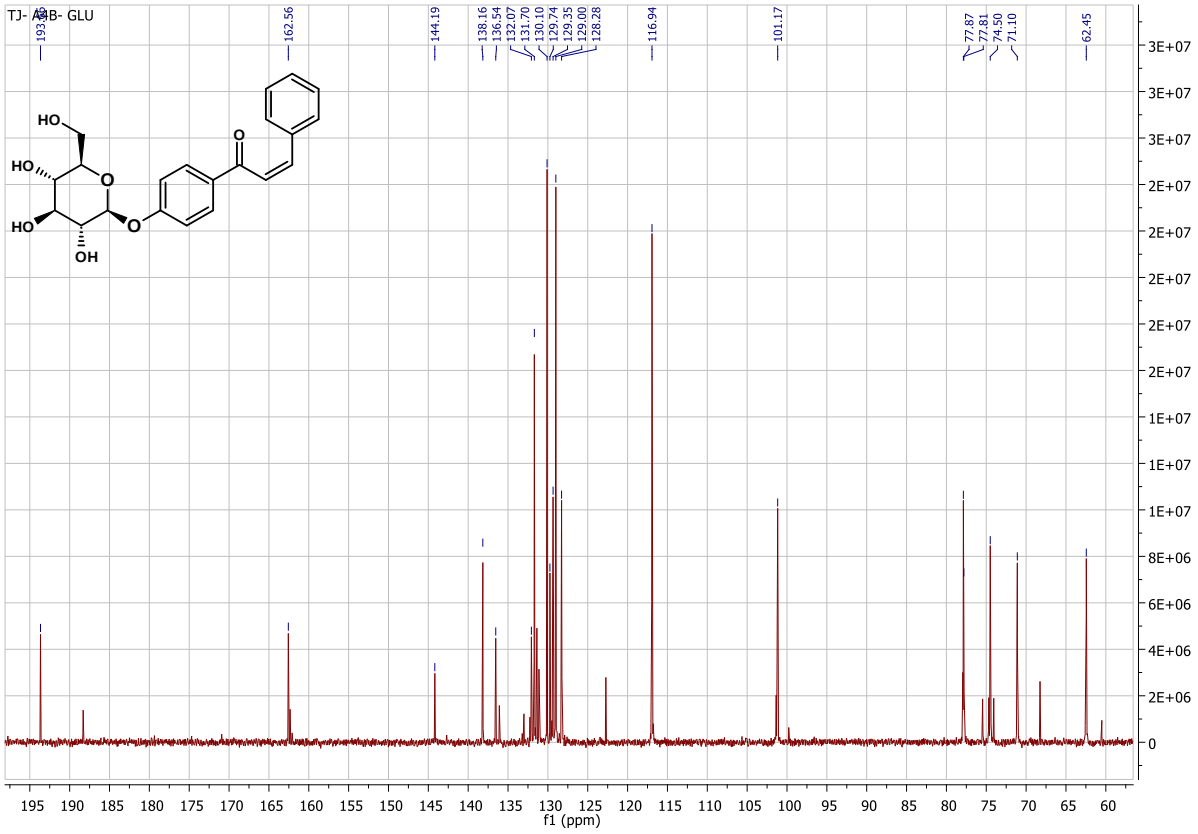

Figure S33 ^{13}C NMR spectra of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (151MHz; Acetone-d$_6$)

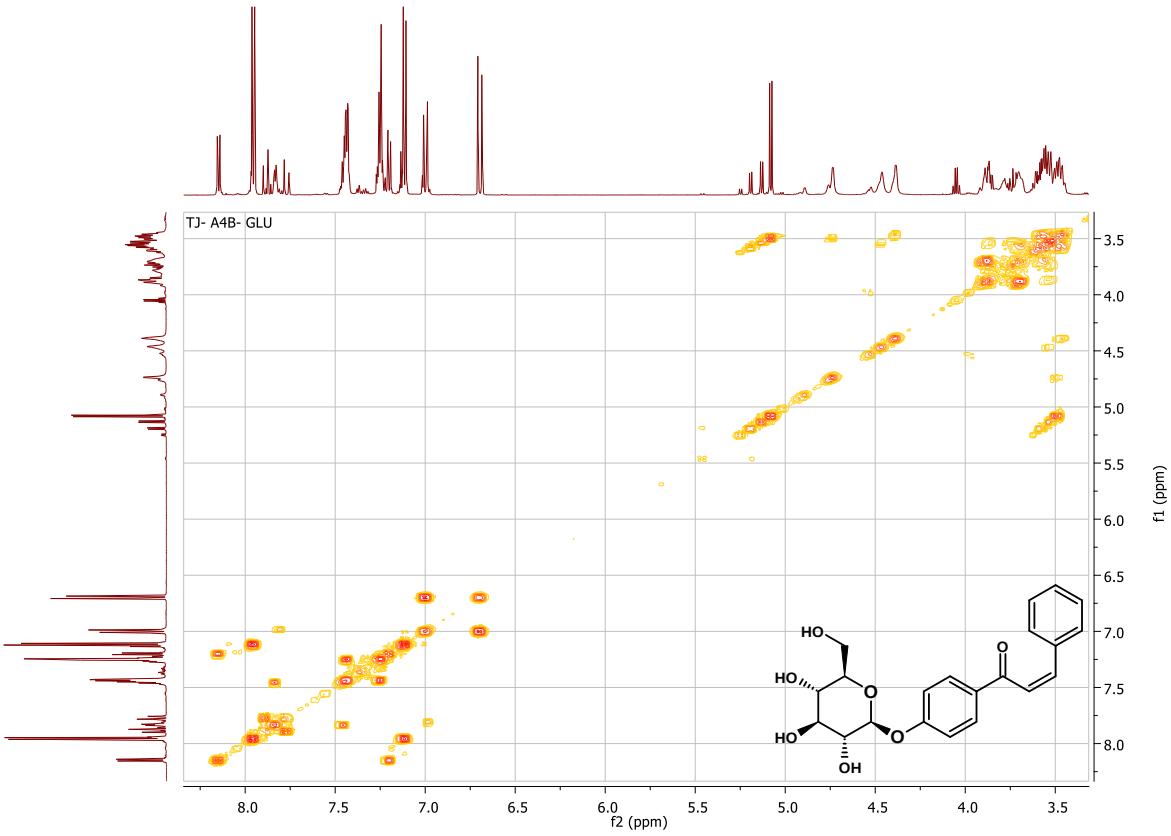

Figure S34 COSY NMR spectra of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

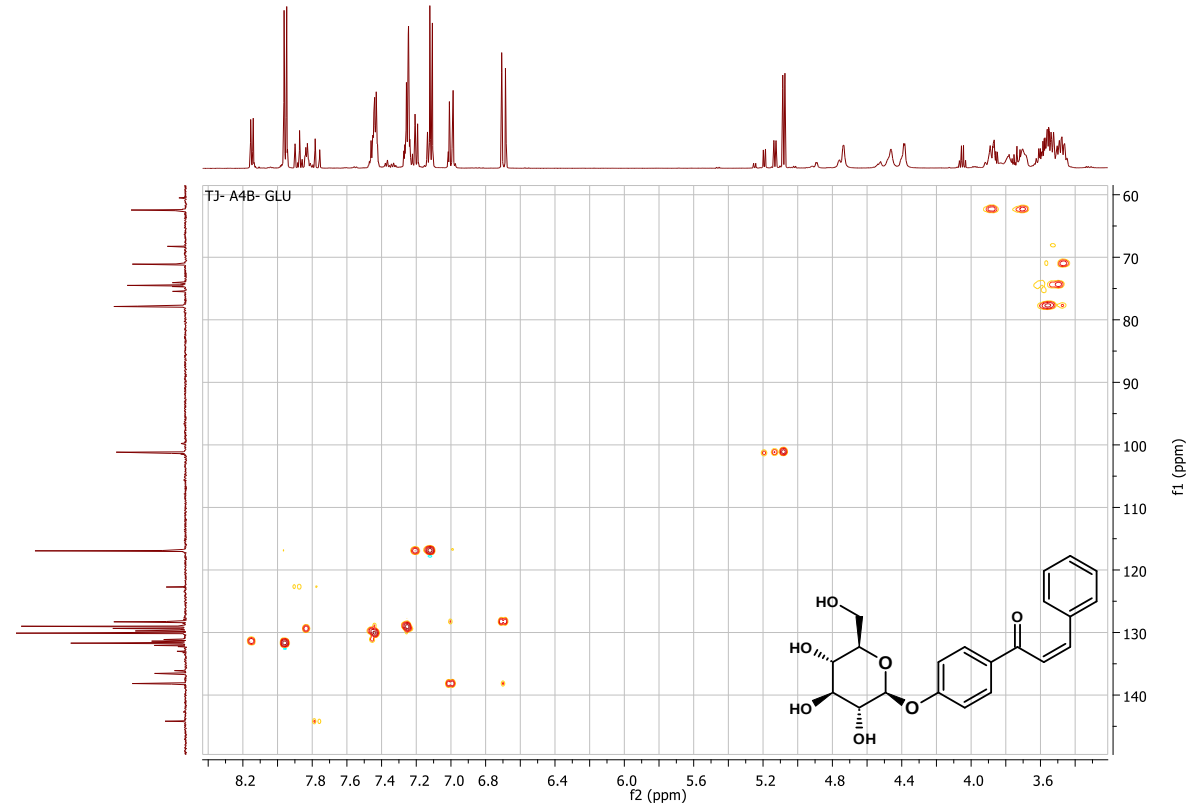

Figure S35 HMQC NMR spectra of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d_6)

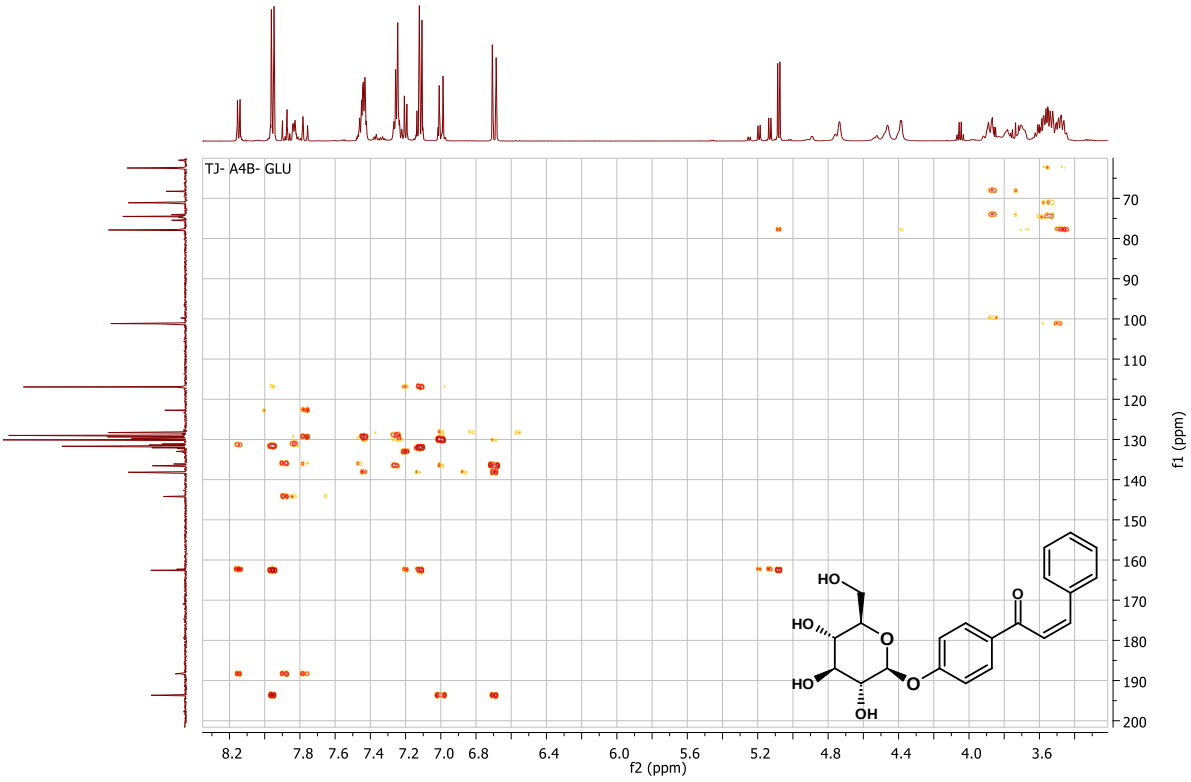

Figure S36 HMBC NMR spectra of *cis*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d_6)

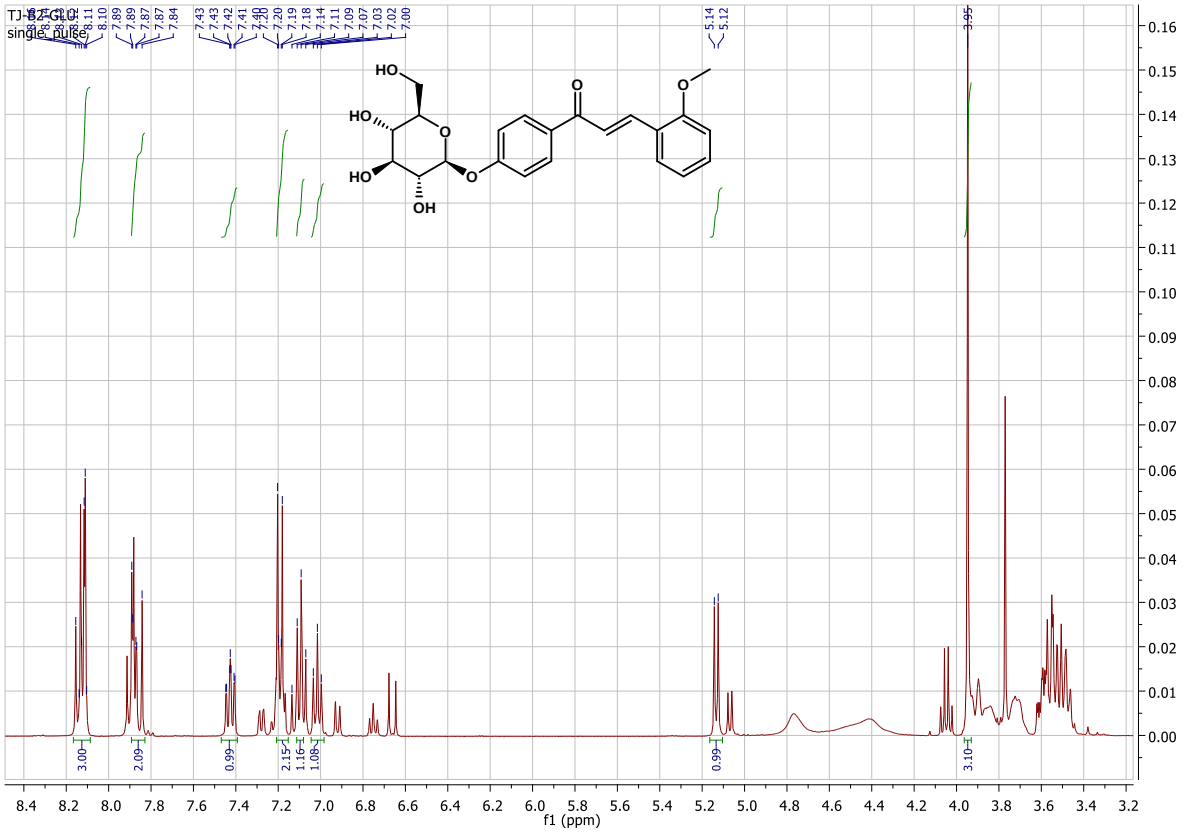

Figure S37 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

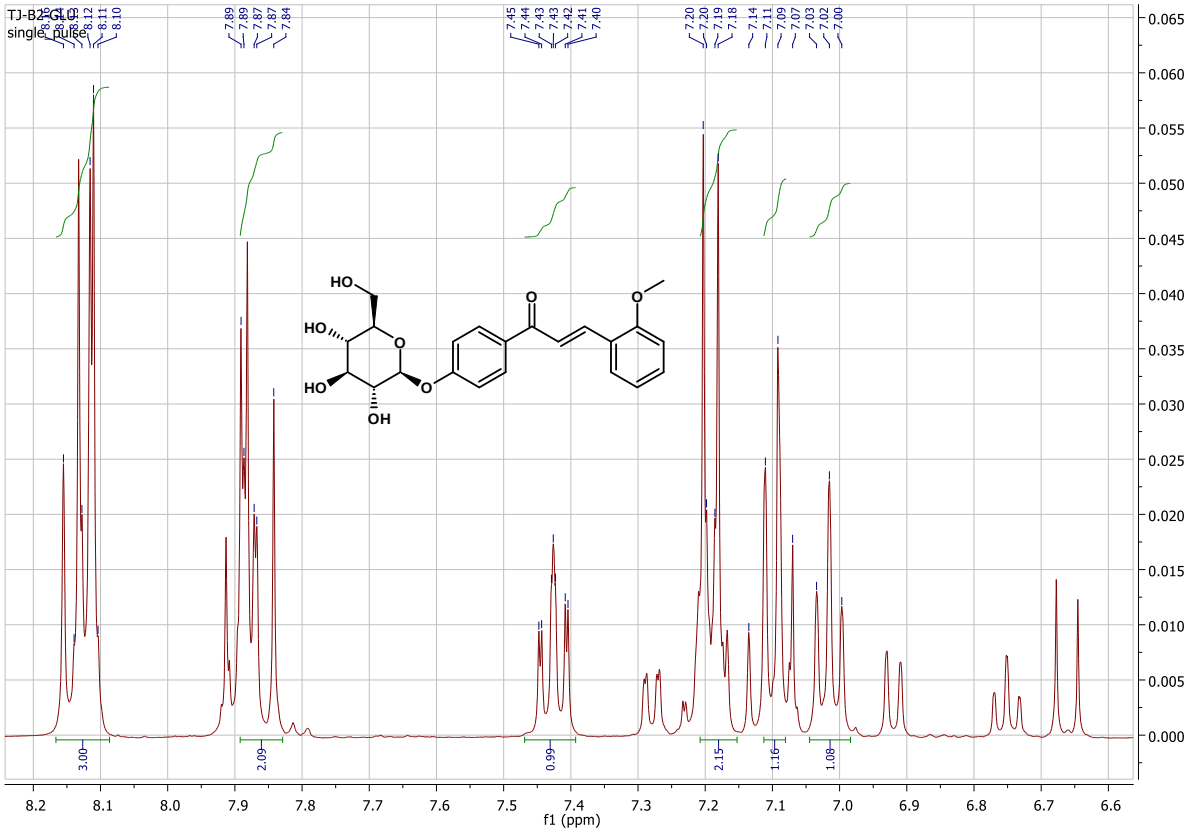

Figure S38 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

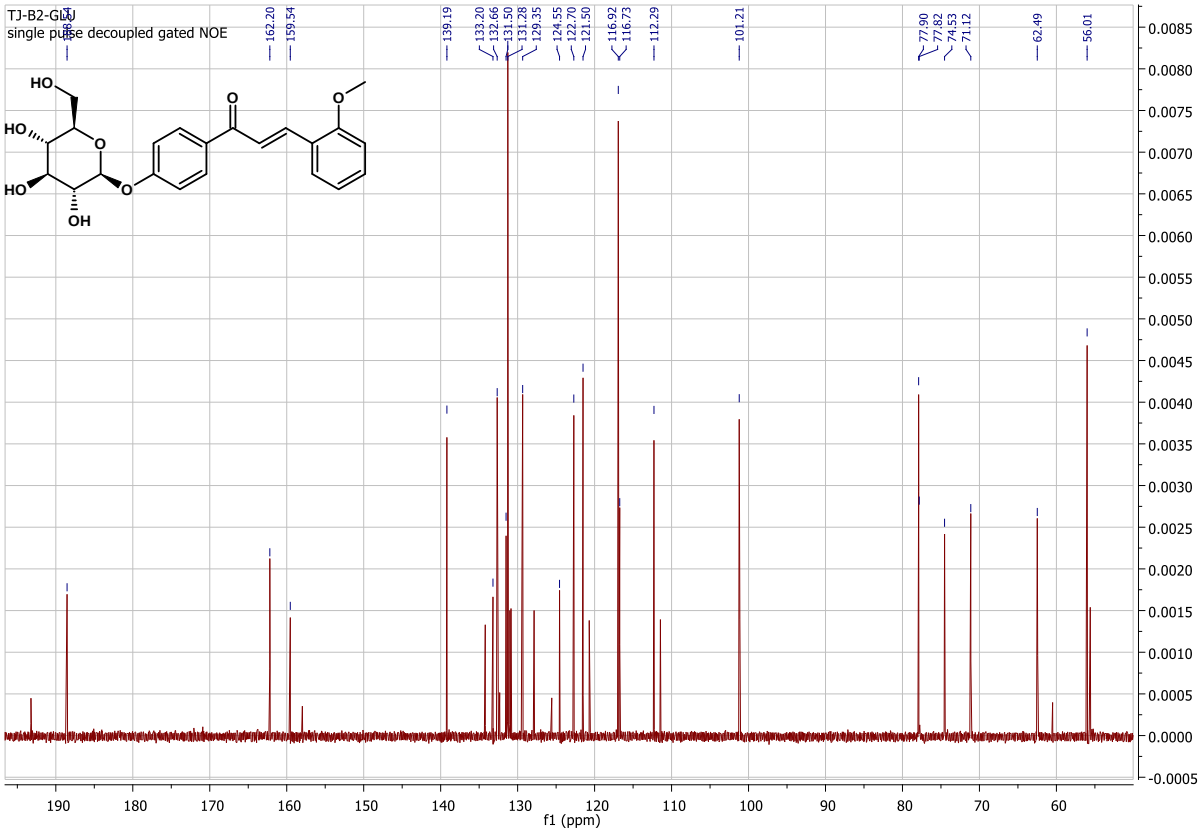

Figure S39 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (151MHz; Acetone-d$_6$)

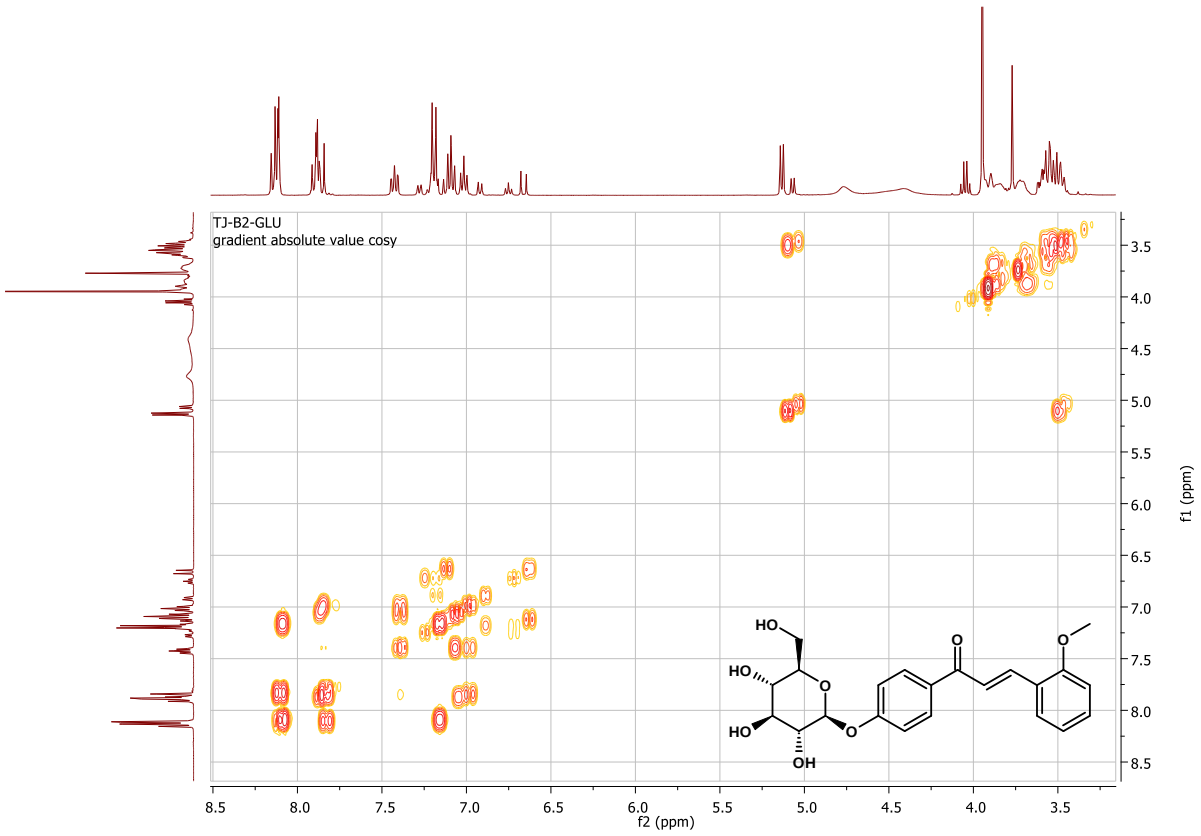

Figure S40 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-chalcone (600MHz; Acetone-d$_6$)

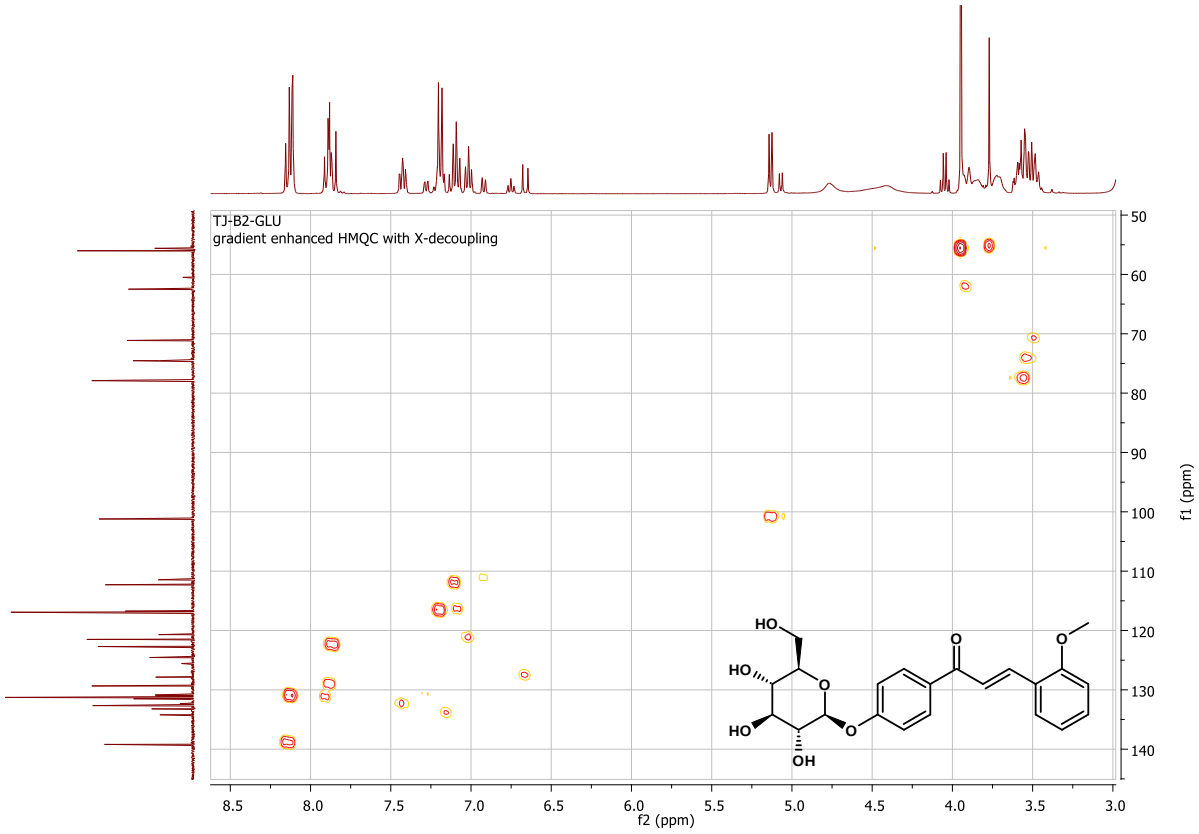

Figure S41 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

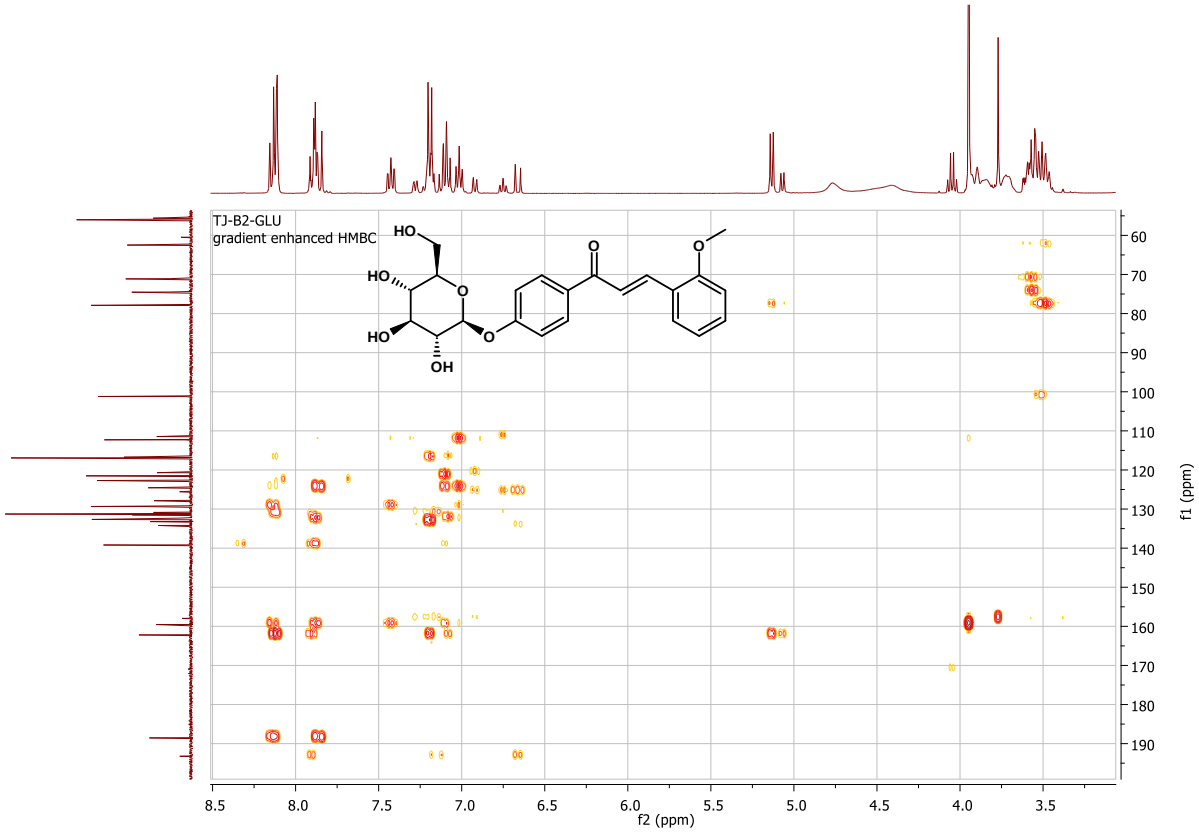

Figure S42 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

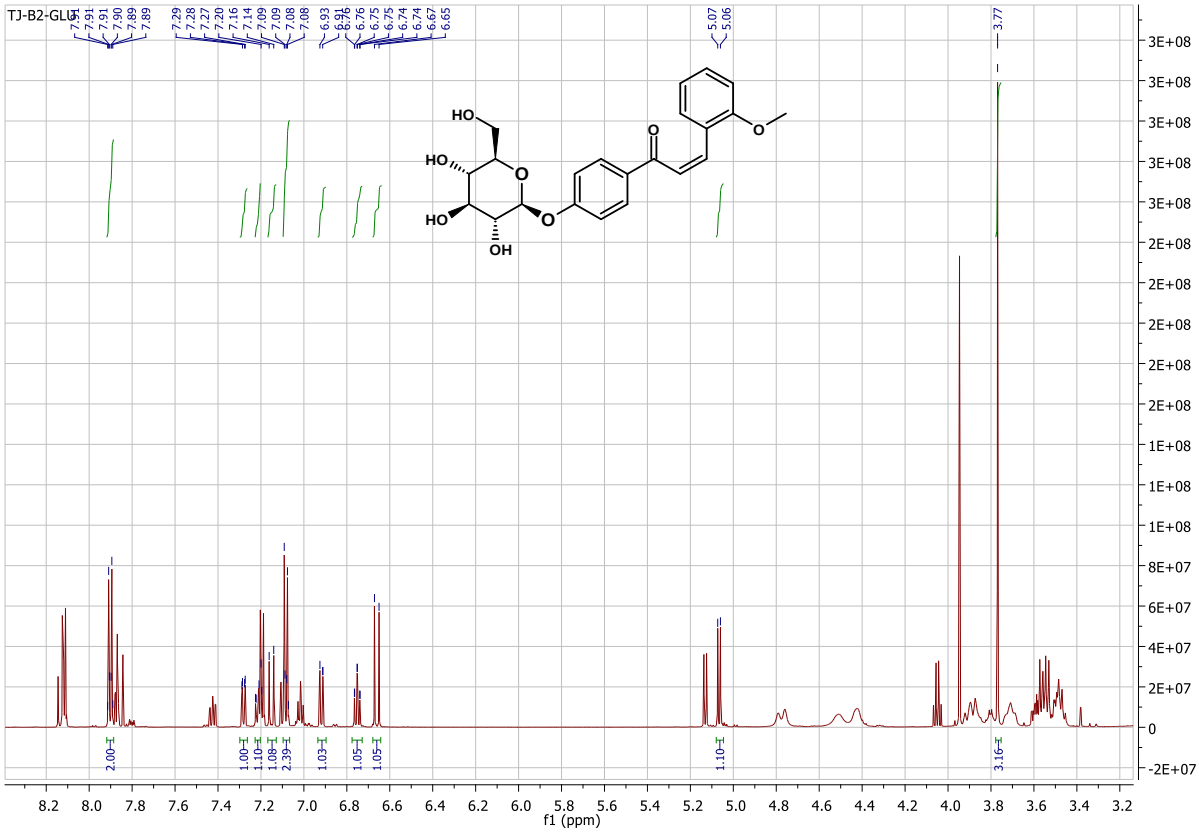

Figure S43 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d$_6$)

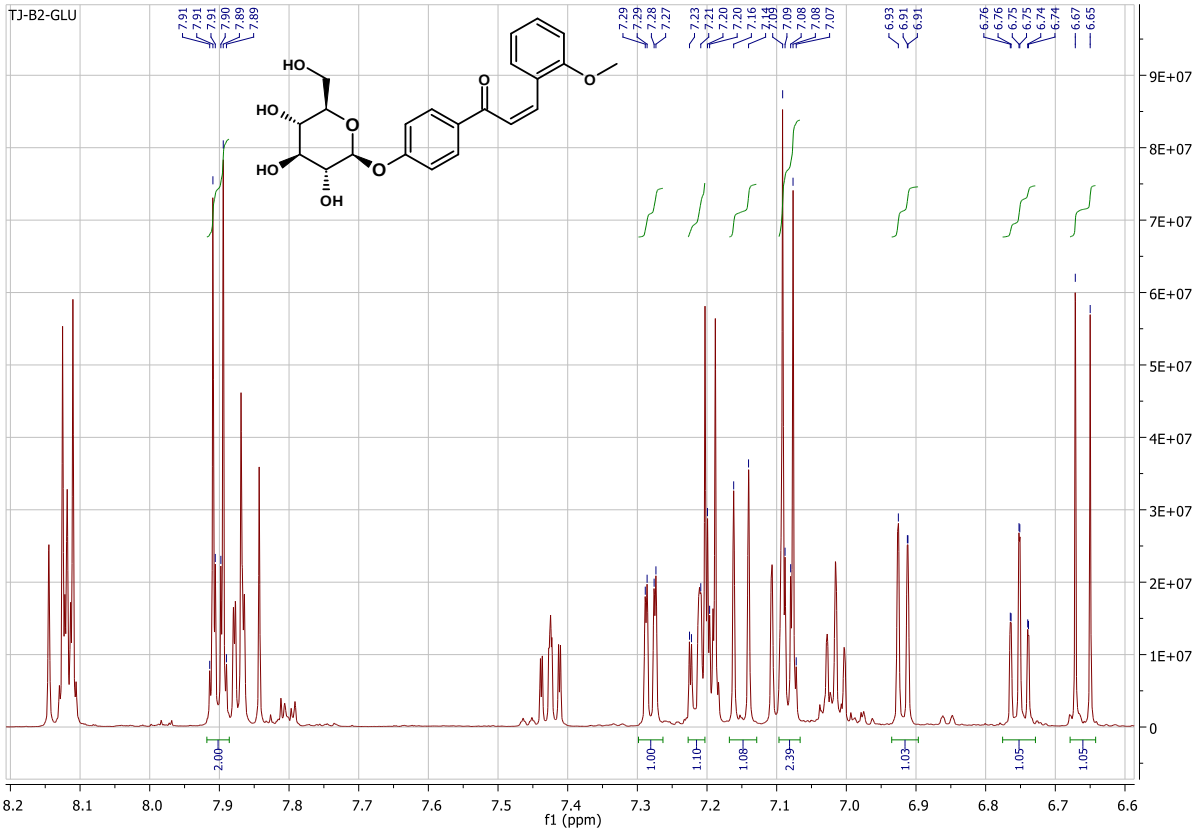

Figure S44 Flavonoid part of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d$_6$)

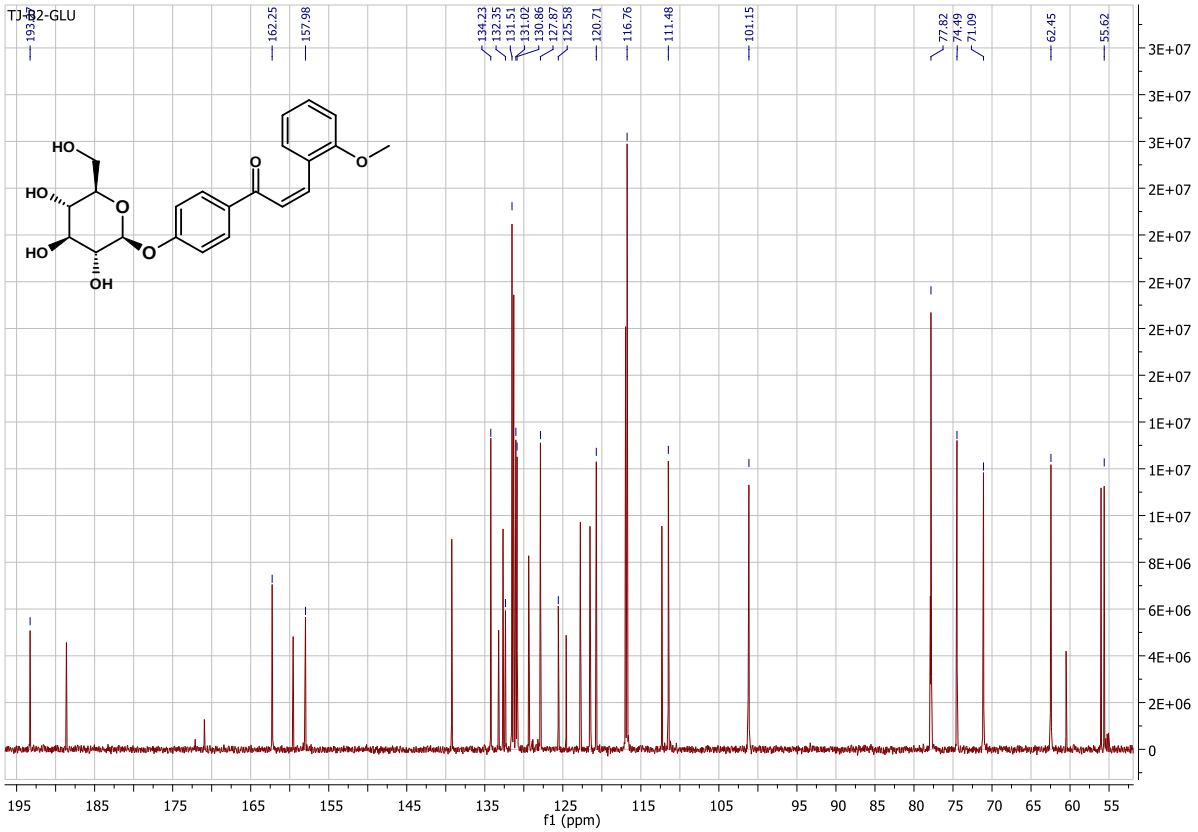

Figure S45 ^{13}C NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (151MHz; Acetone-d$_6$)

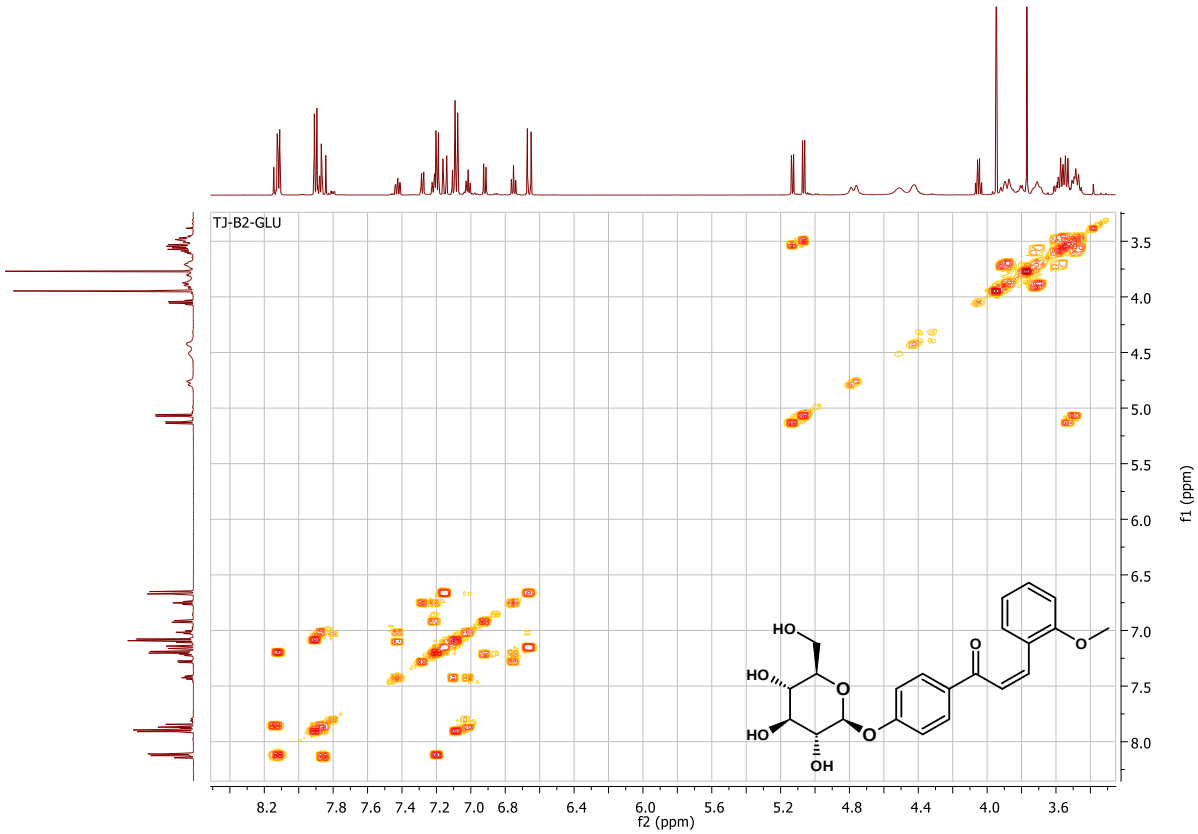

Figure S46 COSY NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d$_6$)

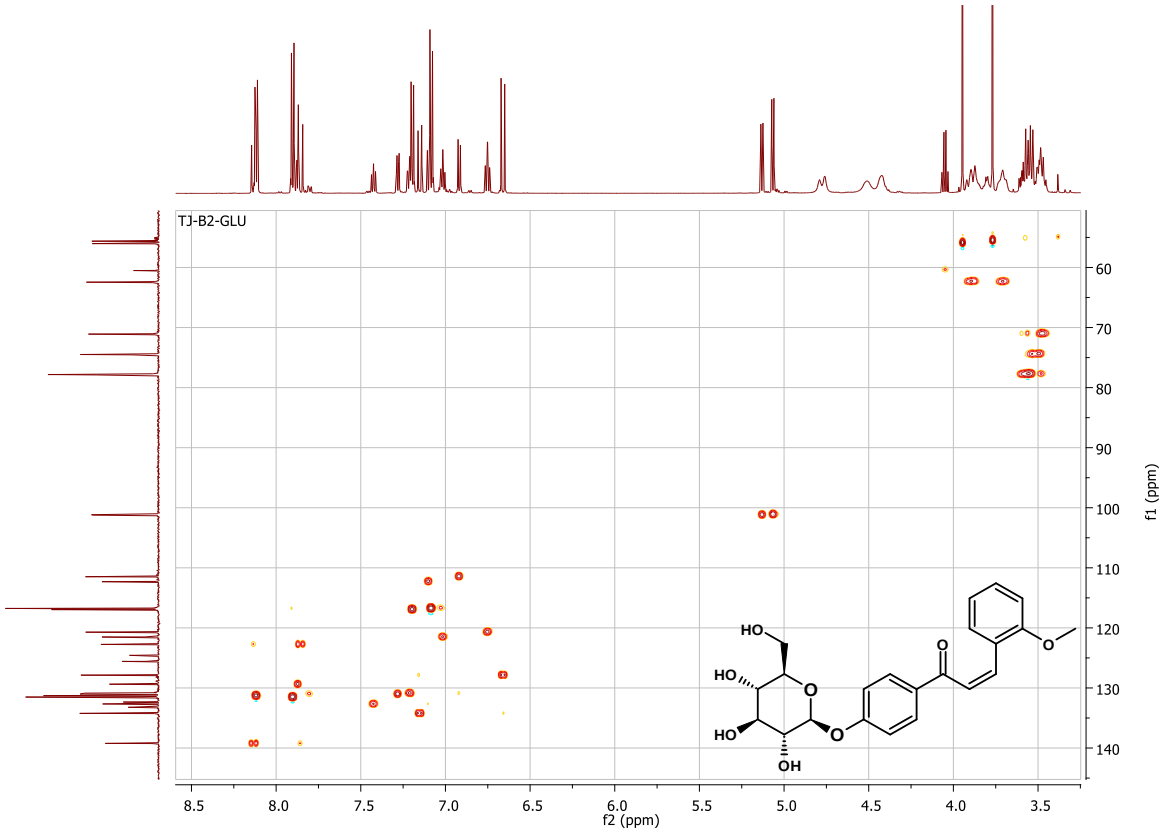

Figure S47 HMQC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

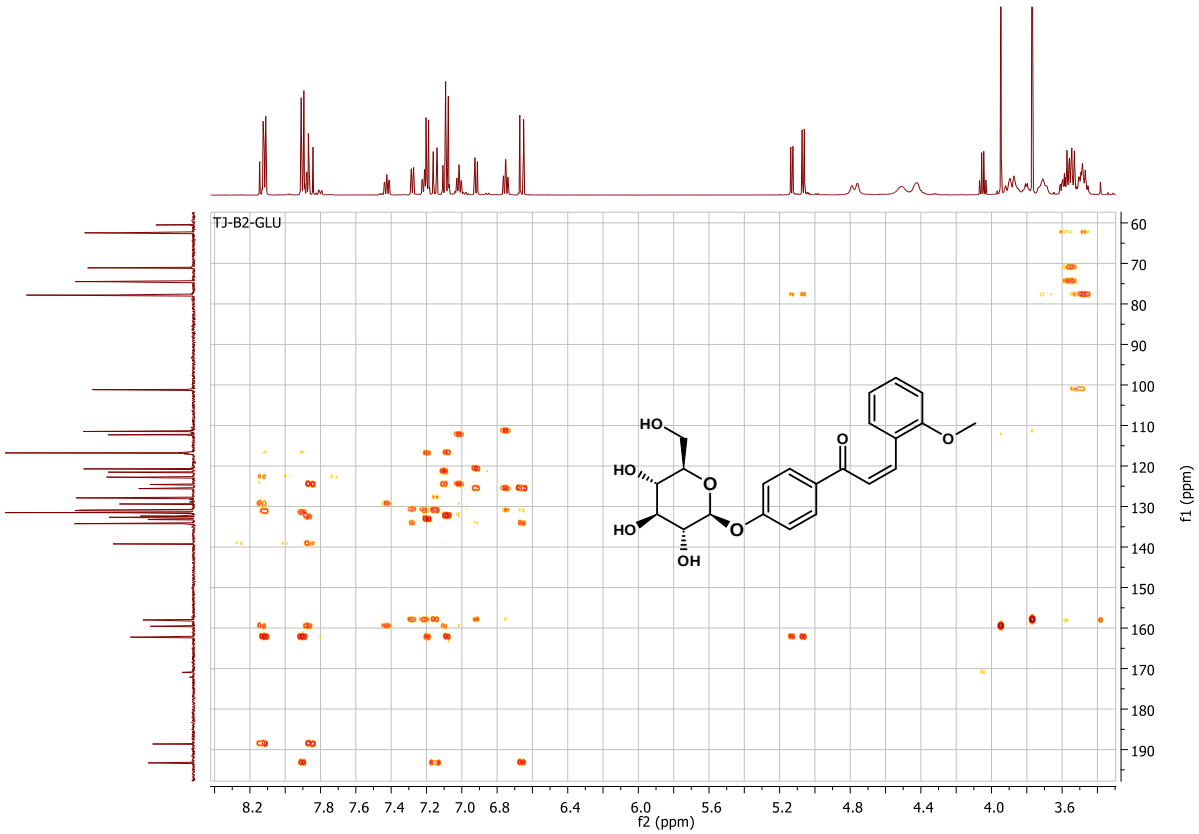

Figure S48 HMBC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2-methoxychalcone (600MHz; Acetone-d_6)

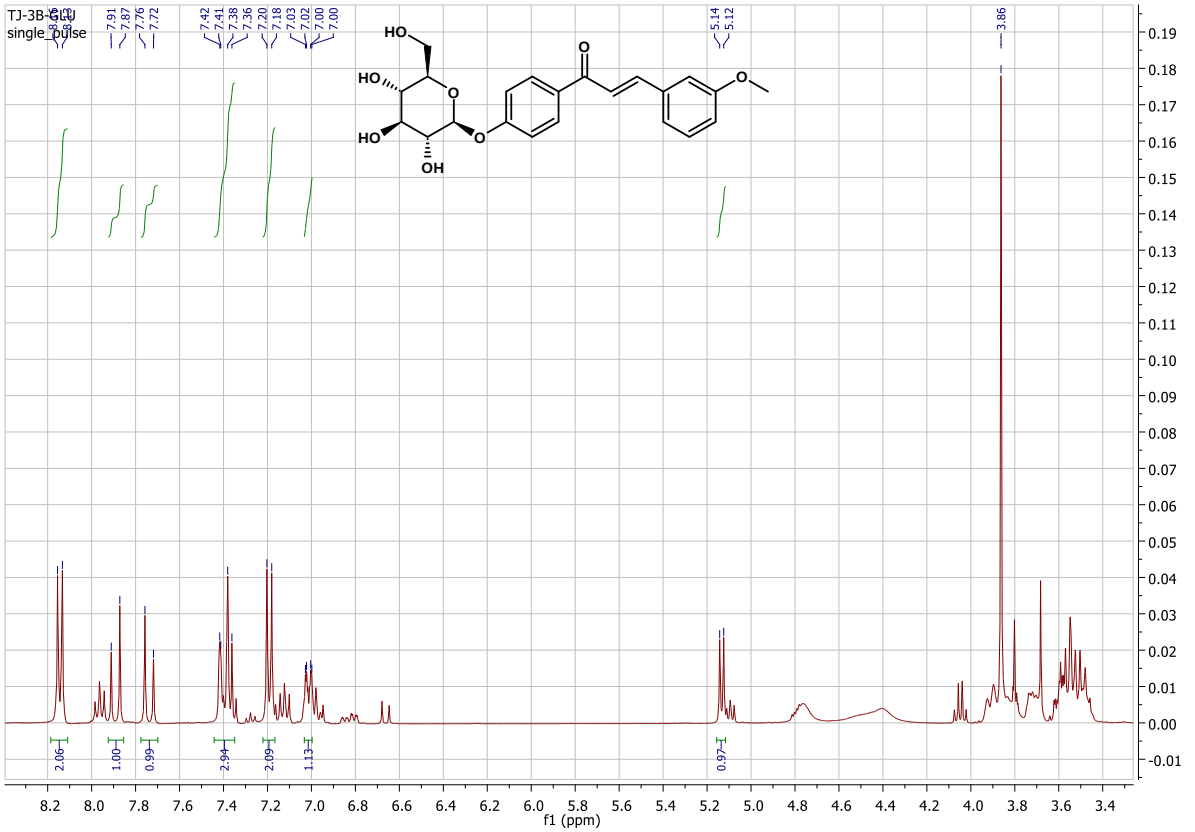

Figure S49 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

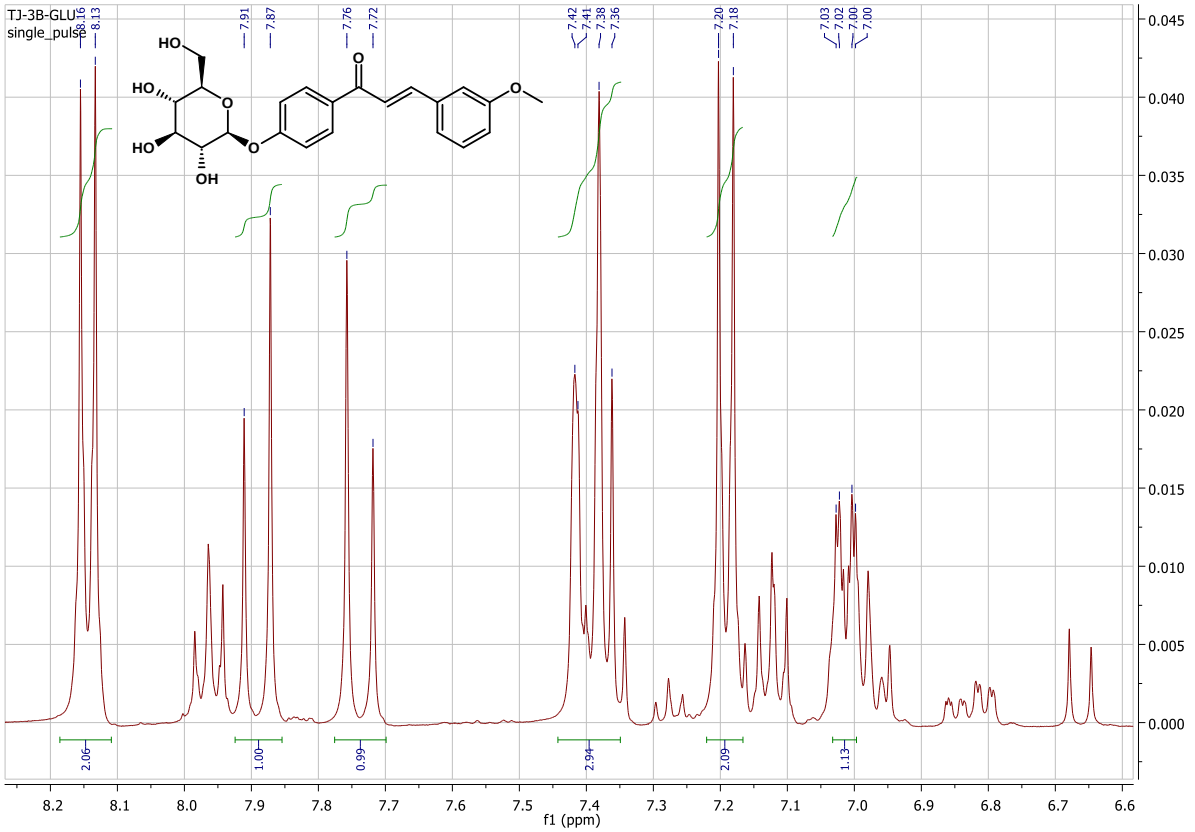

Figure S50 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

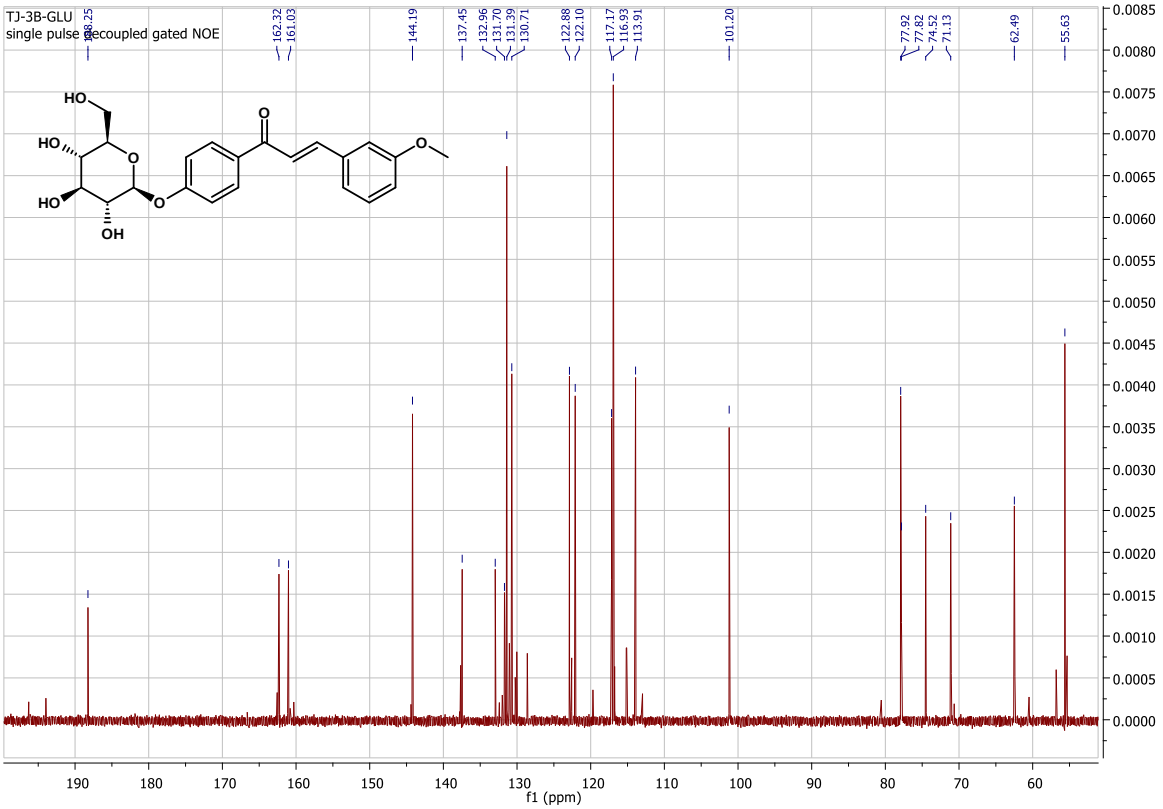

Figure S51 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (151MHz; Acetone-d$_6$)

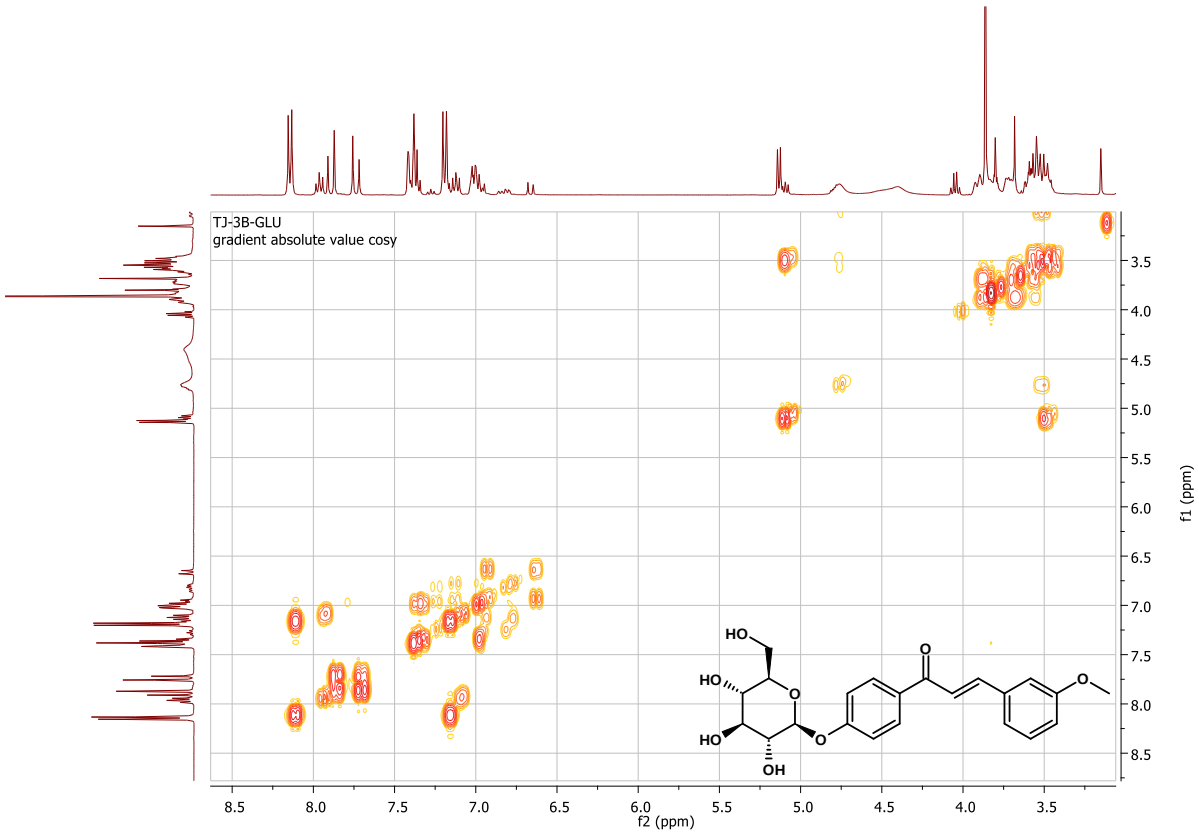

Figure S52 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d$_6$)

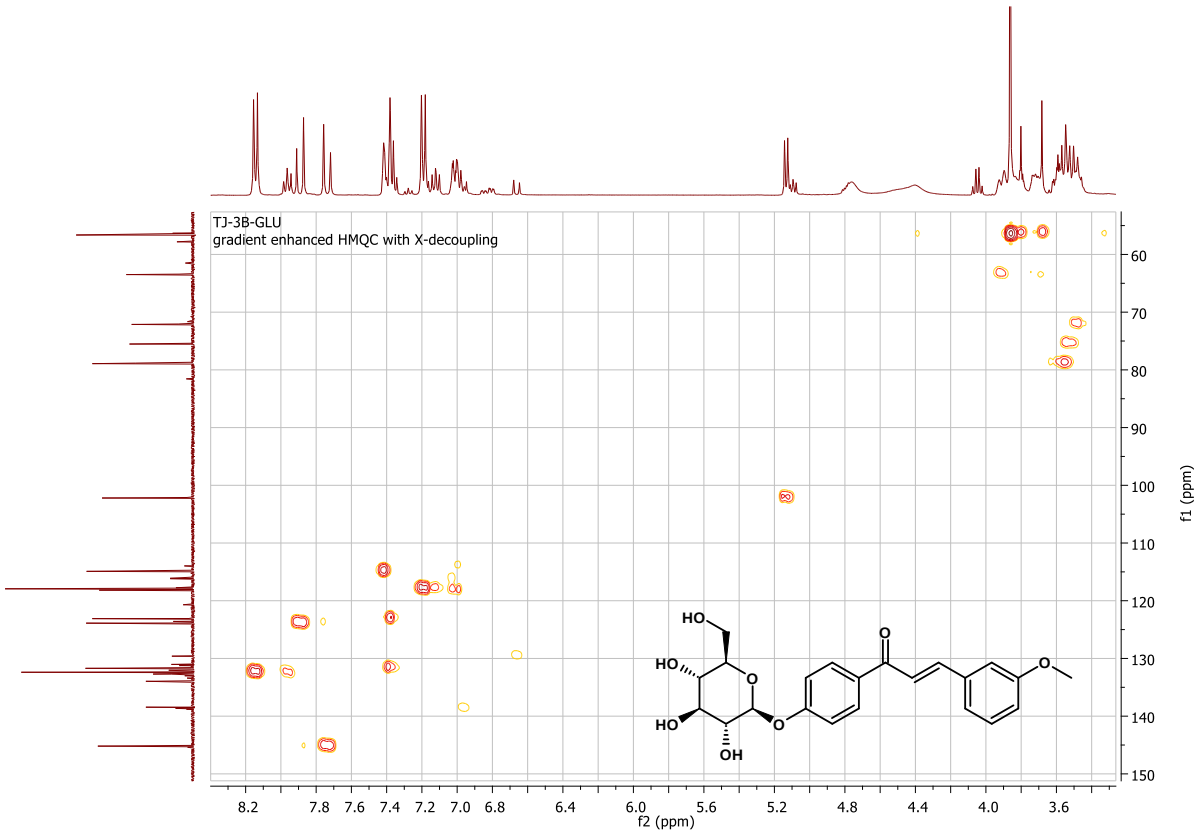

Figure S53 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

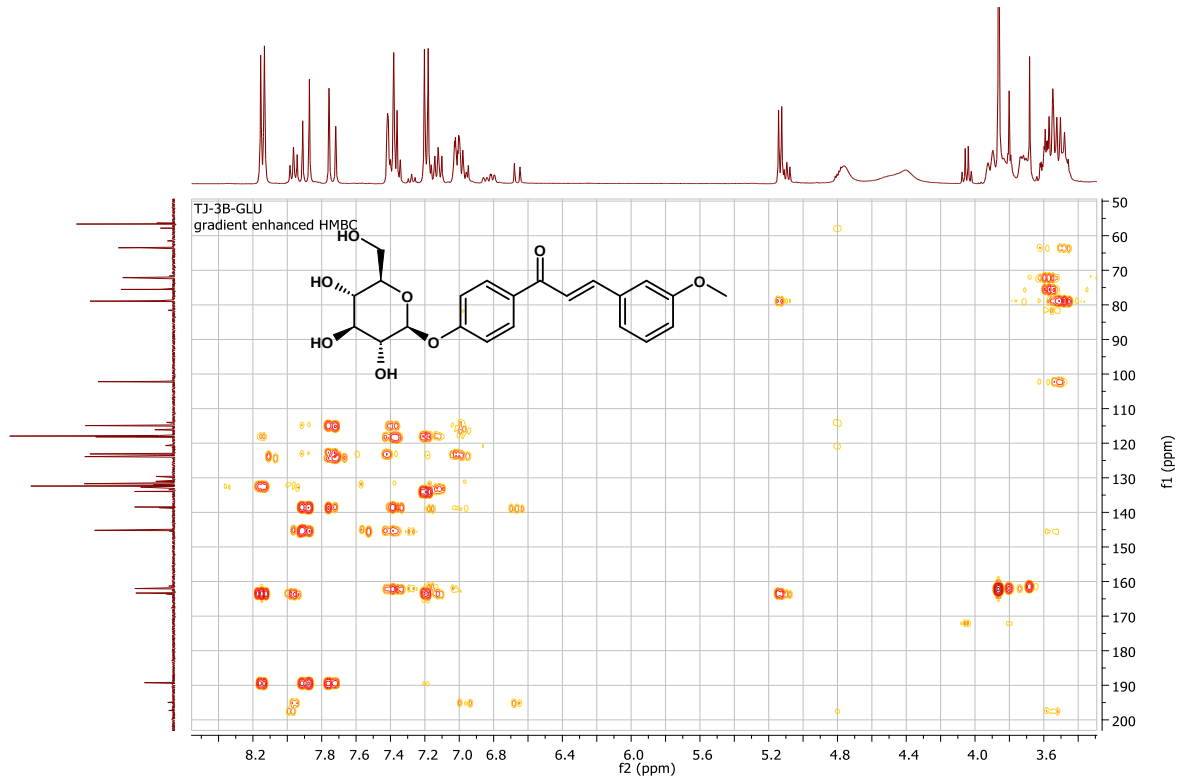

Figure S54 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

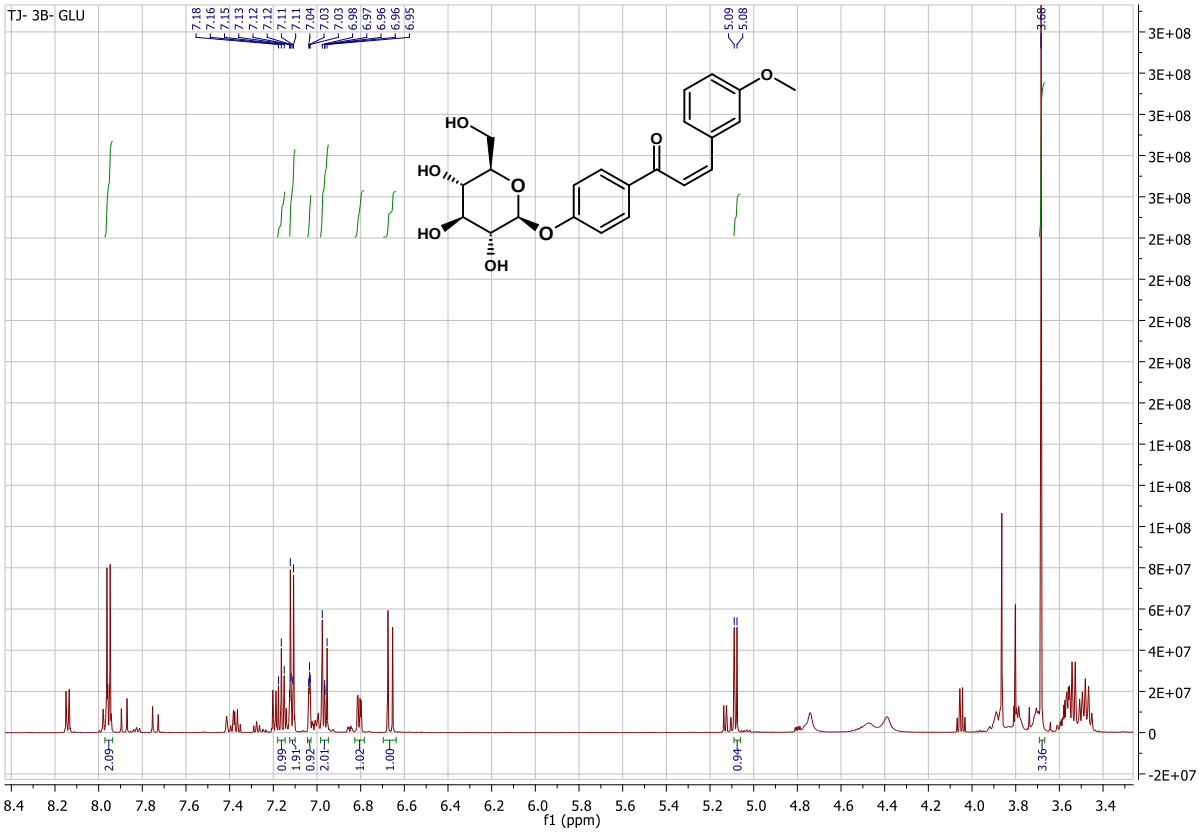

Figure S55 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d$_6$)

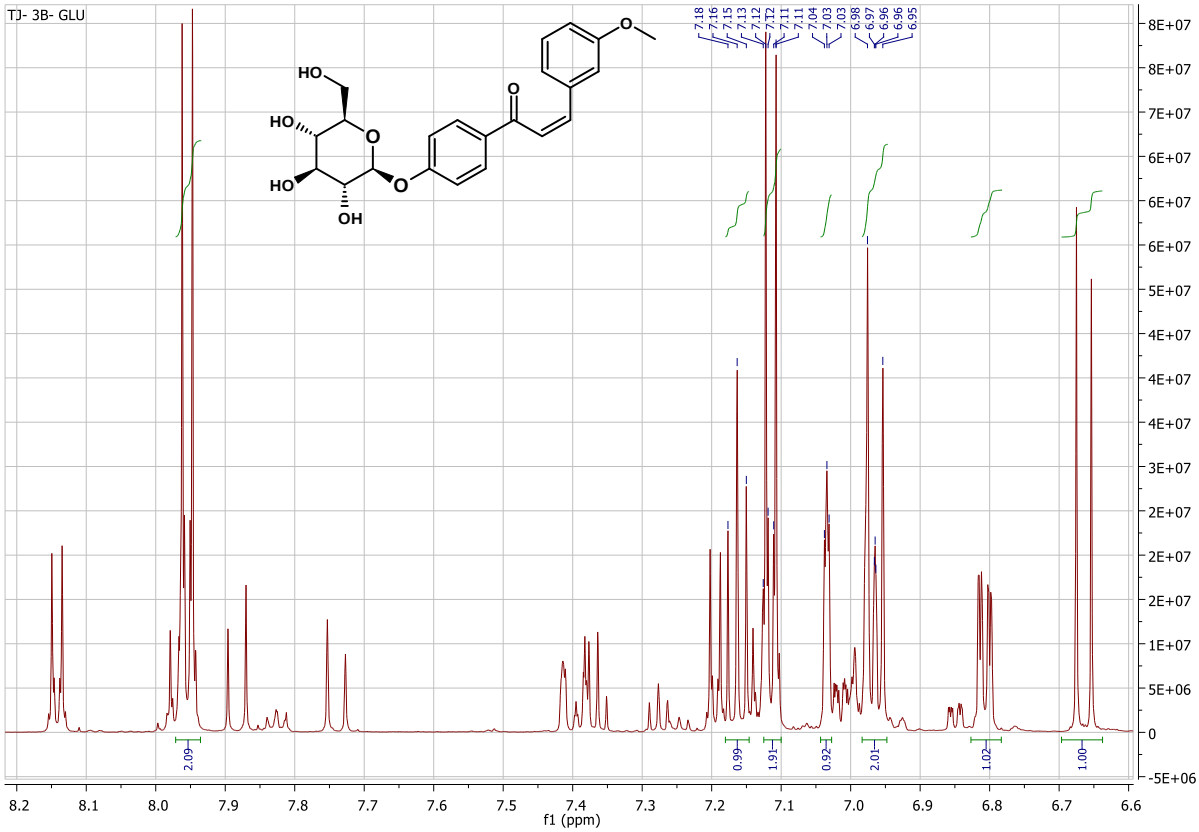

Figure S56 Flavonoid part of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d$_6$)

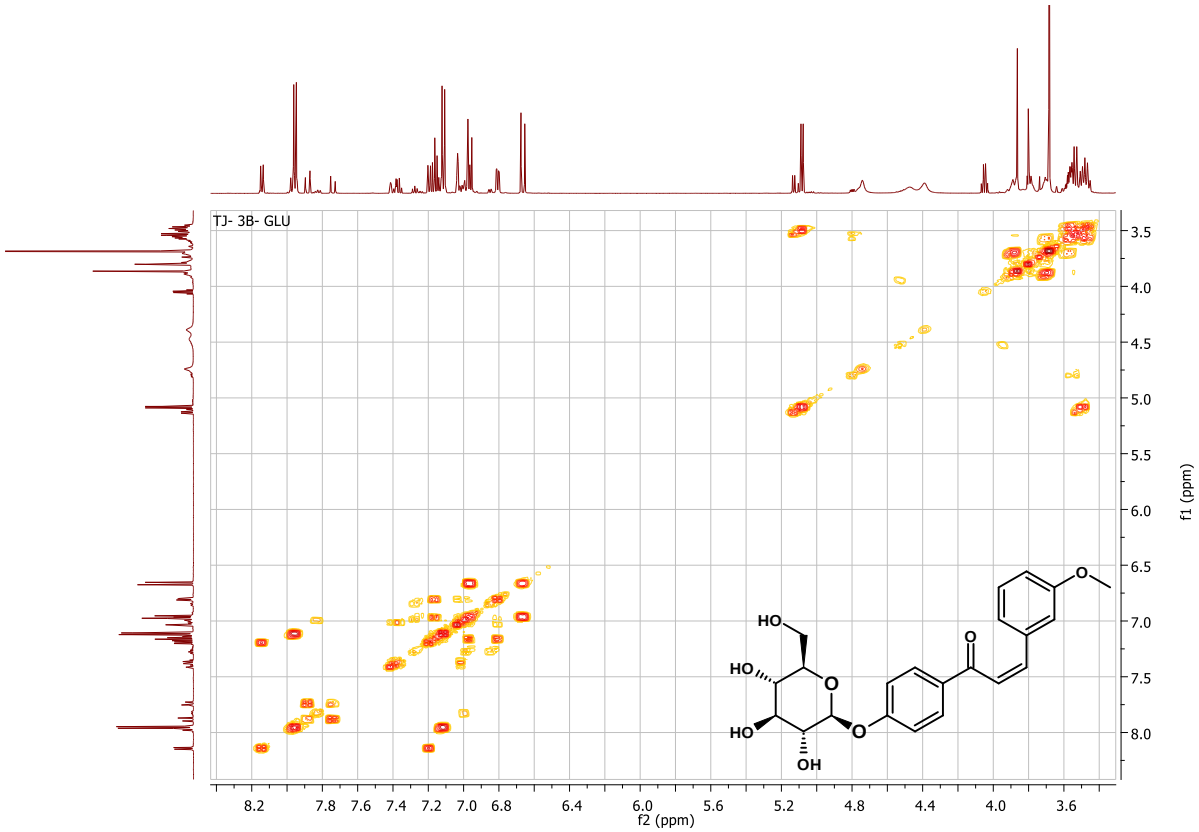

Figure S57 COSY NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

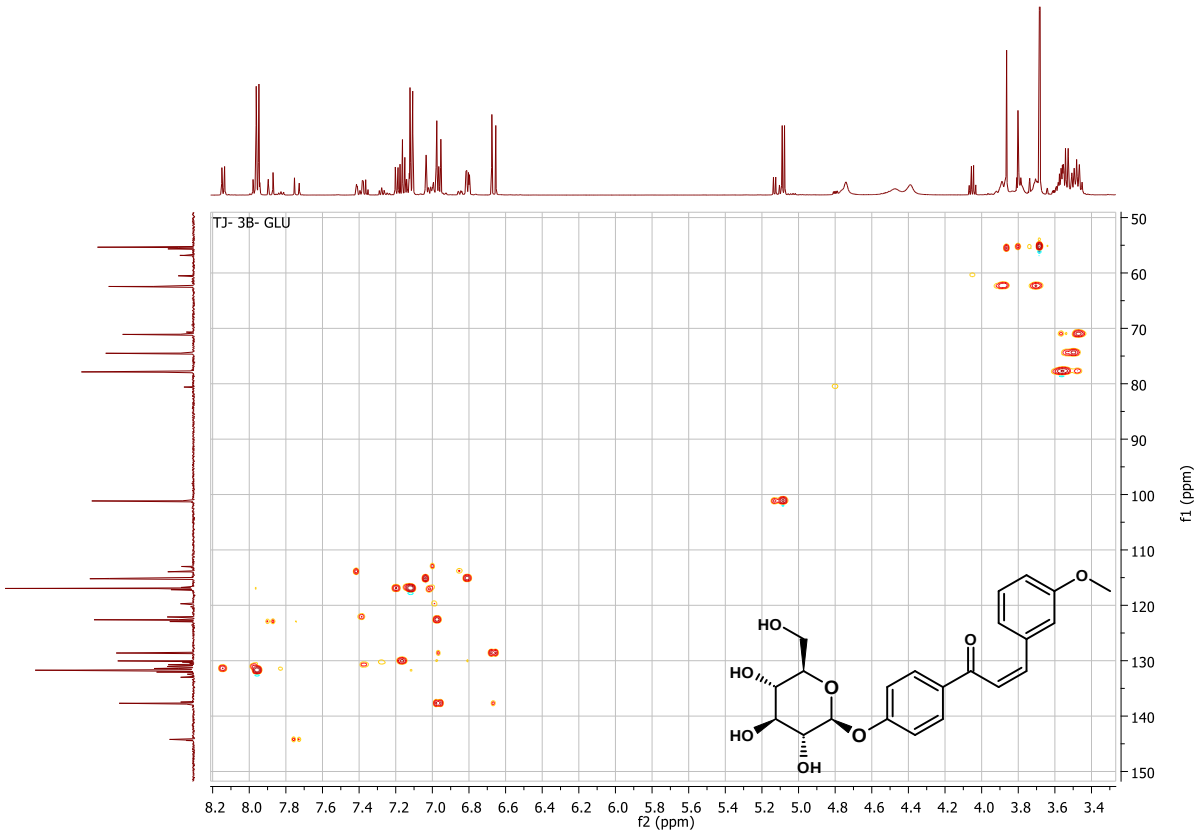

Figure S58 HMQC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d_6)

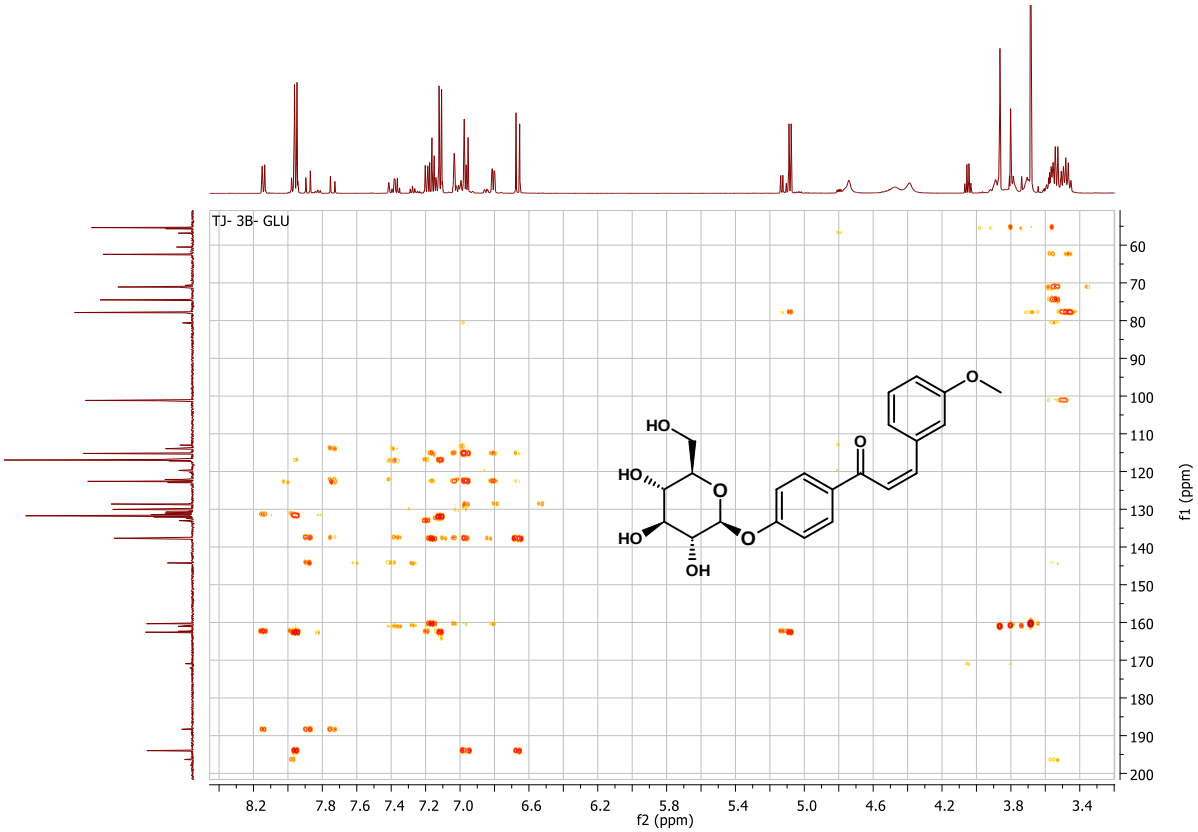

Figure S59 HMBC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3-methoxychalcone (600MHz; Acetone-d$_6$)

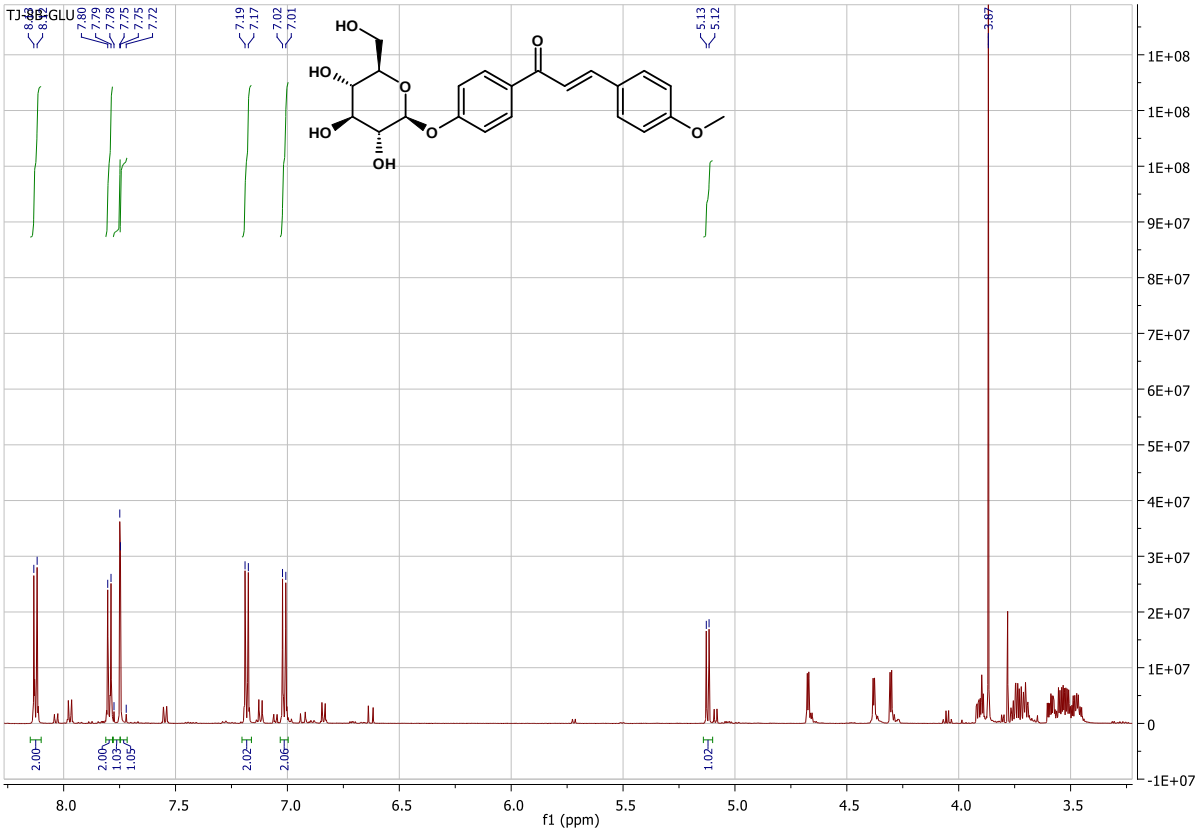

Figure S60 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

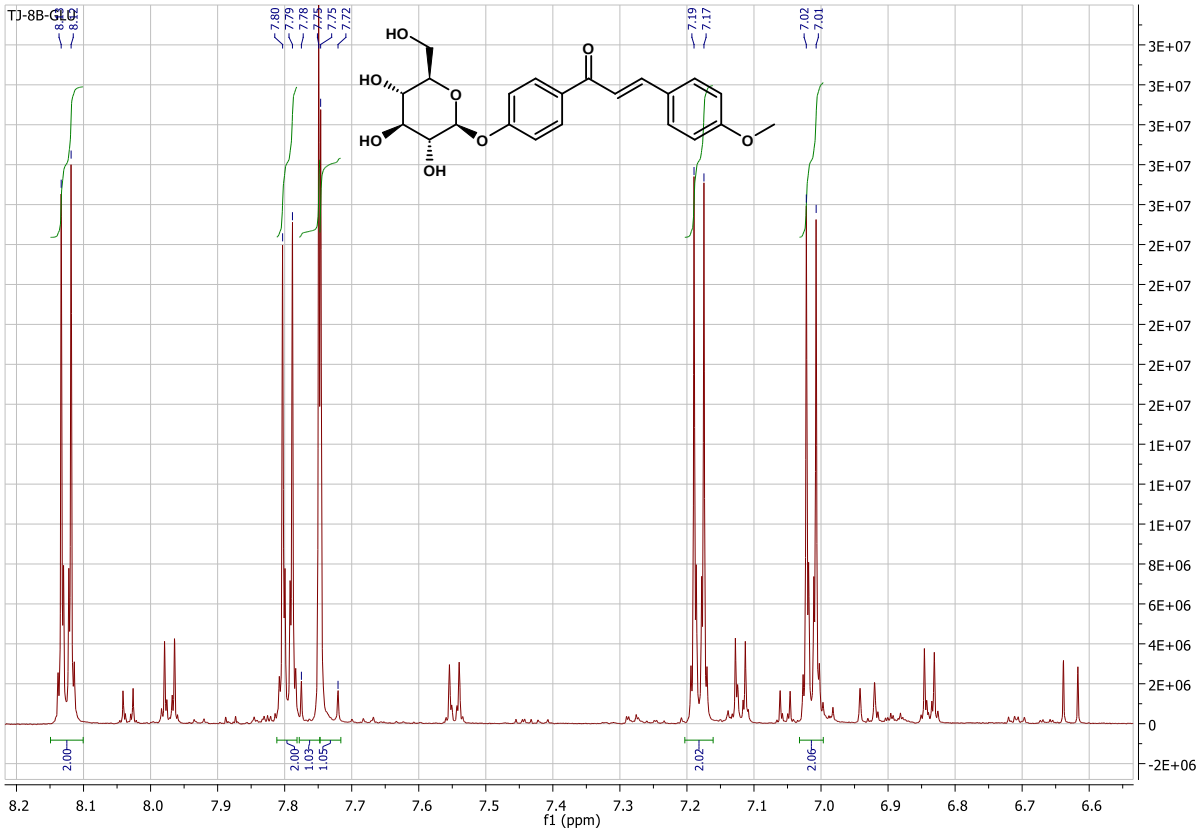

Figure S61 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

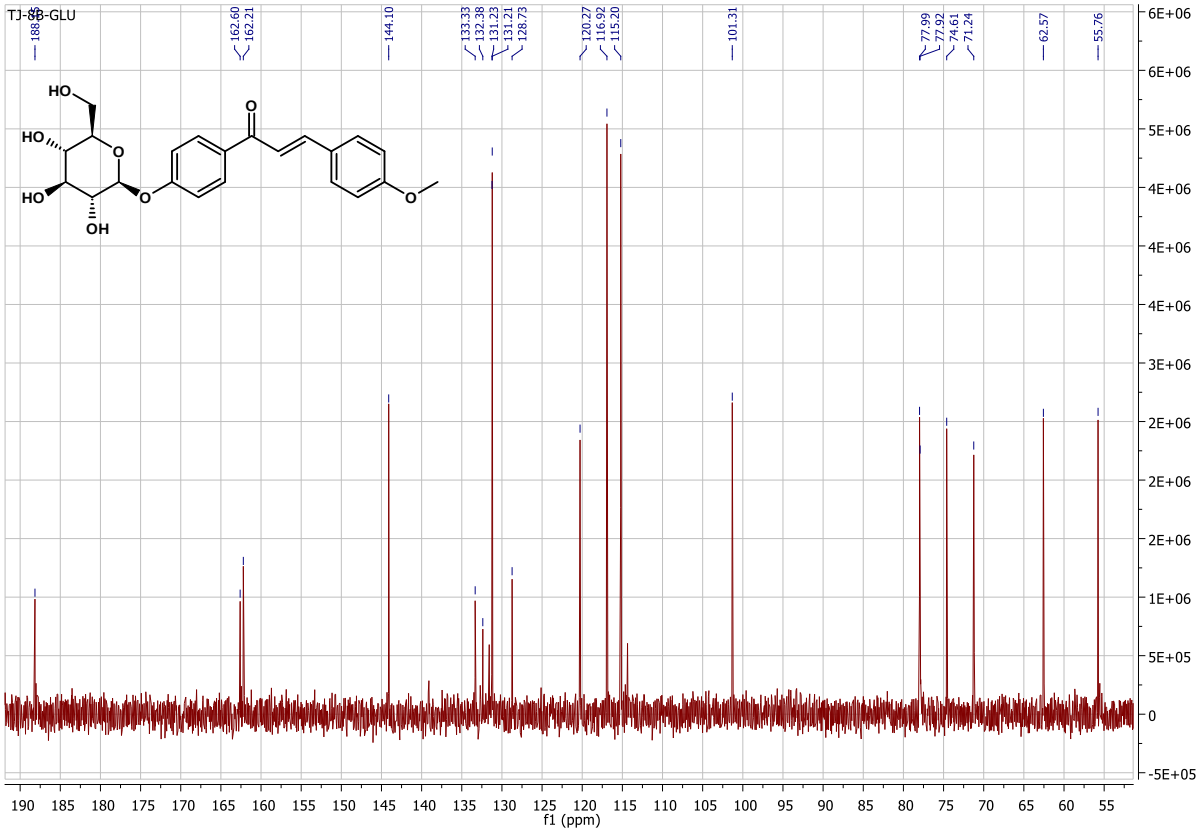

Figure S62 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

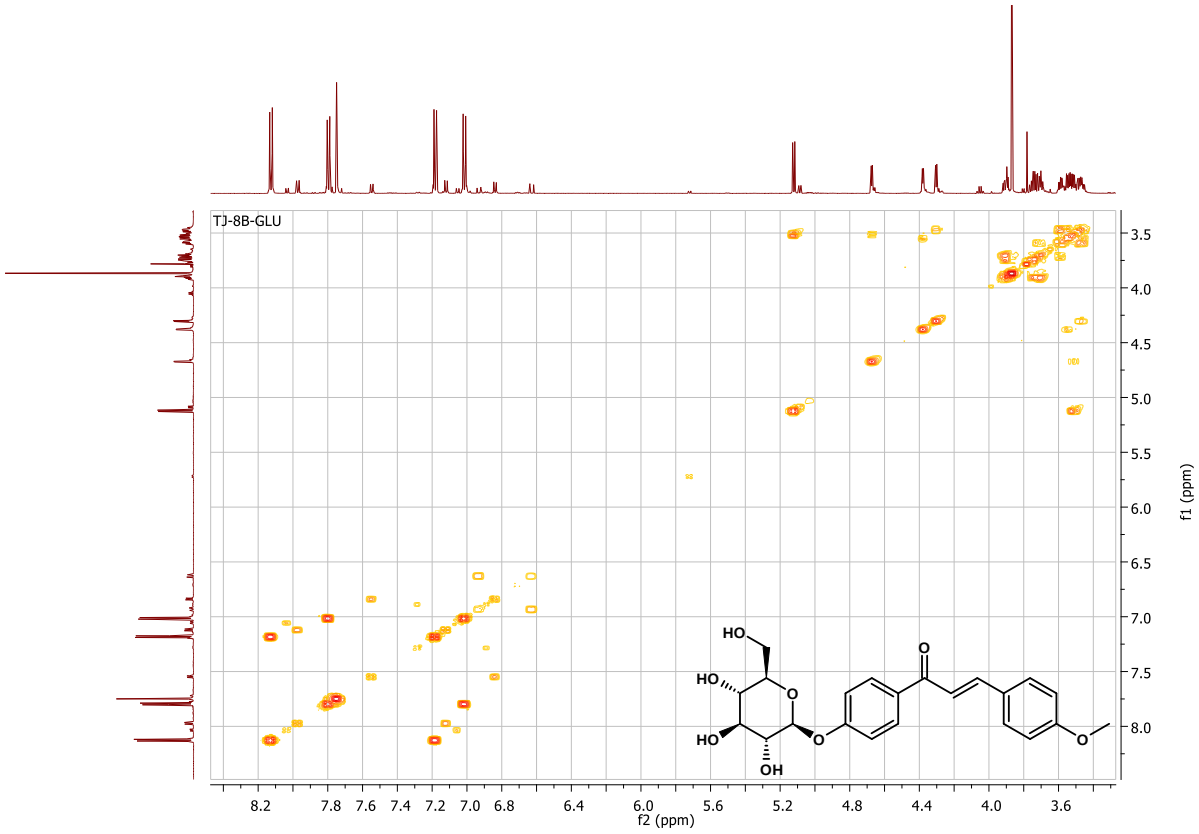

Figure S63 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d_6)

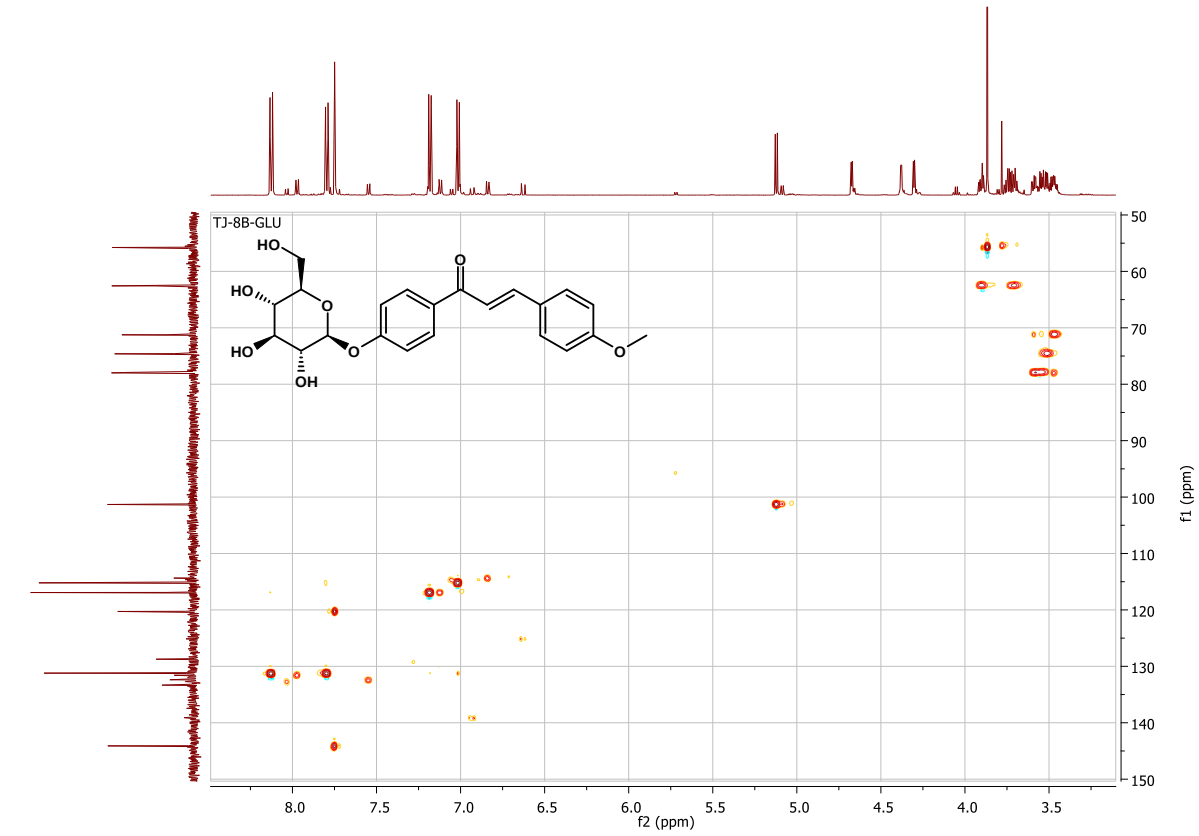

Figure S64 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d_6)

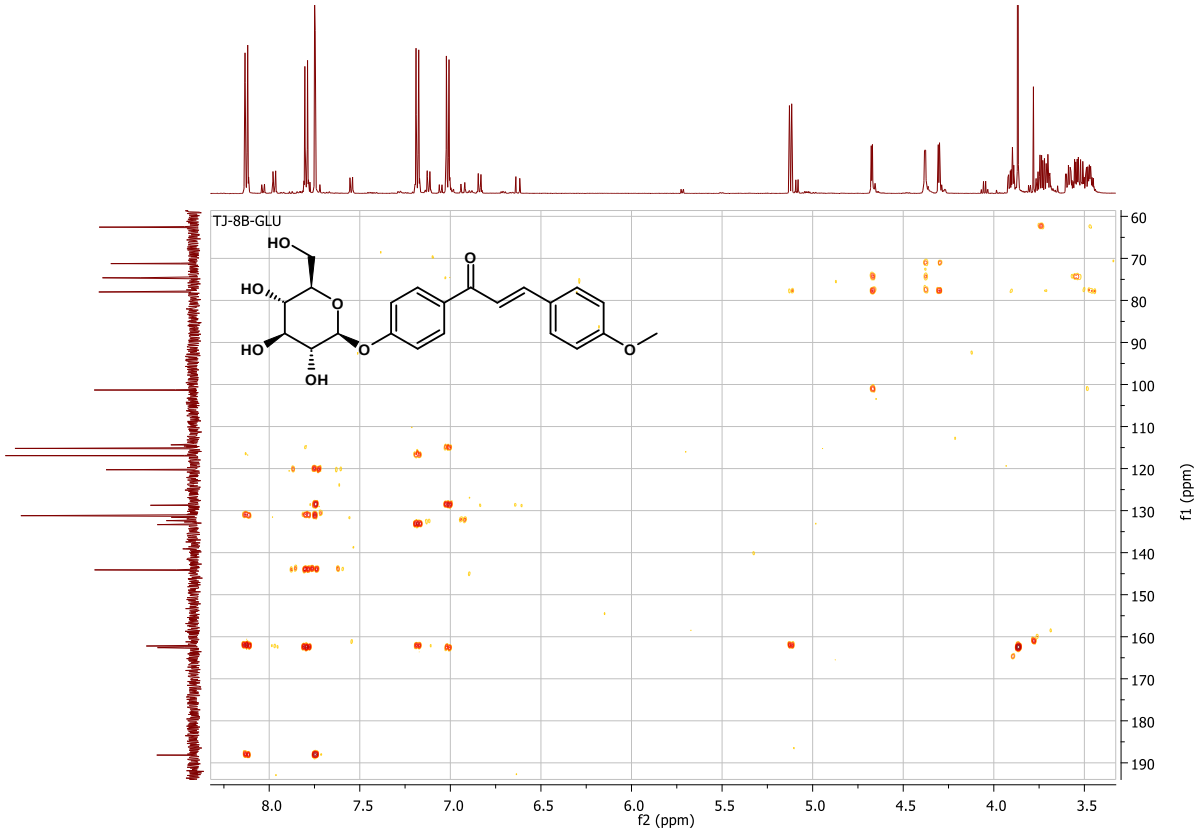

Figure S65 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

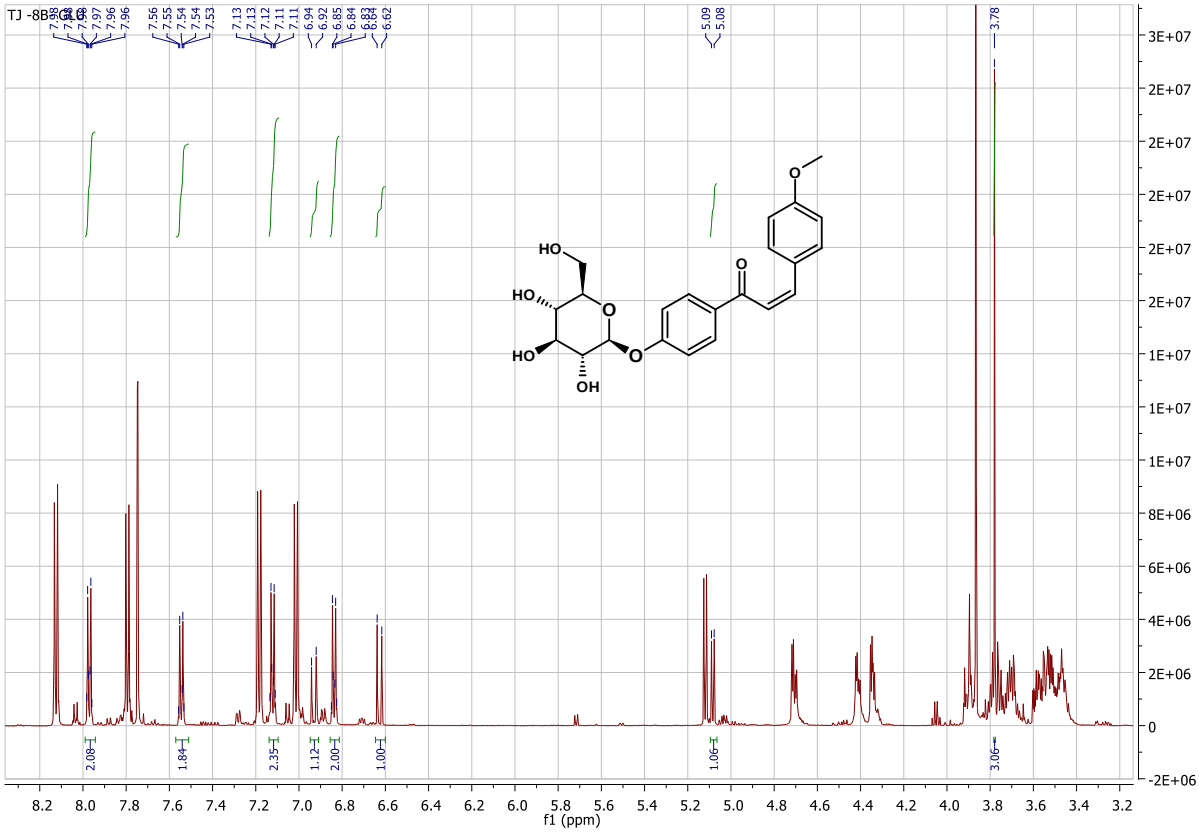

Figure S66 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

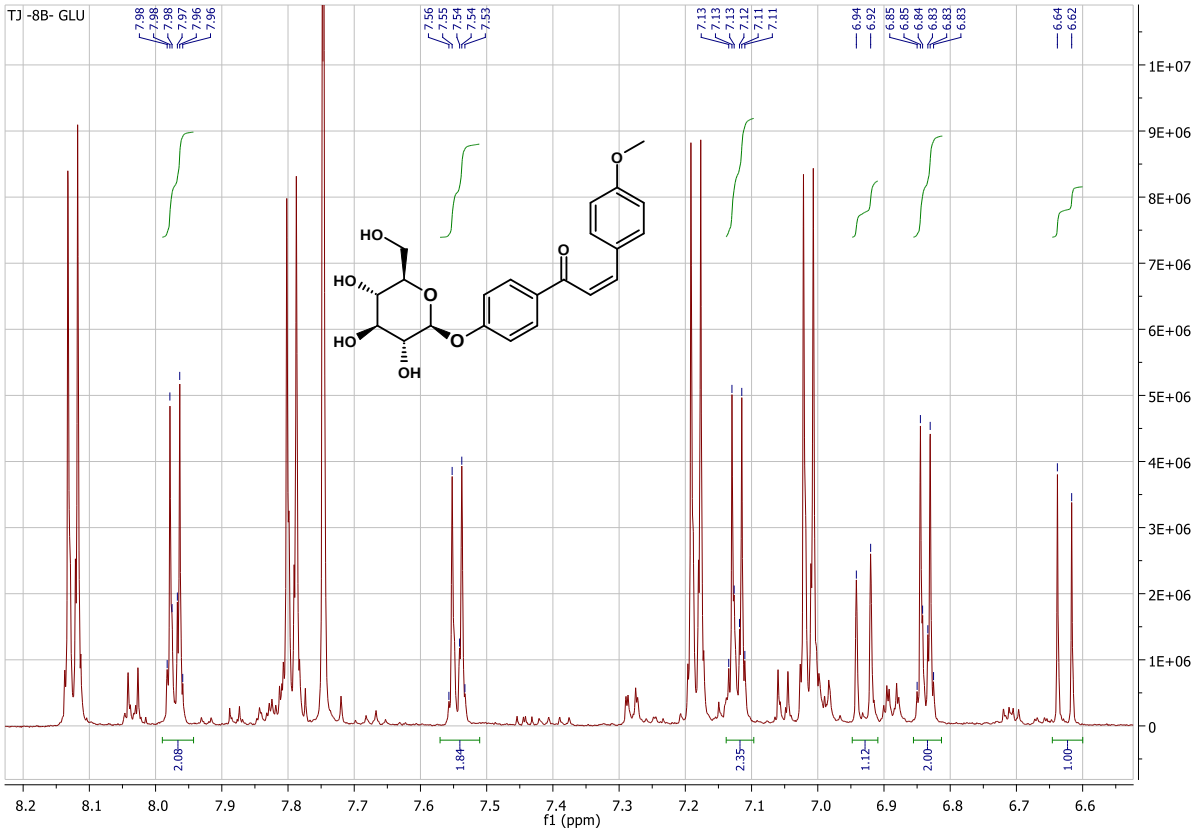

Figure S67 Flafonoid part of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

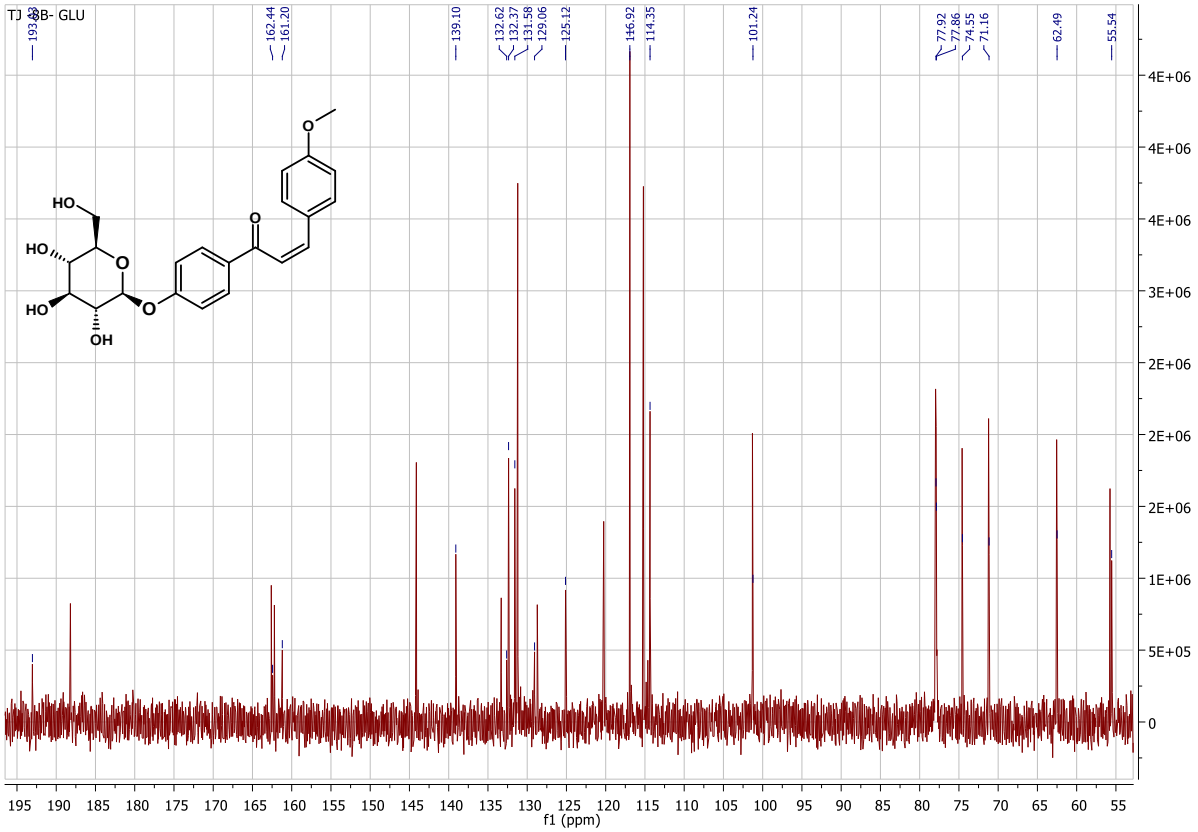

Figure S68 ^{13}C NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (151MHz; Acetone-d$_6$)

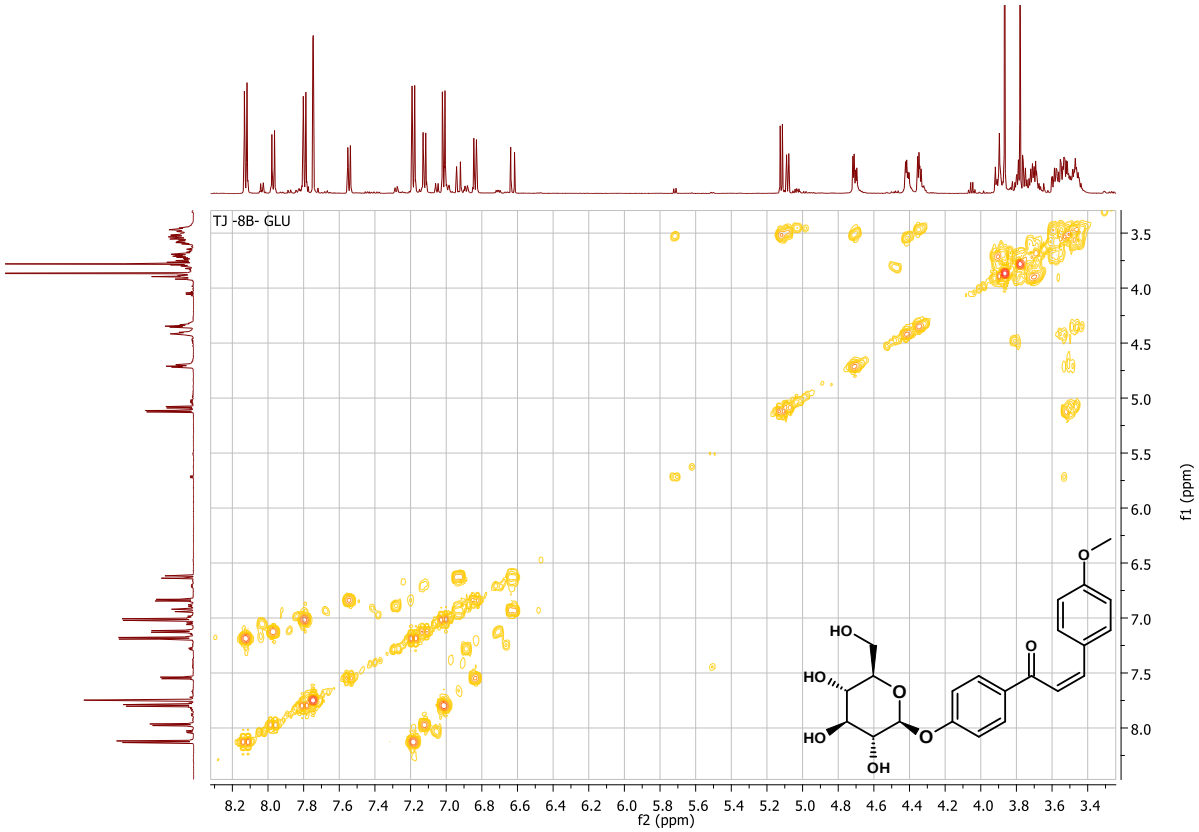

Figure S69 COSY NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

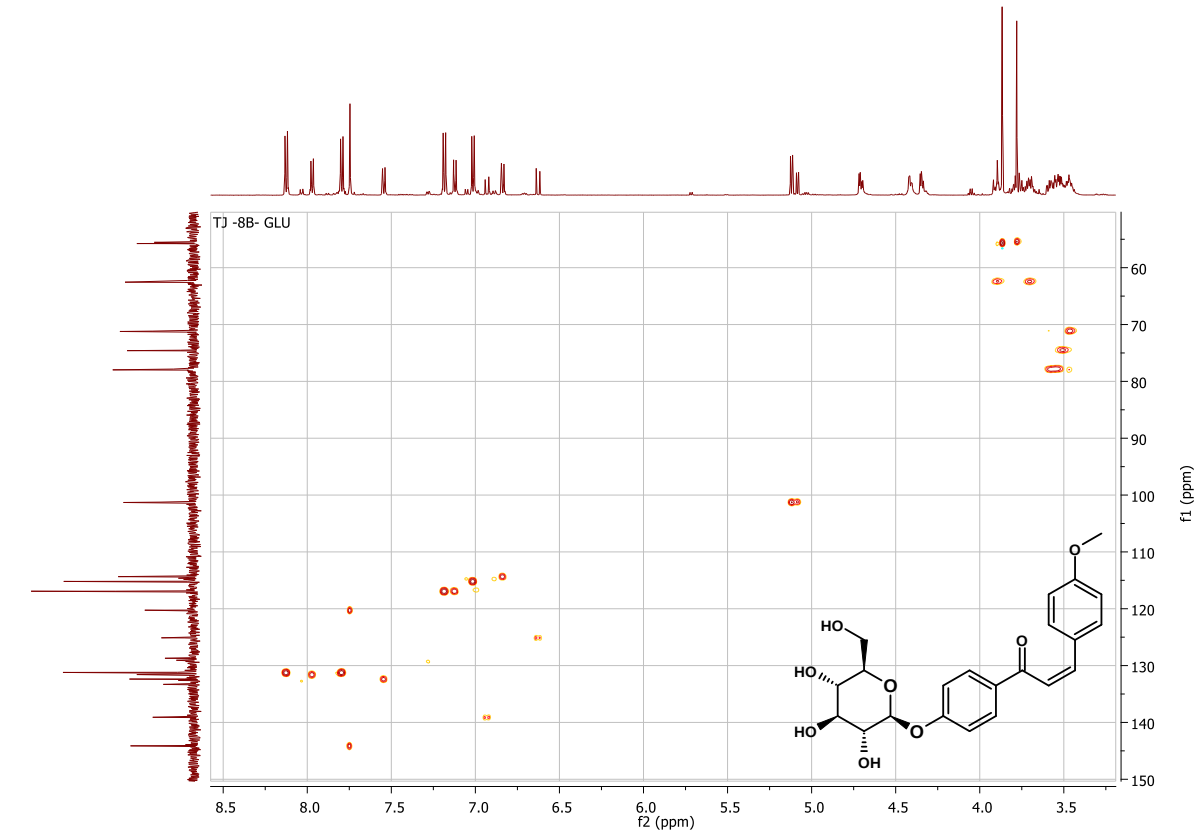

Figure S70 HMQC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

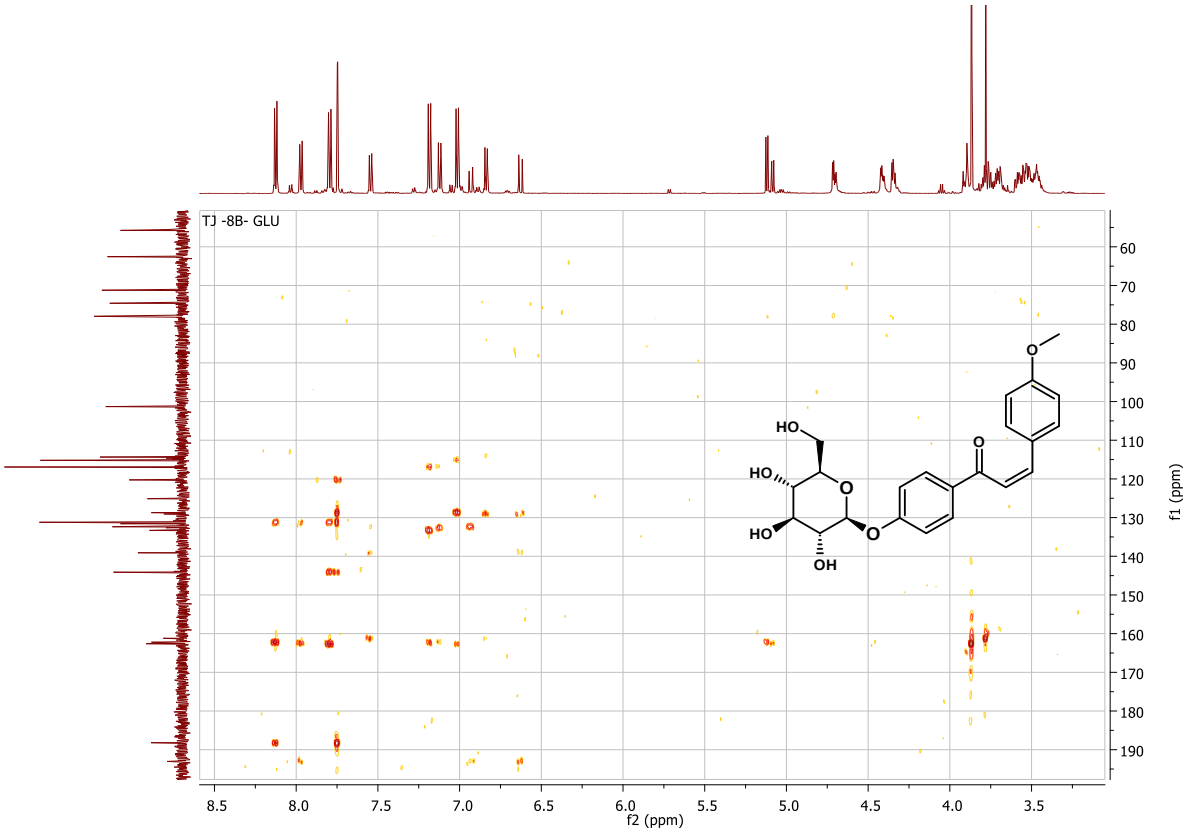

Figure S71 HMBC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-4-methoxychalcone (600MHz; Acetone-d$_6$)

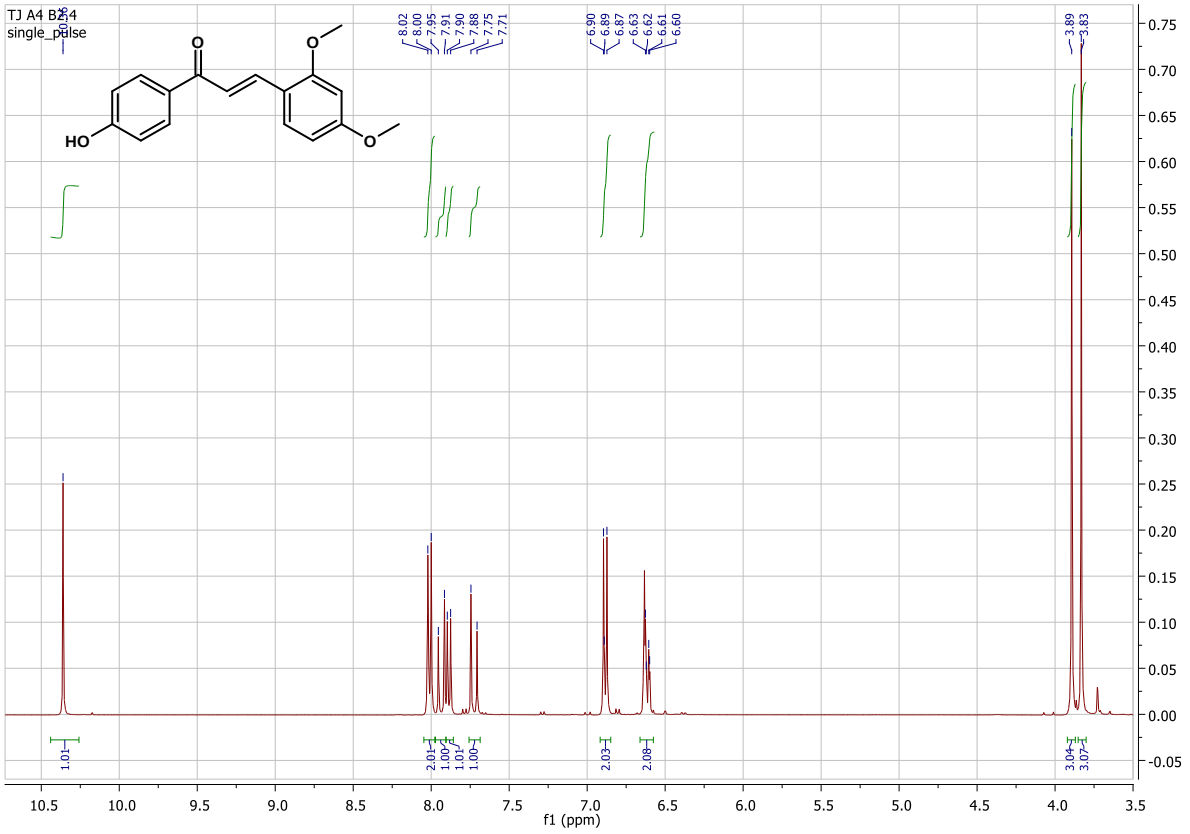

Figure S72 ^{1}H NMR spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (600MHz; DMSO-d$_6$)

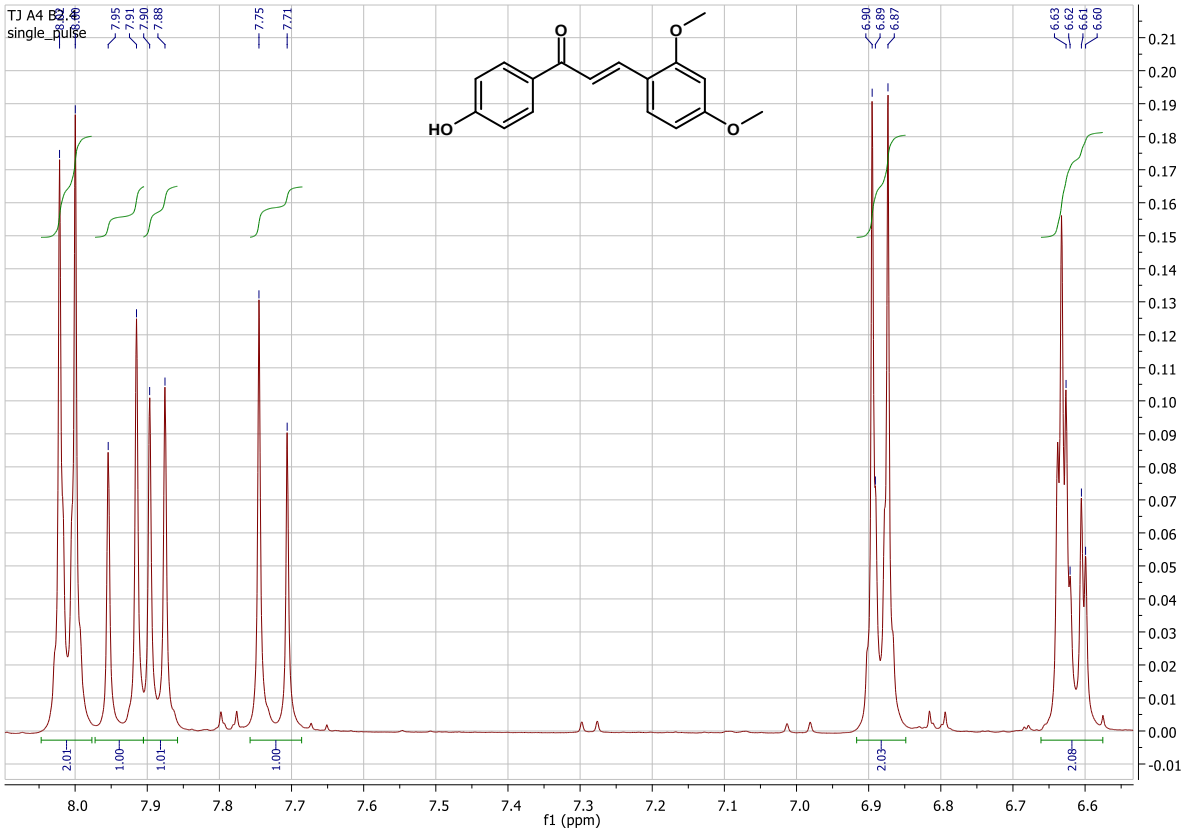

Figure S73 Flavonoid part of spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (600MHz; DMSO-d_6)

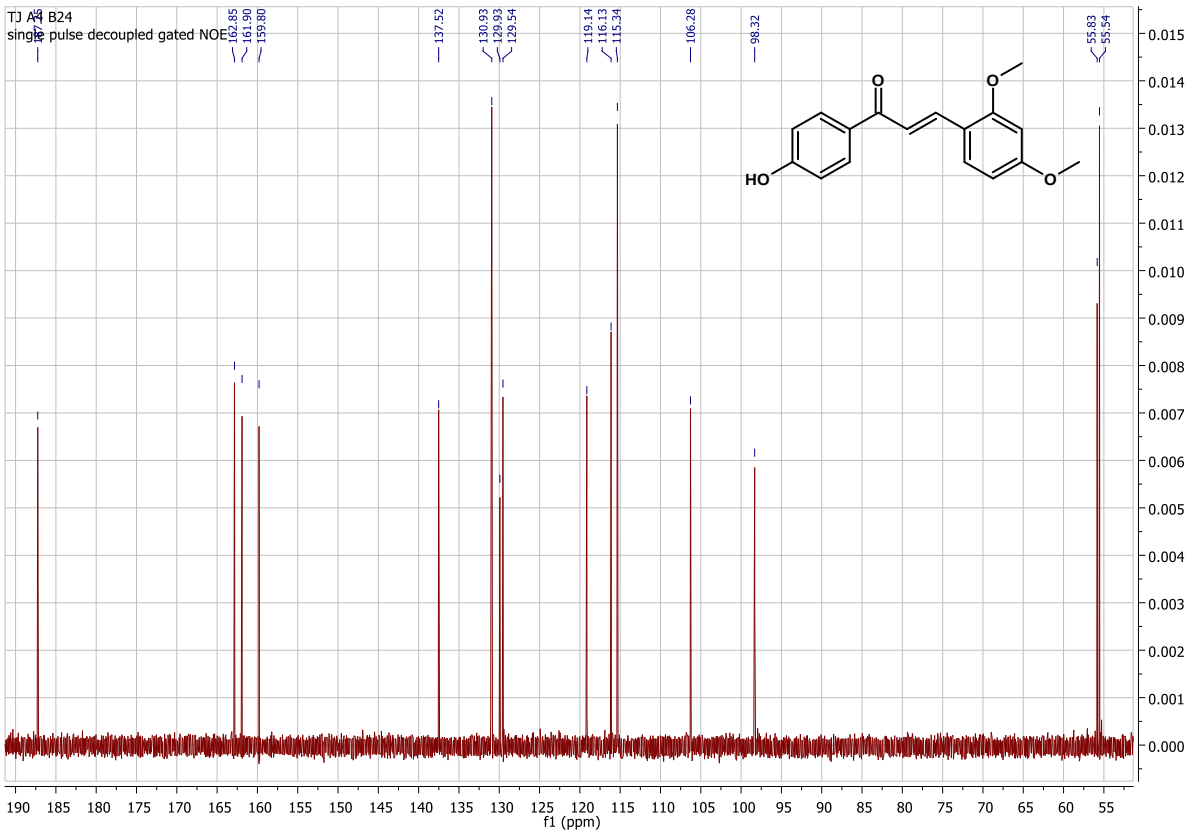

Figure S74 ^{13}C NMR spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (151MHz; DMSO-d_6)

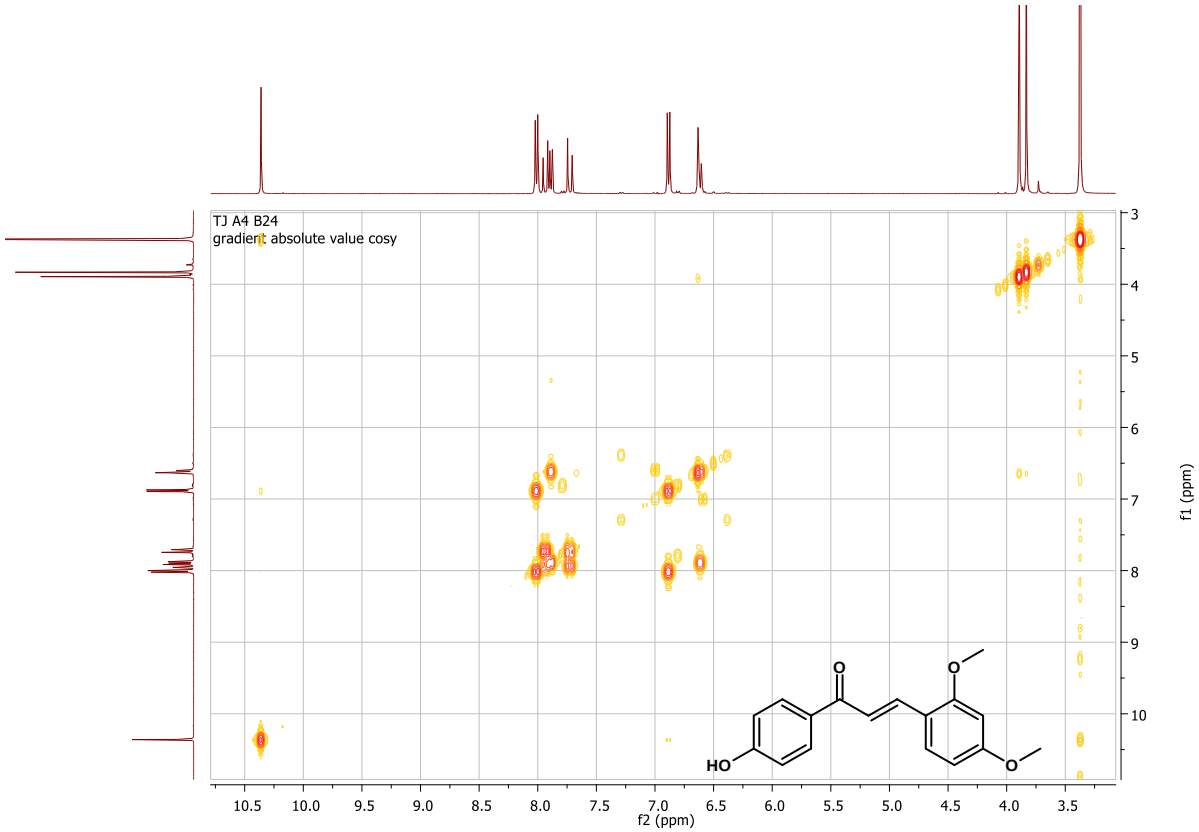

Figure S75 COSY NMR spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (600MHz; DMSO-d_6)

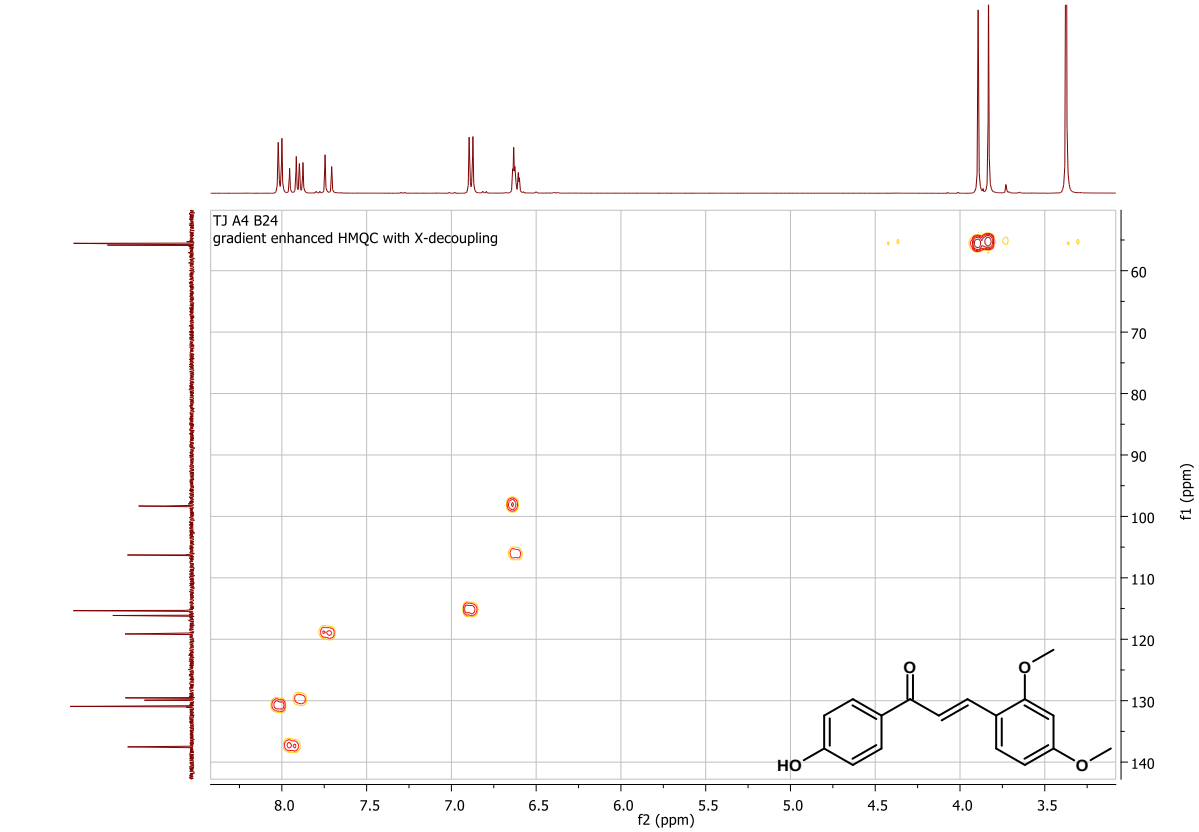

Figure S76 HMQC NMR spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (600MHz; DMSO-d_6)

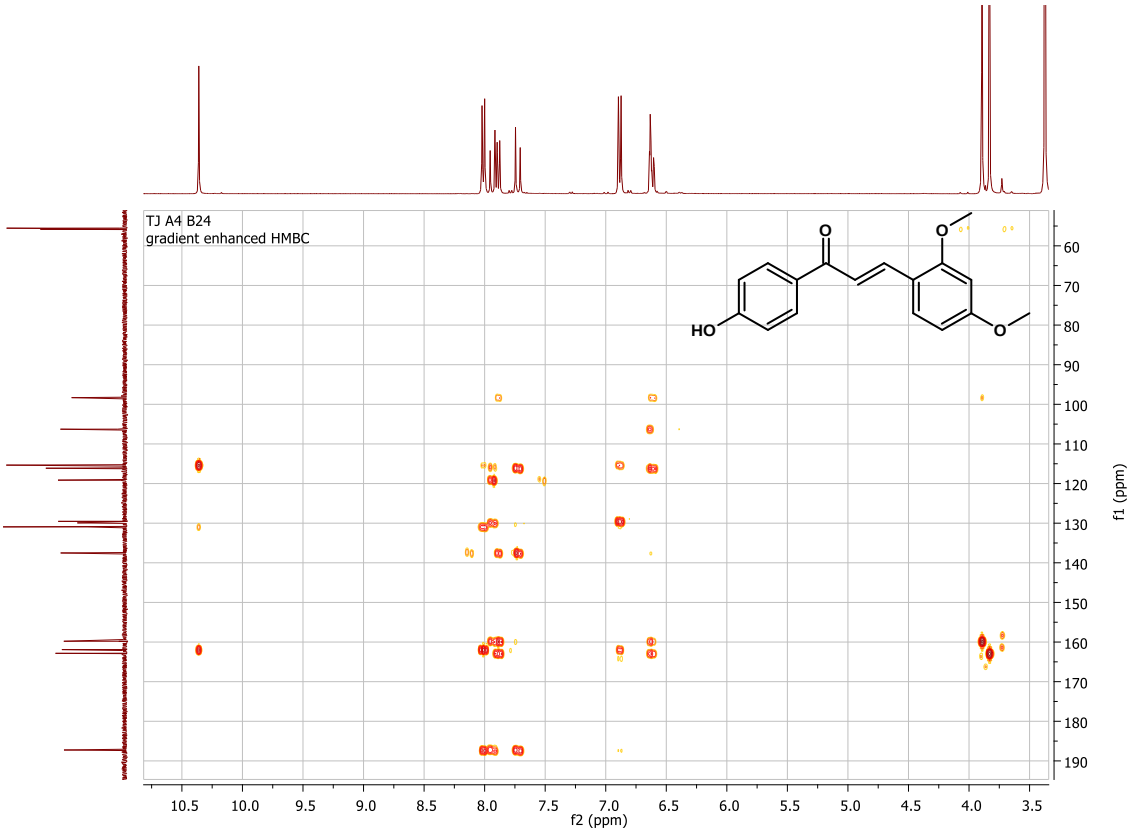

Figure S77 HMBC NMR spectrum of *trans*-4′-hydroxy-2,4-dimethoxychalcone (600MHz; DMSO-d$_6$)

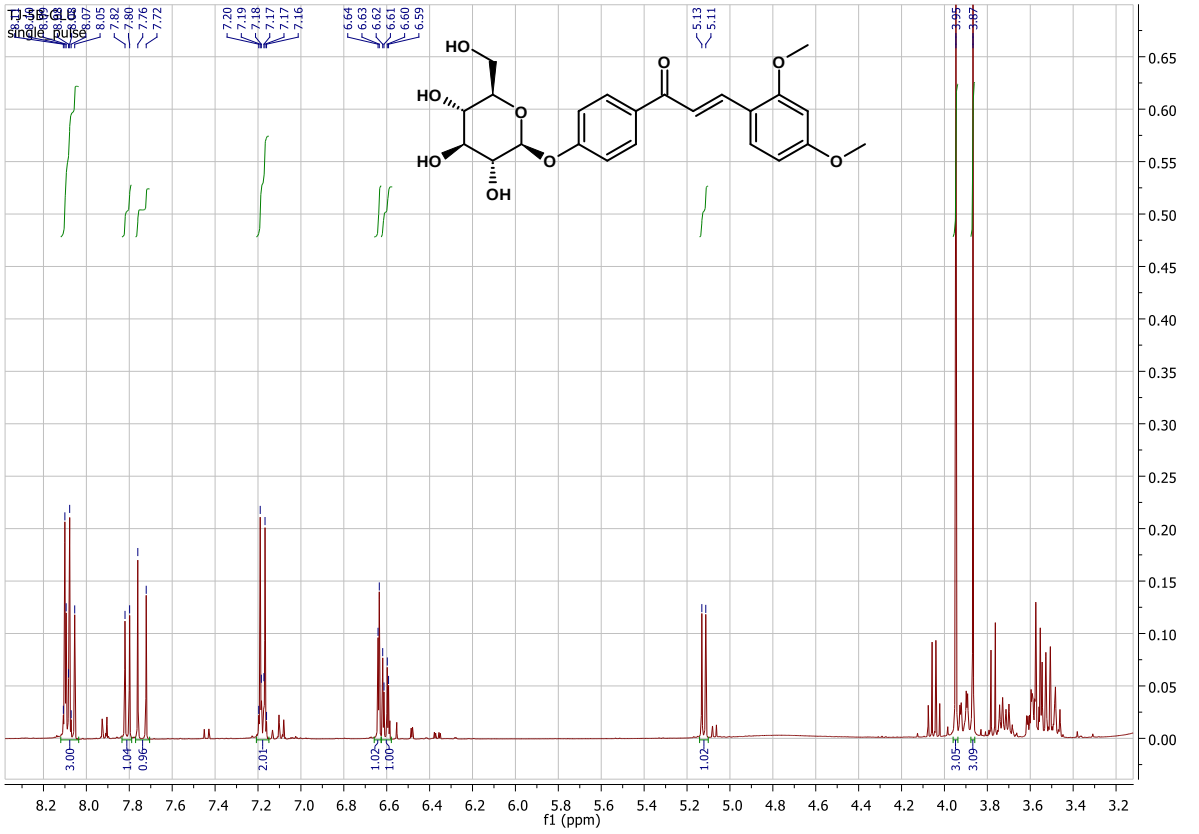

Figure S78 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (600MHz, Acetone-d$_6$)

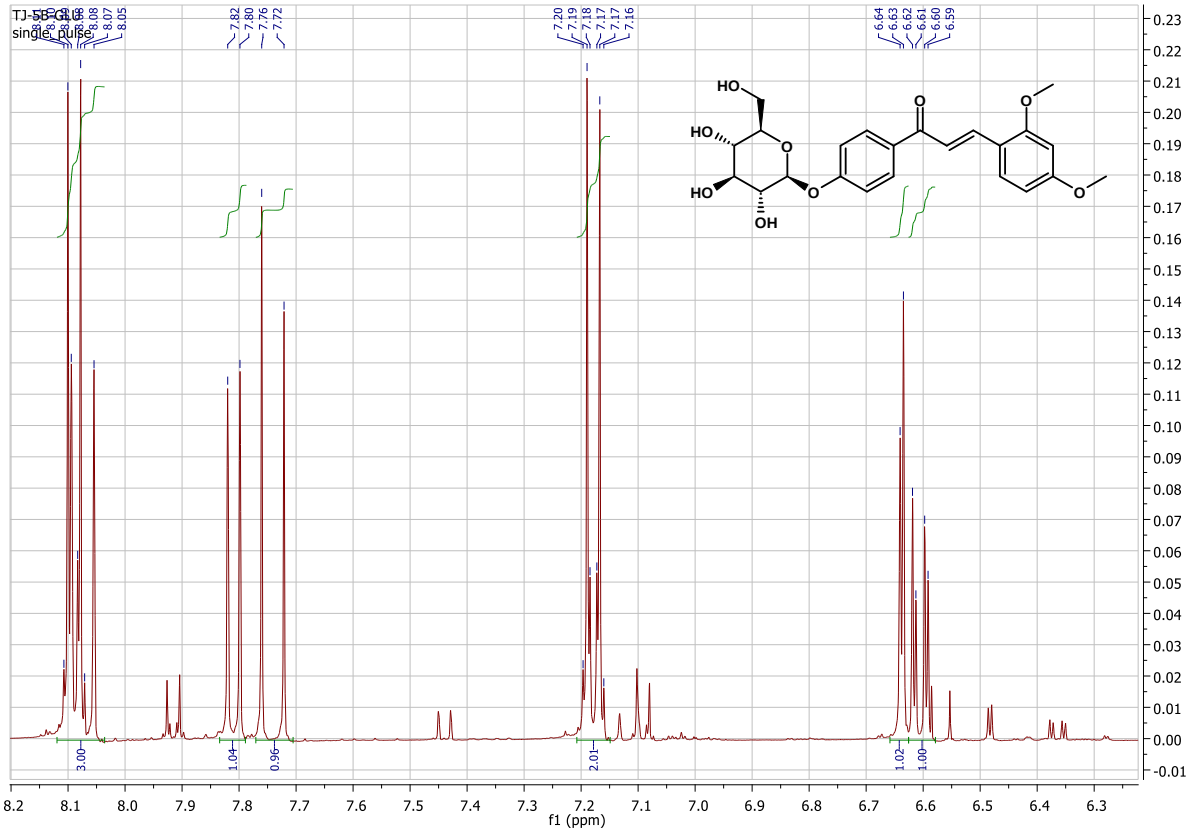

Figure S79 Flavonoid fragment of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (600MHz, Acetone-d$_6$)

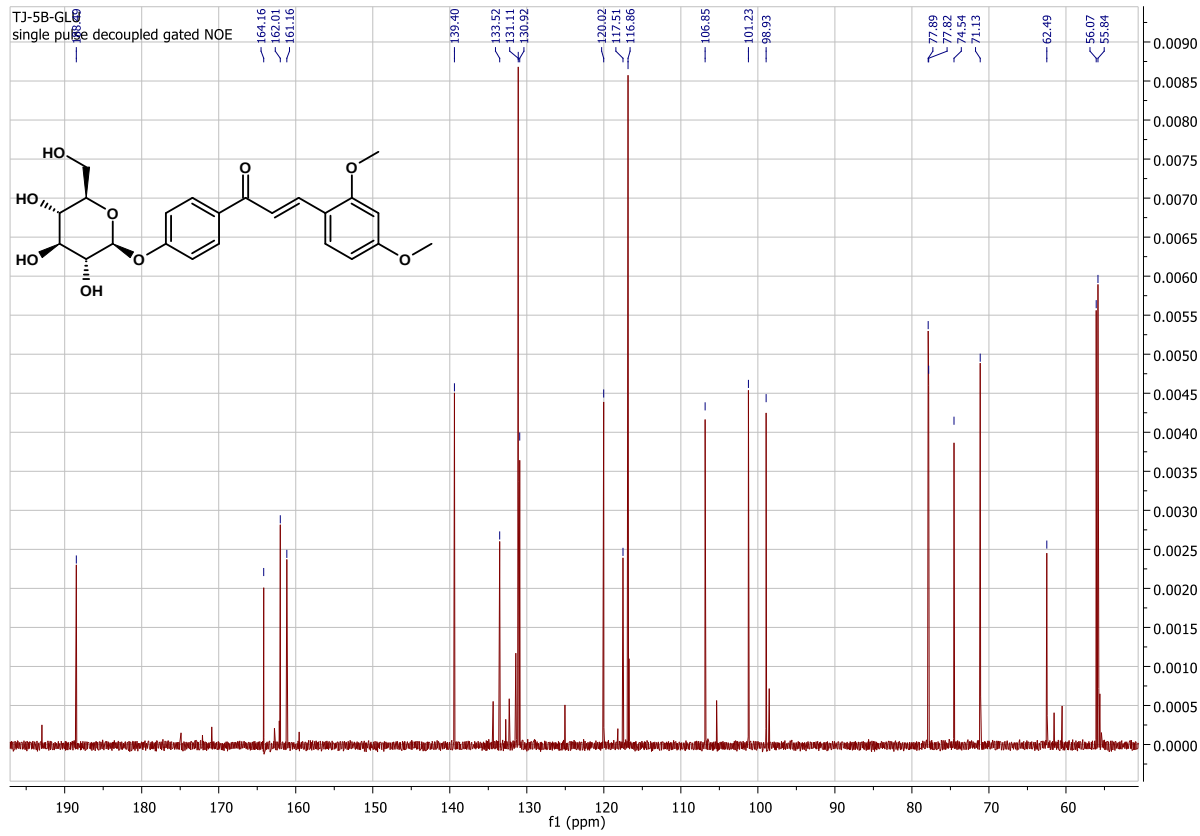

Figure S80 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (151MHz, Acetone-d$_6$)

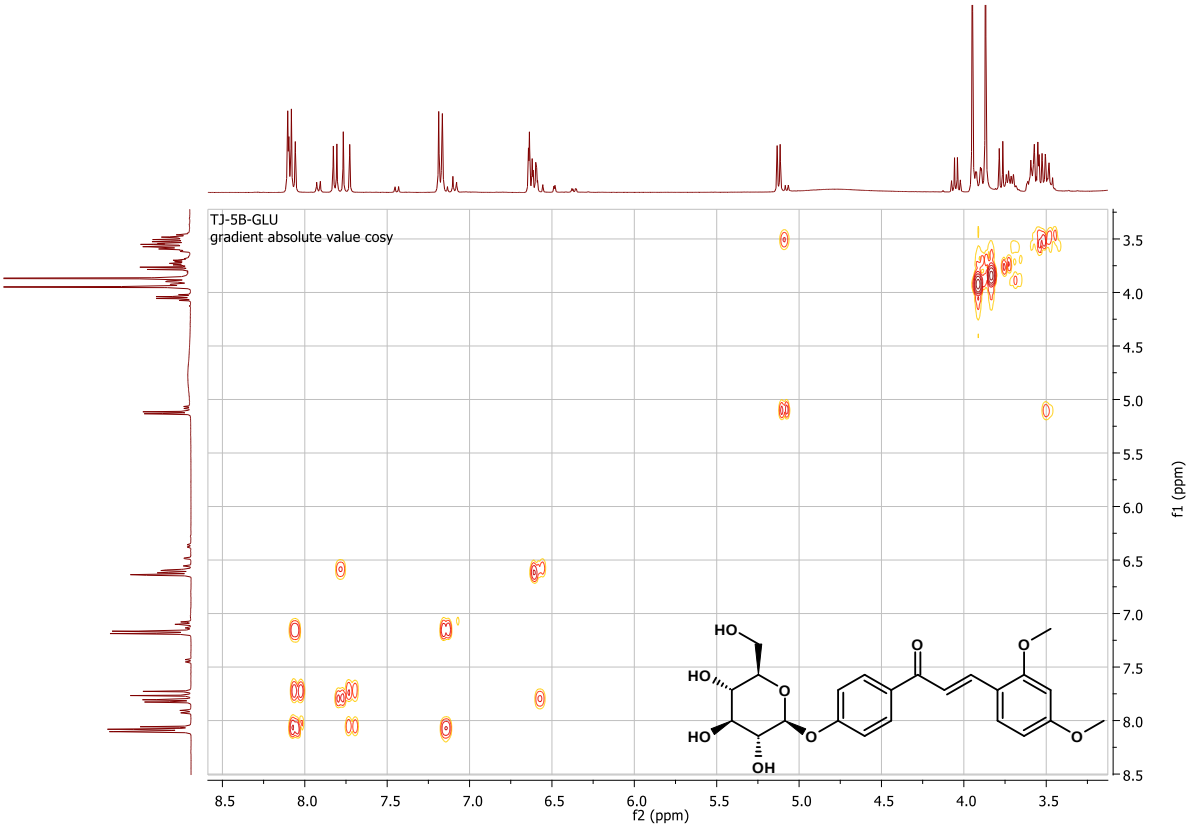

Figure S81 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (600MHz, Acetone-d_6)

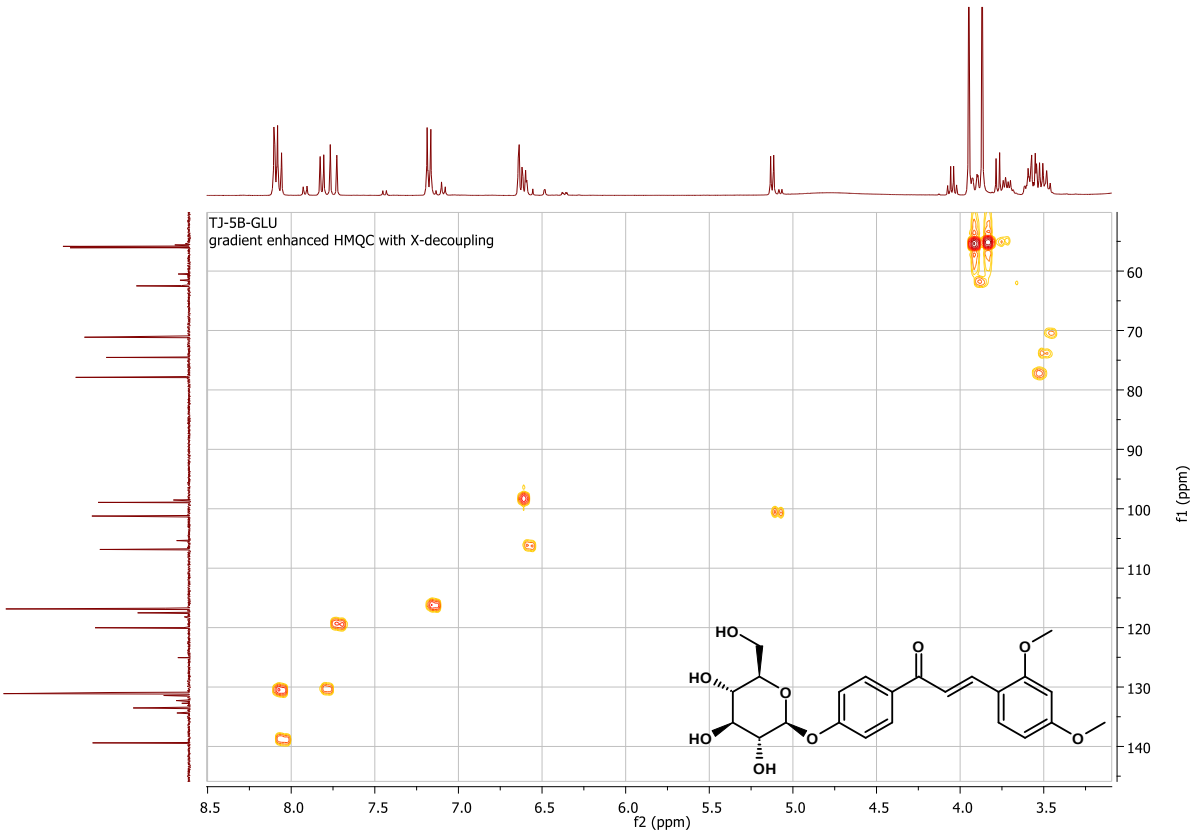

Figure S82 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (600MHz, Acetone-d_6)

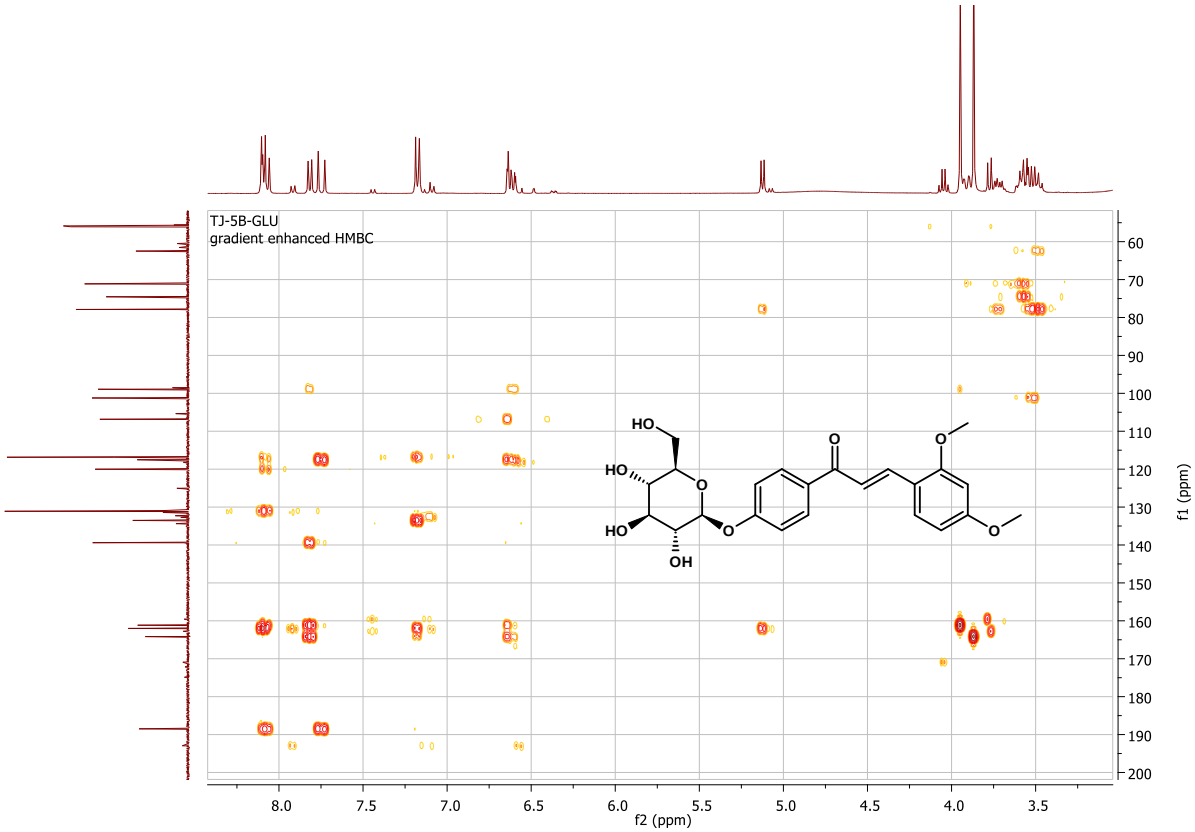

Figure S83 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-2,4-dimethoxychalcone (600MHz, Acetone-d$_6$)

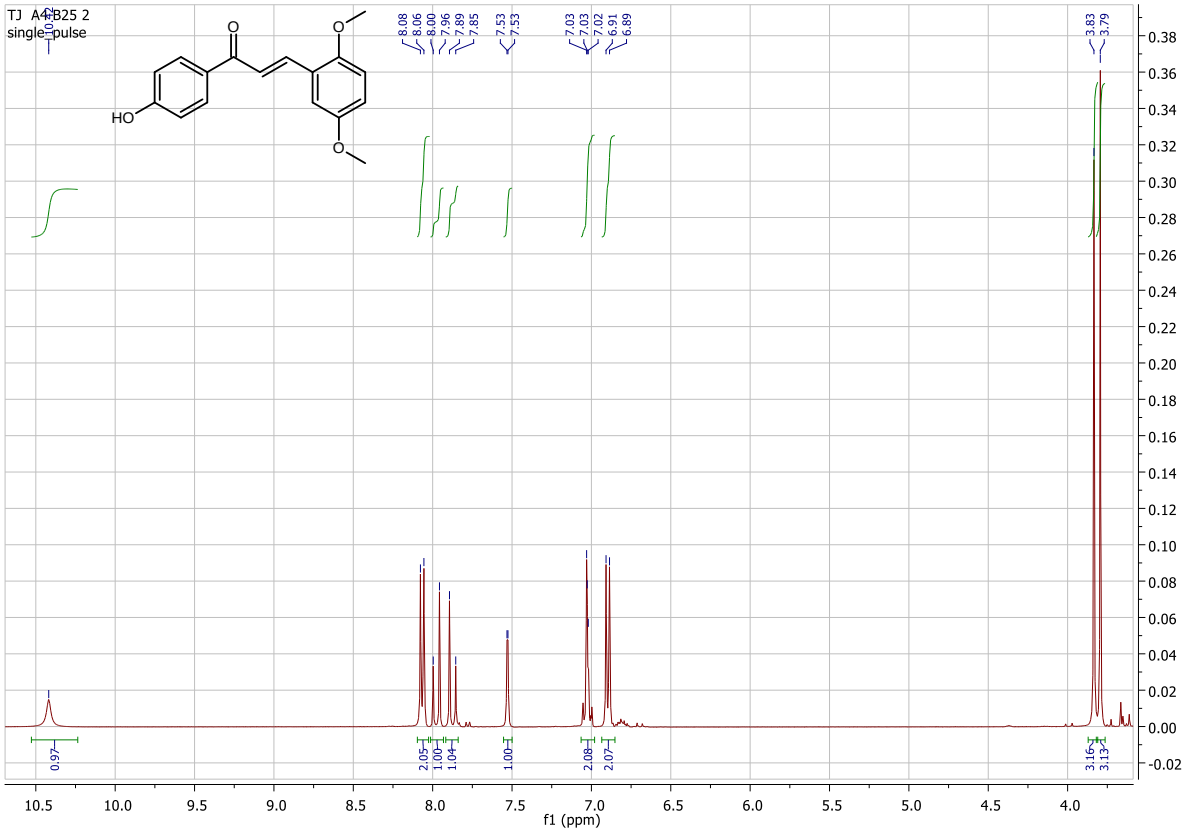

Figure S84 ^{1}H NMR spectrum of *trans*-4′-hydroxy-2,5-dimethoxychalcone (600MHz; DMSO-d$_6$)

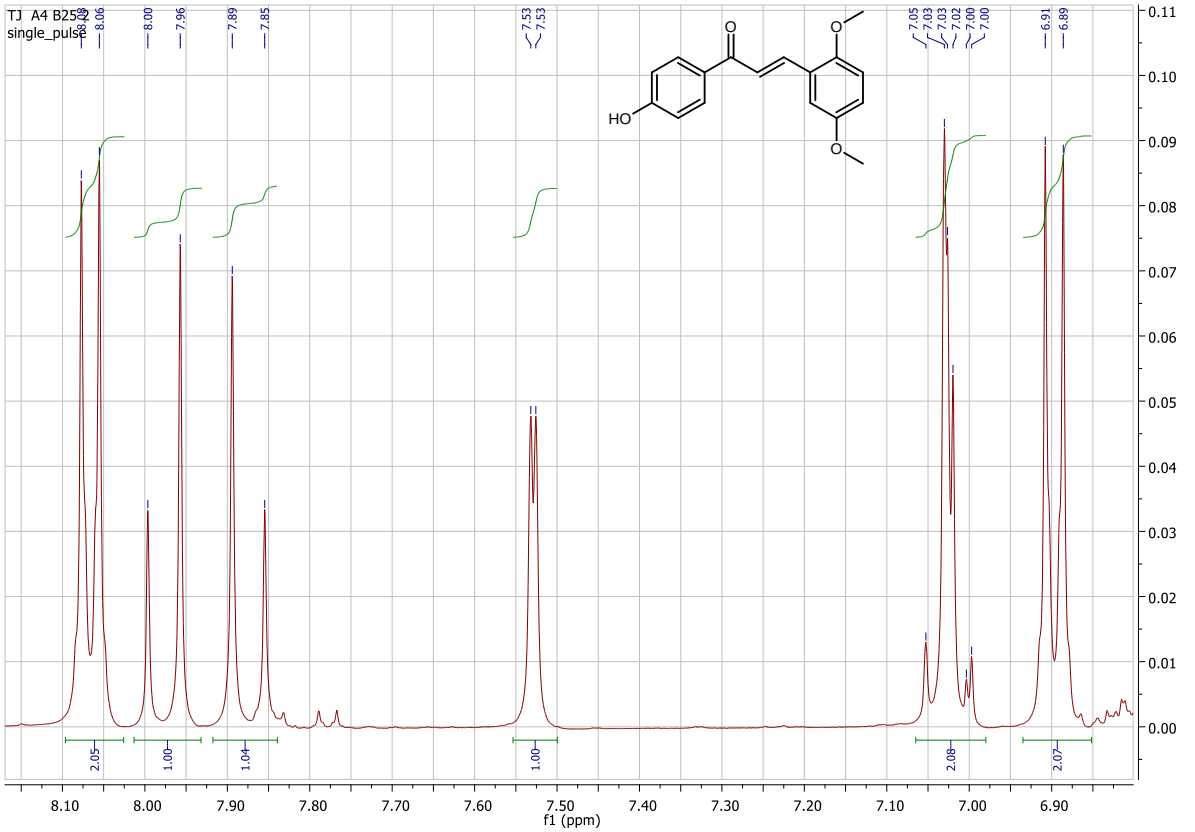

Figure S85 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-hydroxy-2,5-dimethoxychalcone (600MHz; DMSO-d$_6$)

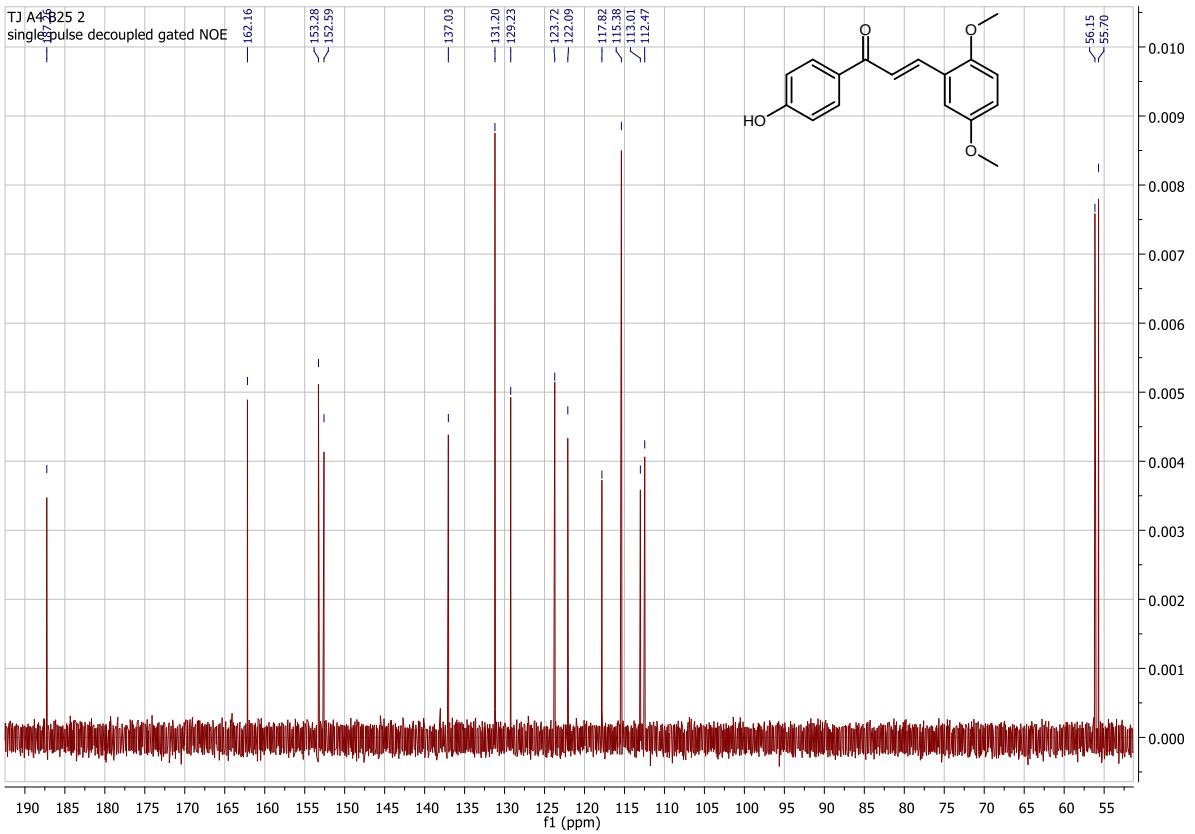

Figure S86 ^{13}C NMR spectrum of 4′-hydroxy-2,5-dimethoxychalcone (151MHz; DMSO-d$_6$)

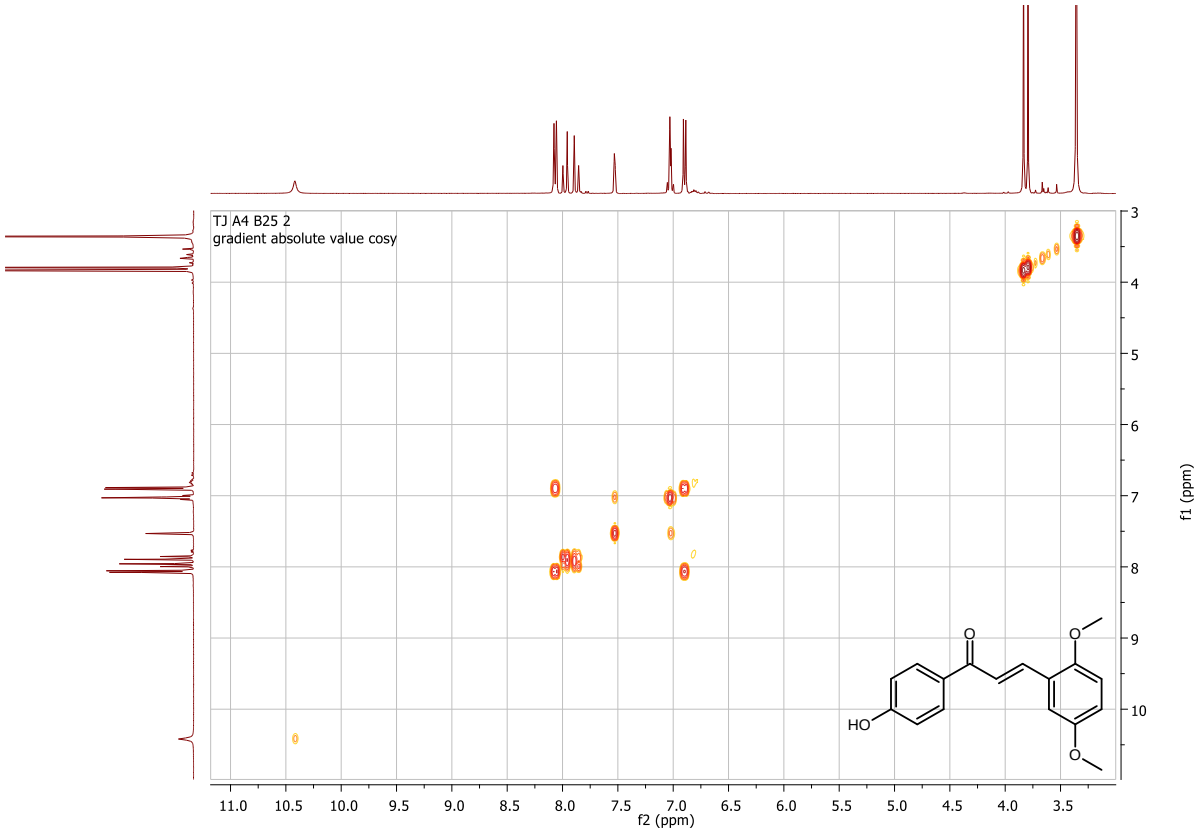

Figure S87 COSY NMR spectrum of *trans*-4′-hydroxy-2,5-dimethoxychalcone (600MHz; DMSO-d_6)

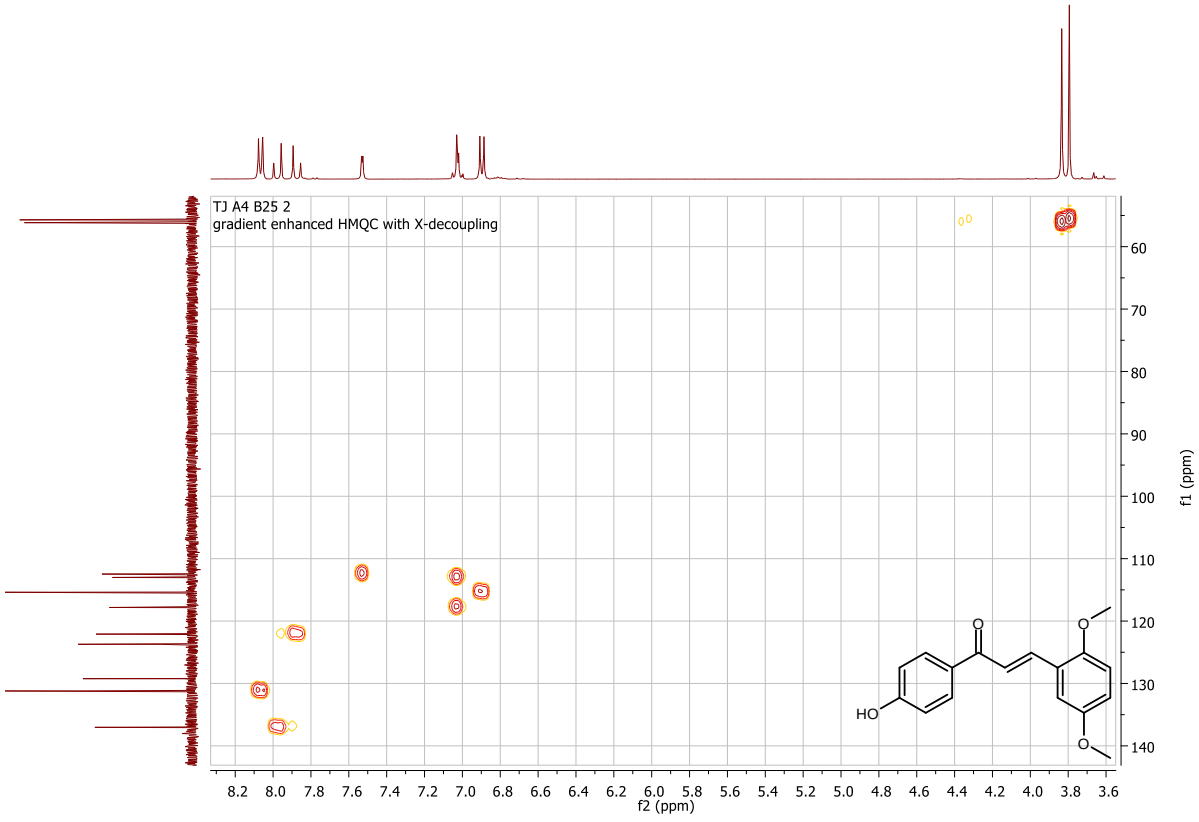

Figure S88 HMQC NMR spectrum of *trans*-4′-hydroxy-2,5-dimethoxychalcone (600MHz; DMSO-d_6)

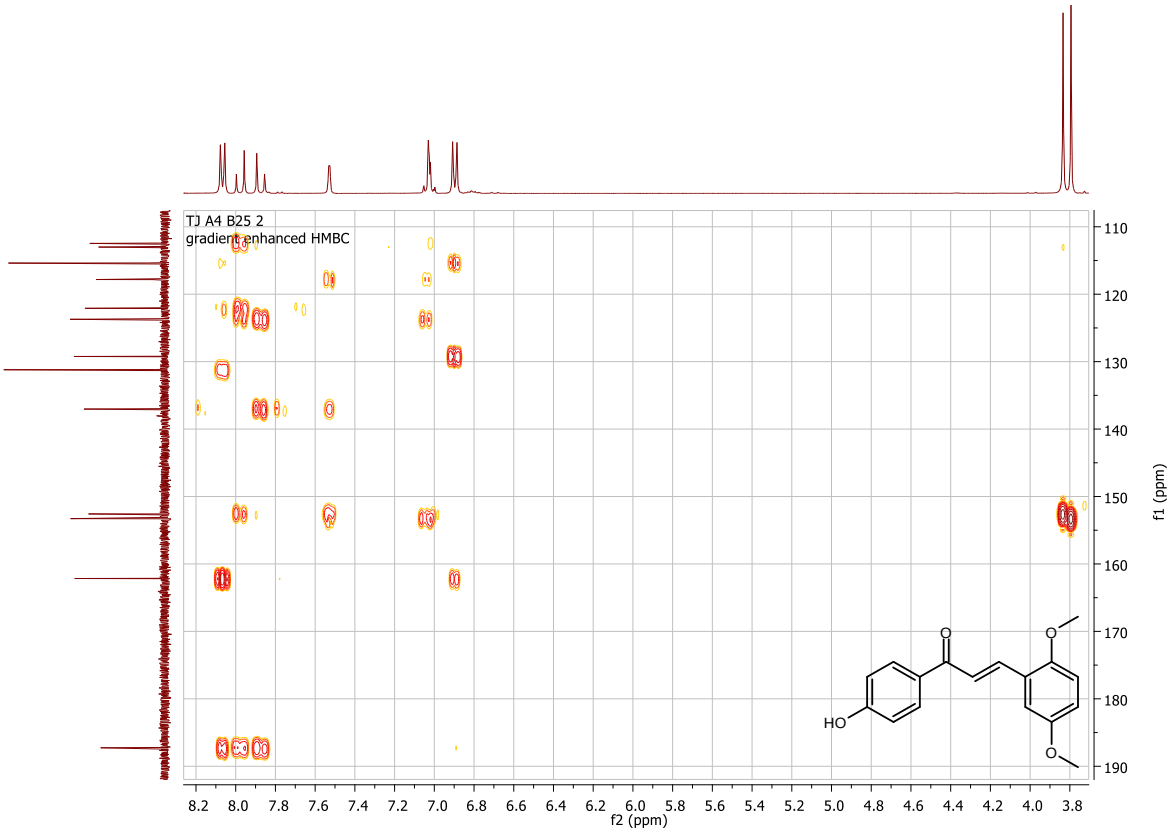

Figure S89 HMBC NMR spectrum of *trans*-4′-hydroxy-2,5-dimethoxychalcone (600MHz; DMSO-d_6)

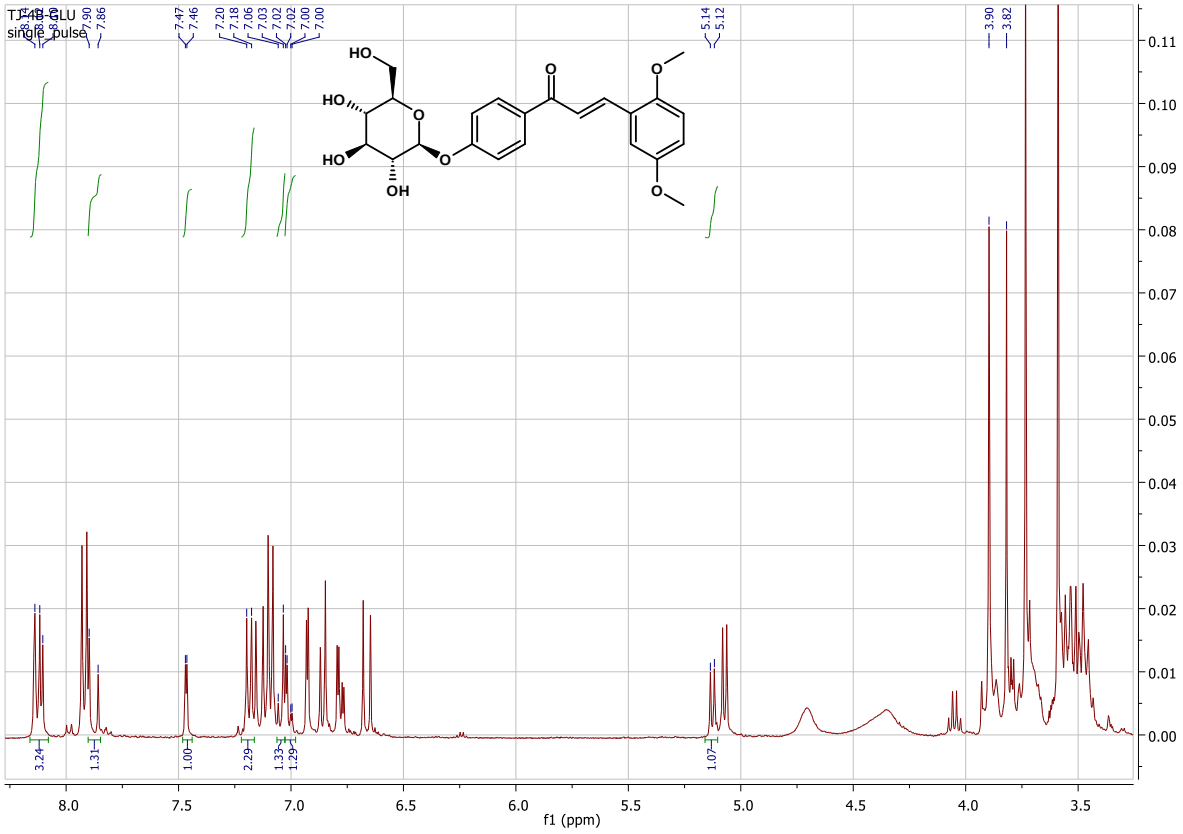

Figure S90 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (600MHz; Acetone-d_6)

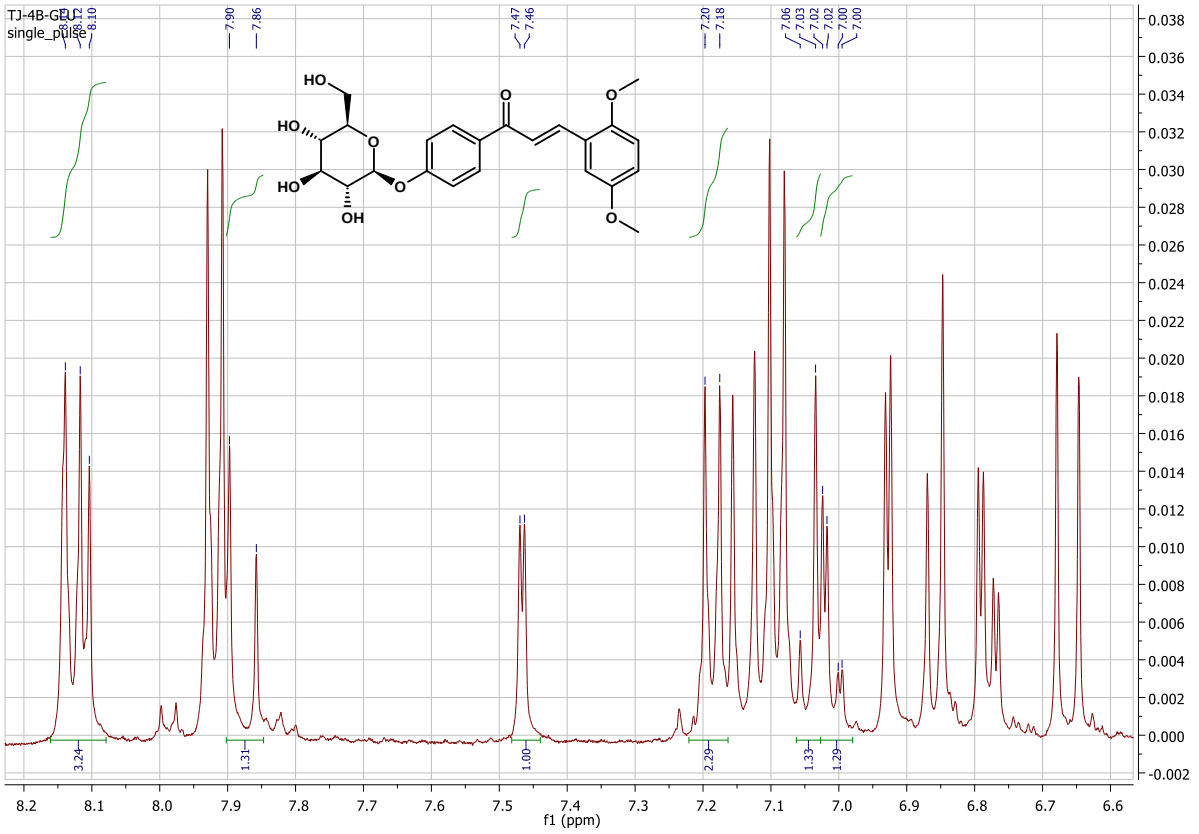

Figure S91 Flavonoid fragment of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (600MHz; Acetone-d$_6$)

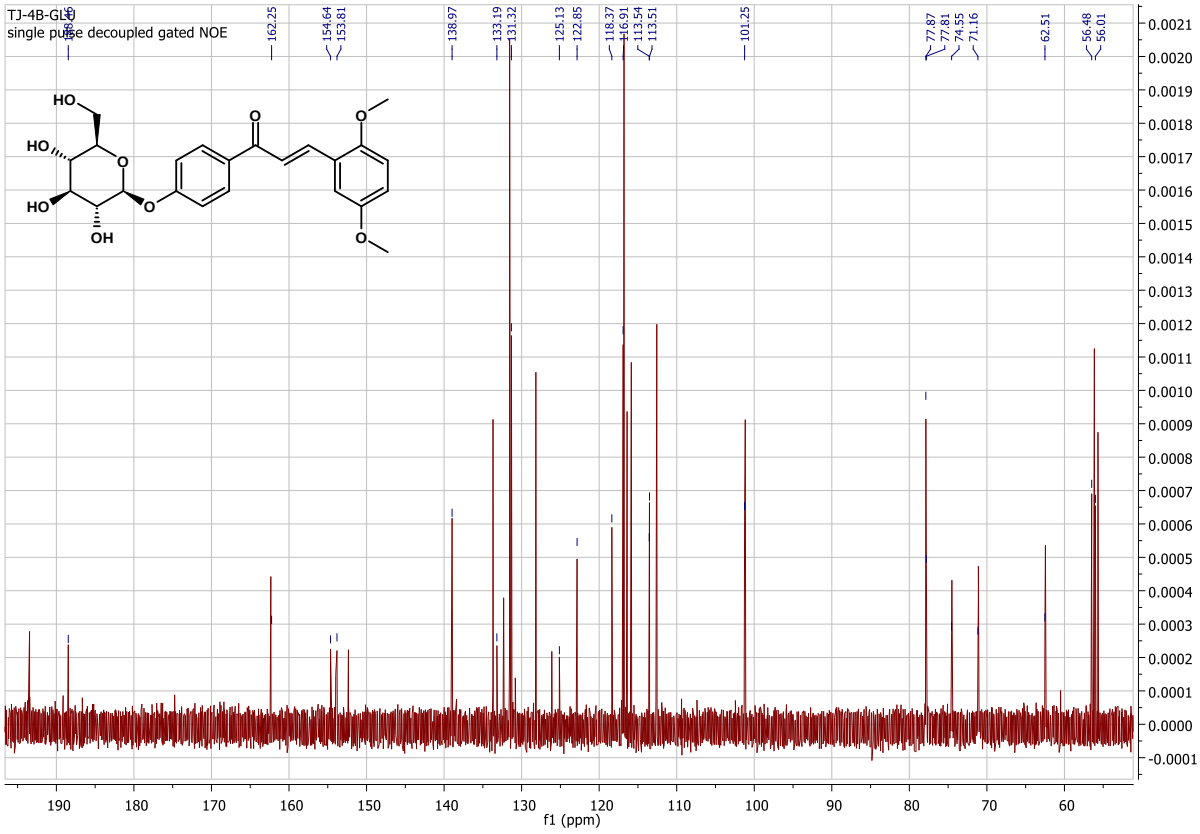

Figure S92 ^{13}C NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (151MHz; Acetone-d$_6$)

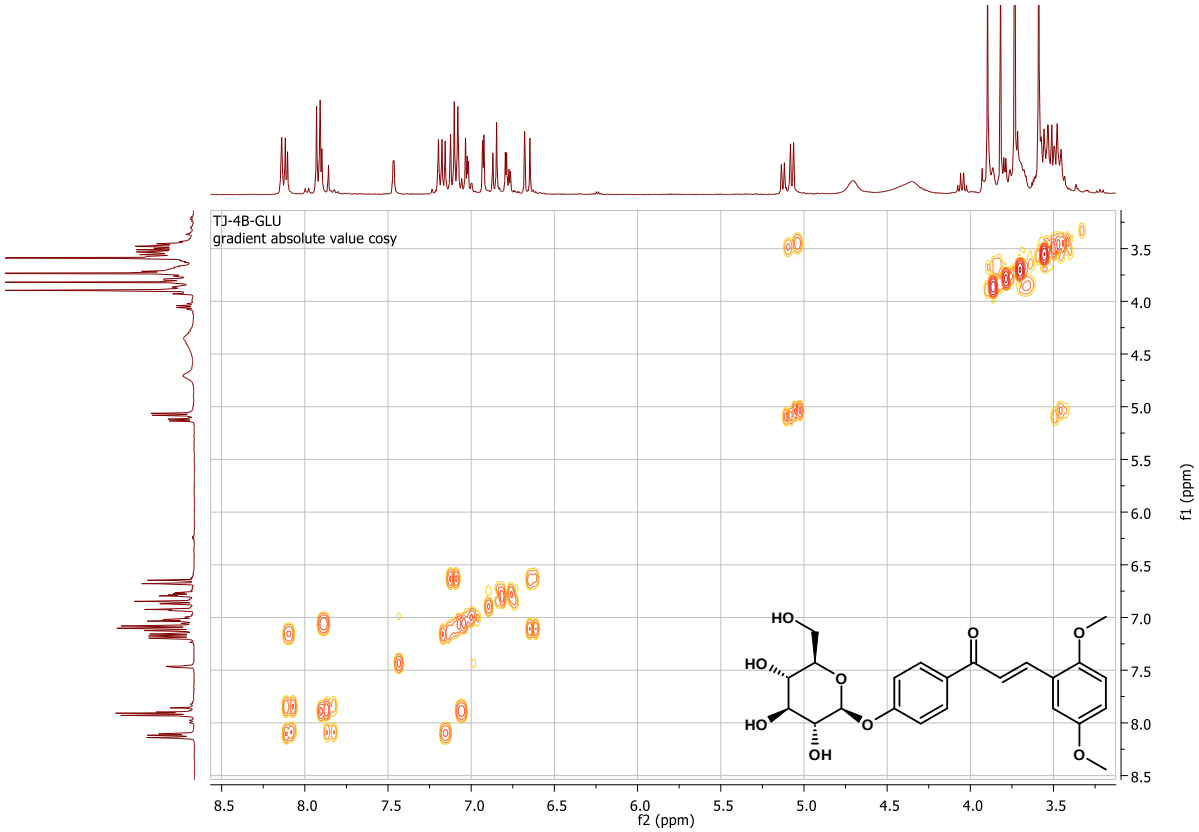

Figure S93 COSY NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (600MHz; Acetone-d_6)

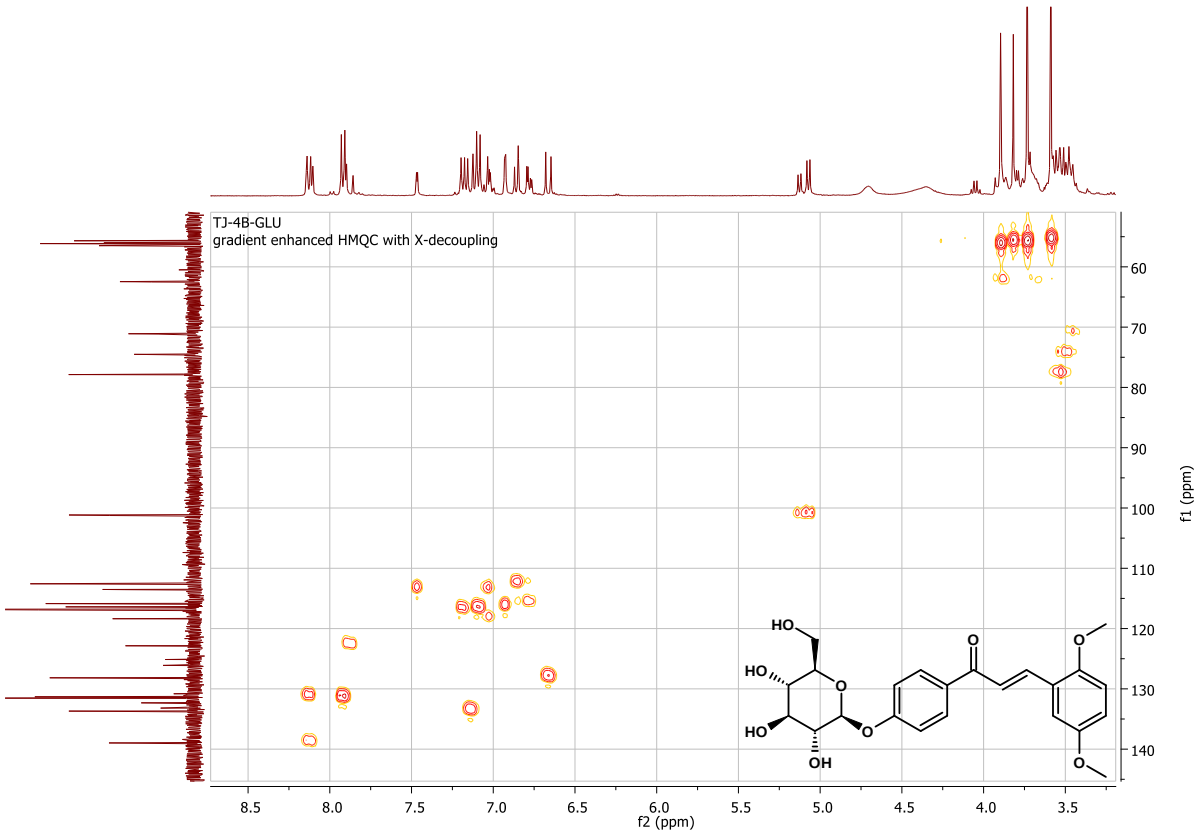

Figure S94 HMQC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (600MHz; Acetone-d_6)

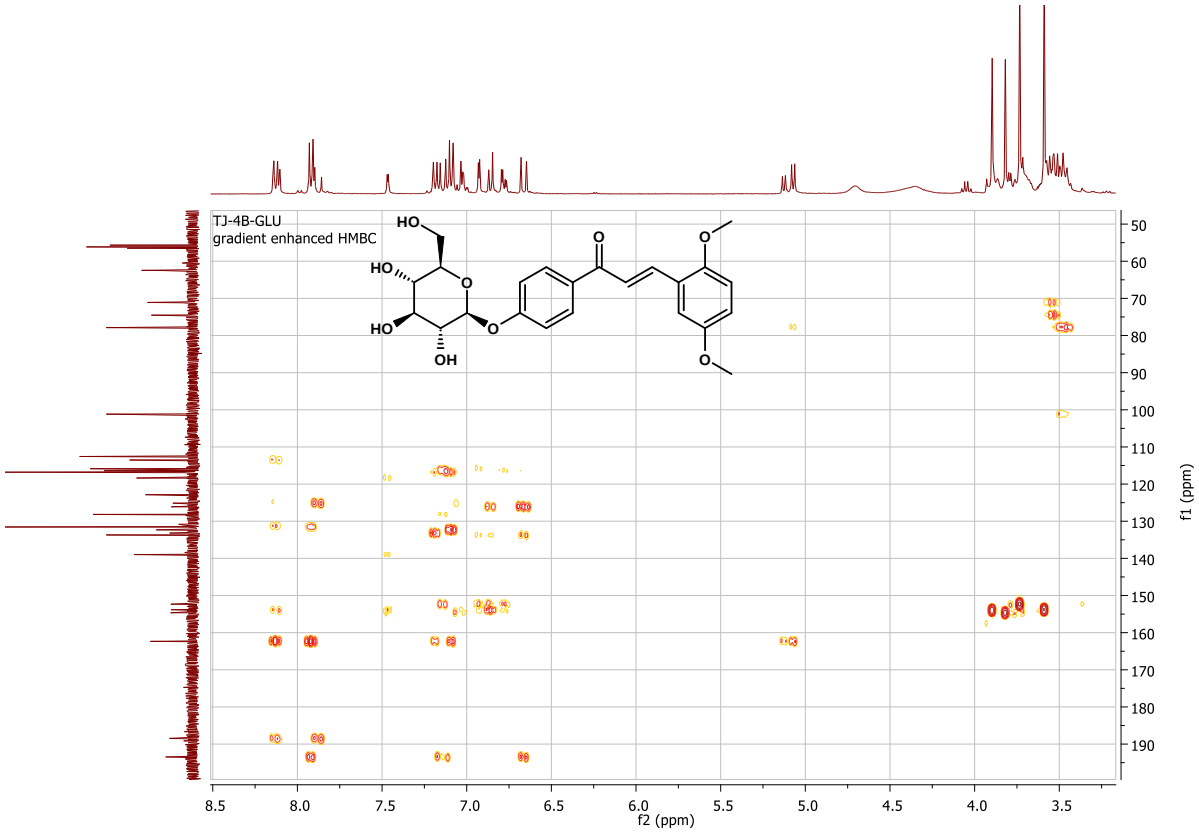

Figure S95 HMBC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-2,5-dimethoxychalcone (600MHz; Acetone-d$_6$)

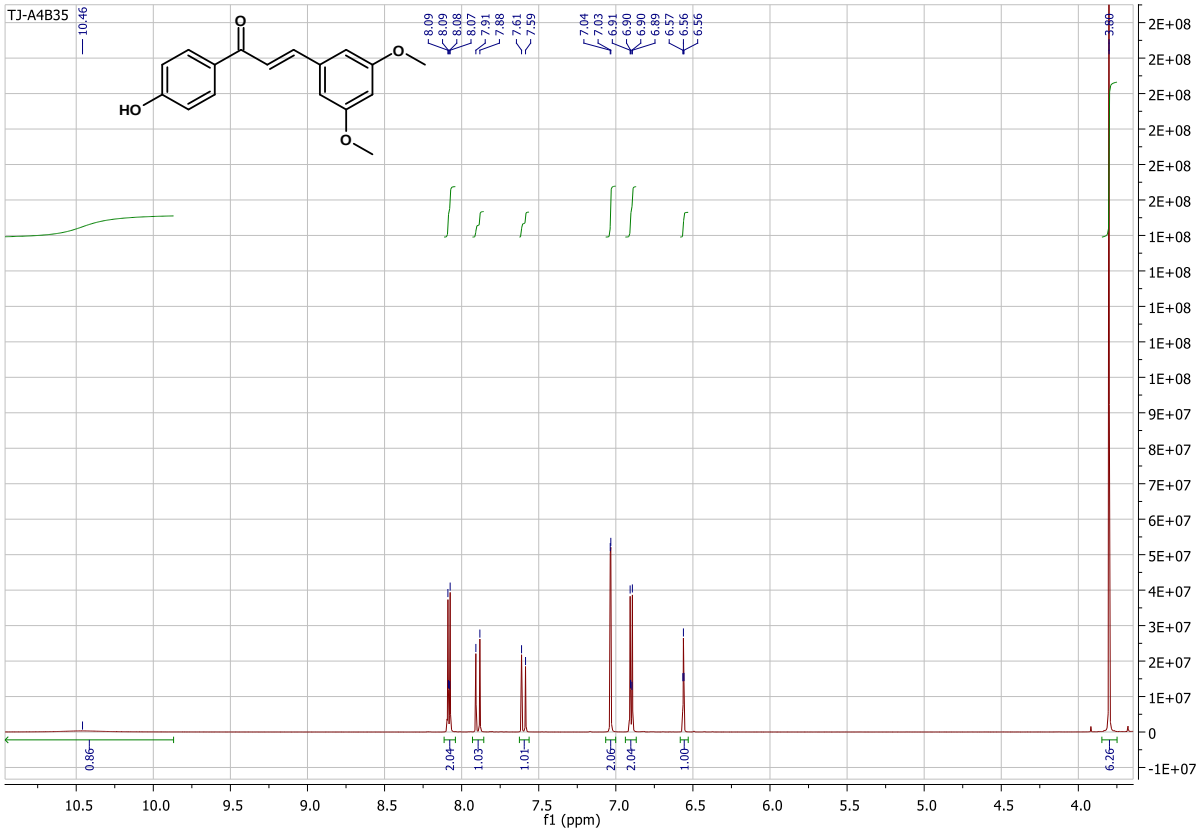

Figure S96 ^{1}H NMR spectrum of *trans*-4′-hydroxy-3,5-dimethoxychalcone (600MHz, DMSO-d$_6$)

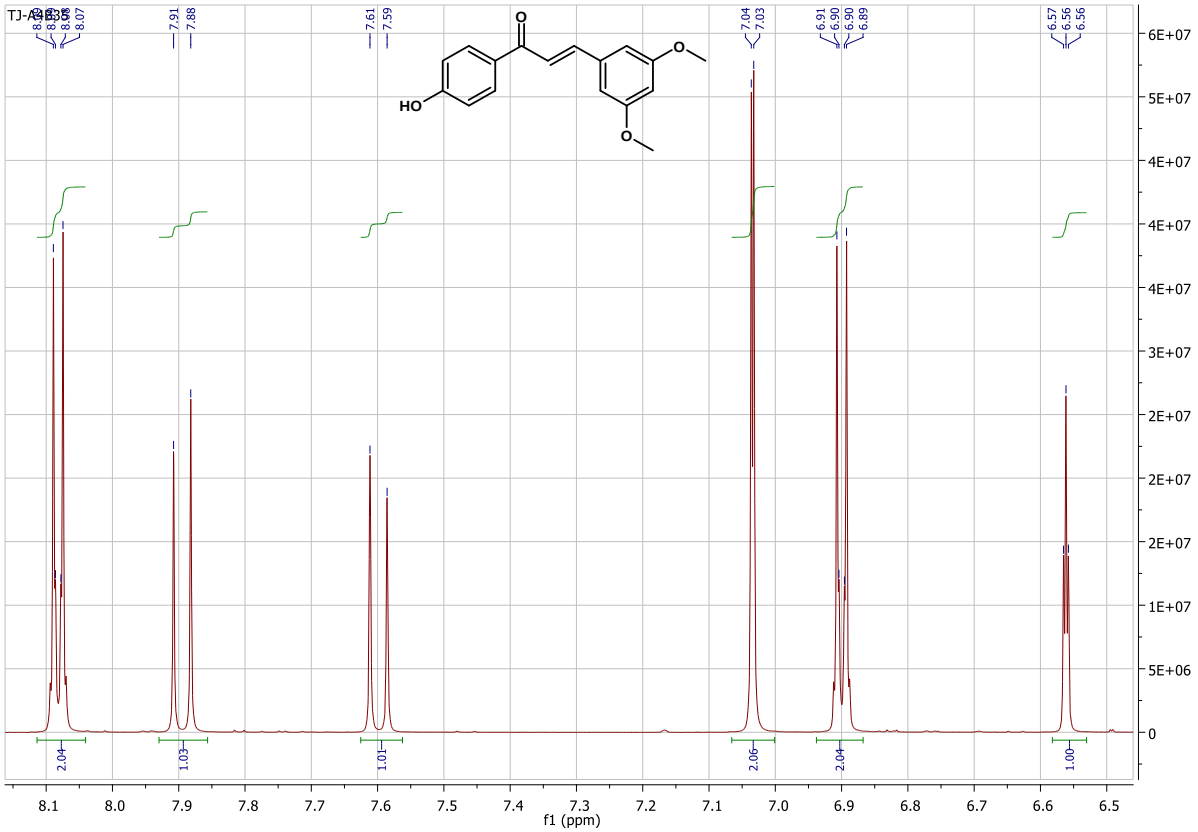

Figure S97 Flavonoid part of spectrum of ^{1}H NMR of *trans*-4′-hydroxy-3,5-dimethoxychalcone (600MHz, DMSO-d$_6$)

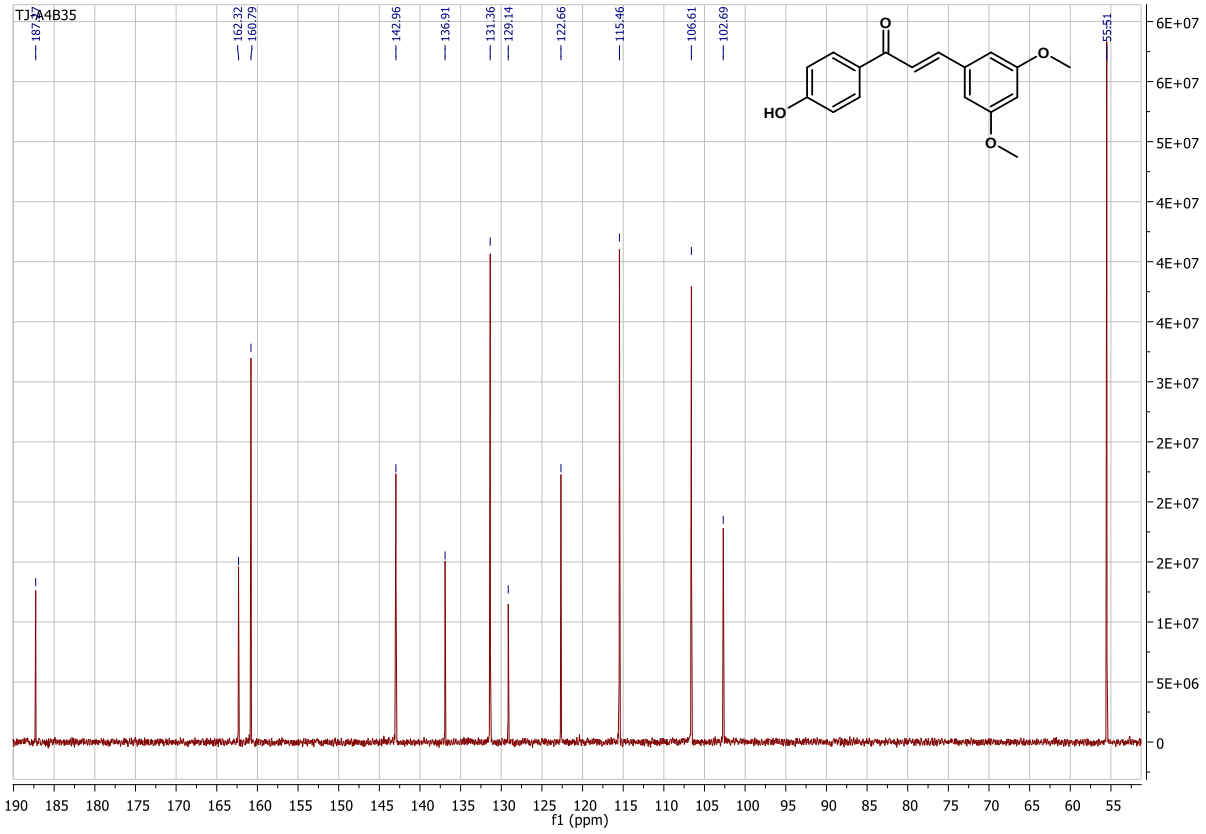

Figure S98 ^{13}C NMR spectrum of *trans*-4′-hydroxy-3,5-dimethoxychalcone (151MHz, DMSO-d$_6$)

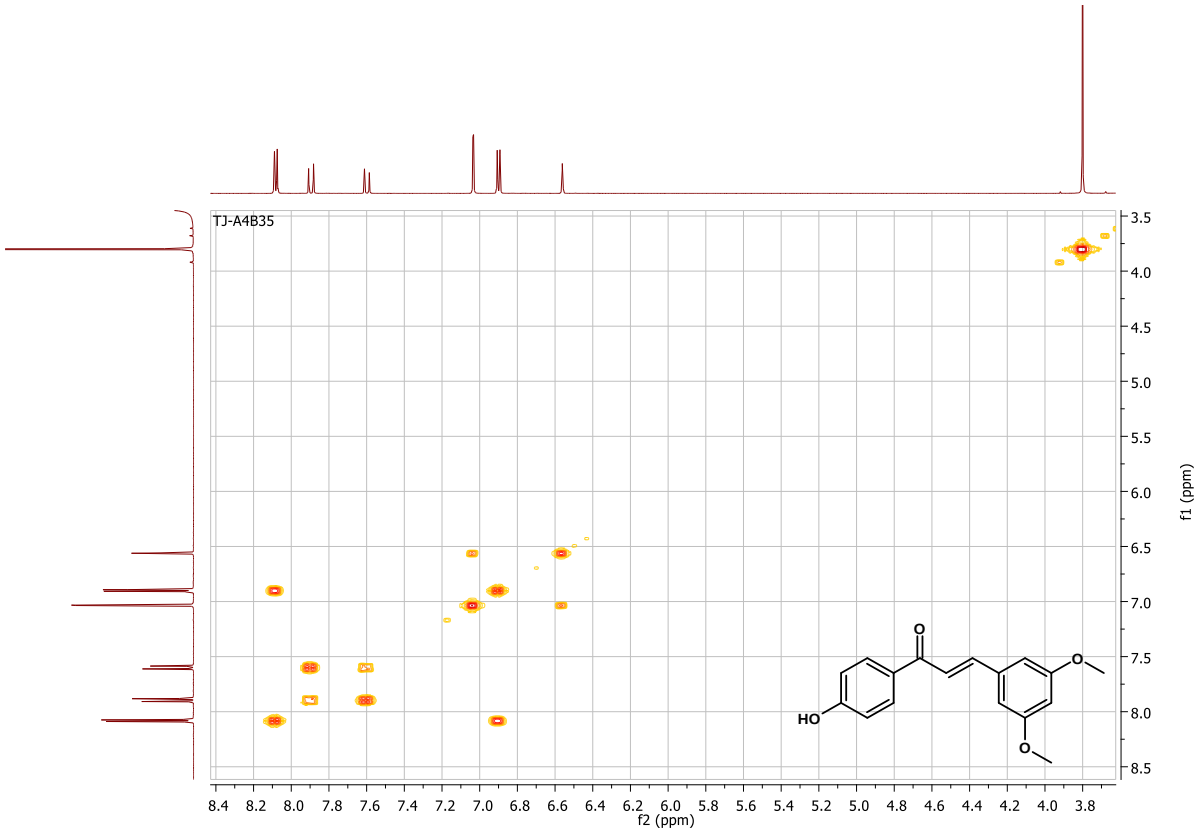

Figure S99 COSY NMR spectrum of *trans*-4′-hydroxy-3,5-dimethoxychalcone (600MHz, DMSO-d_6)

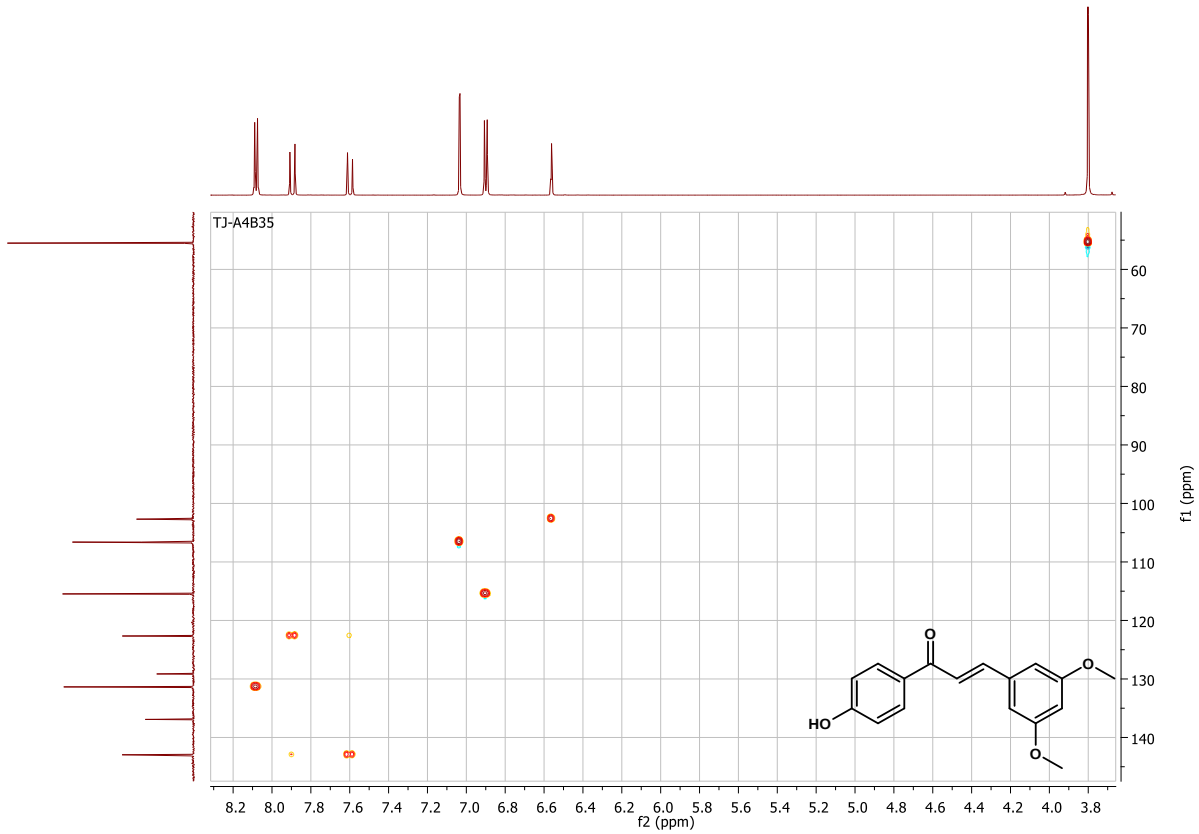

Figure S100 HMQC NMR spectrum of *trans*-4′-hydroxy-3,5-dimethoxychalcone (600MHz, DMSO-d_6)

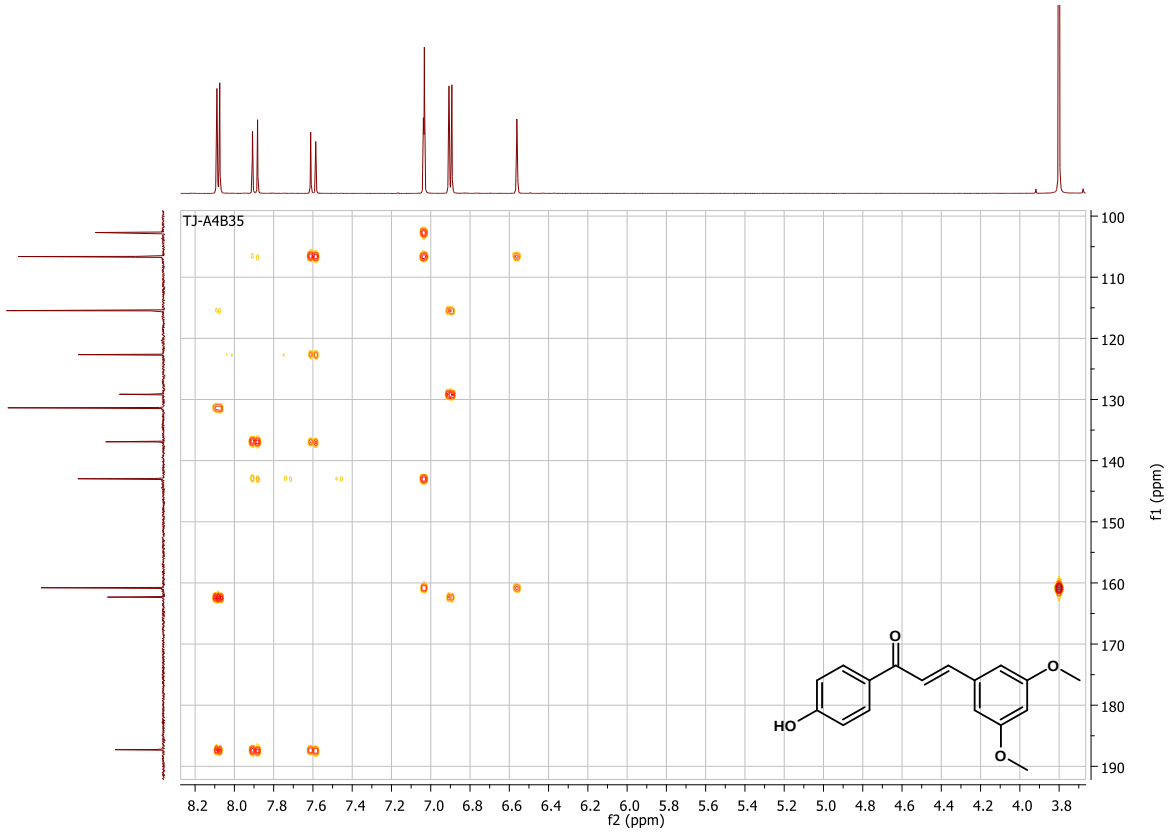

Figure S101 HMBC NMR spectrum of *trans*-4′-hydroxy-3,5-dimethoxychalcone (600MHz, DMSO-d_6)

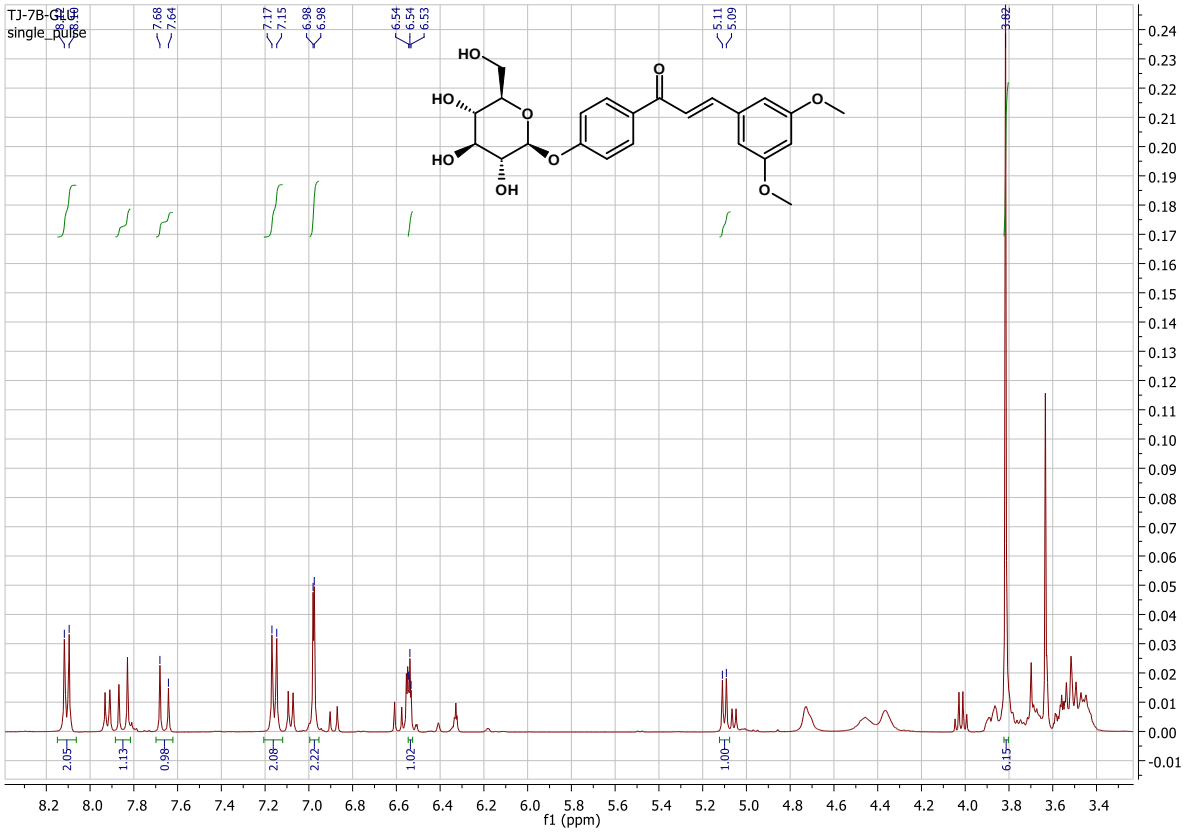

Figure S102 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, DMSO-d_6)

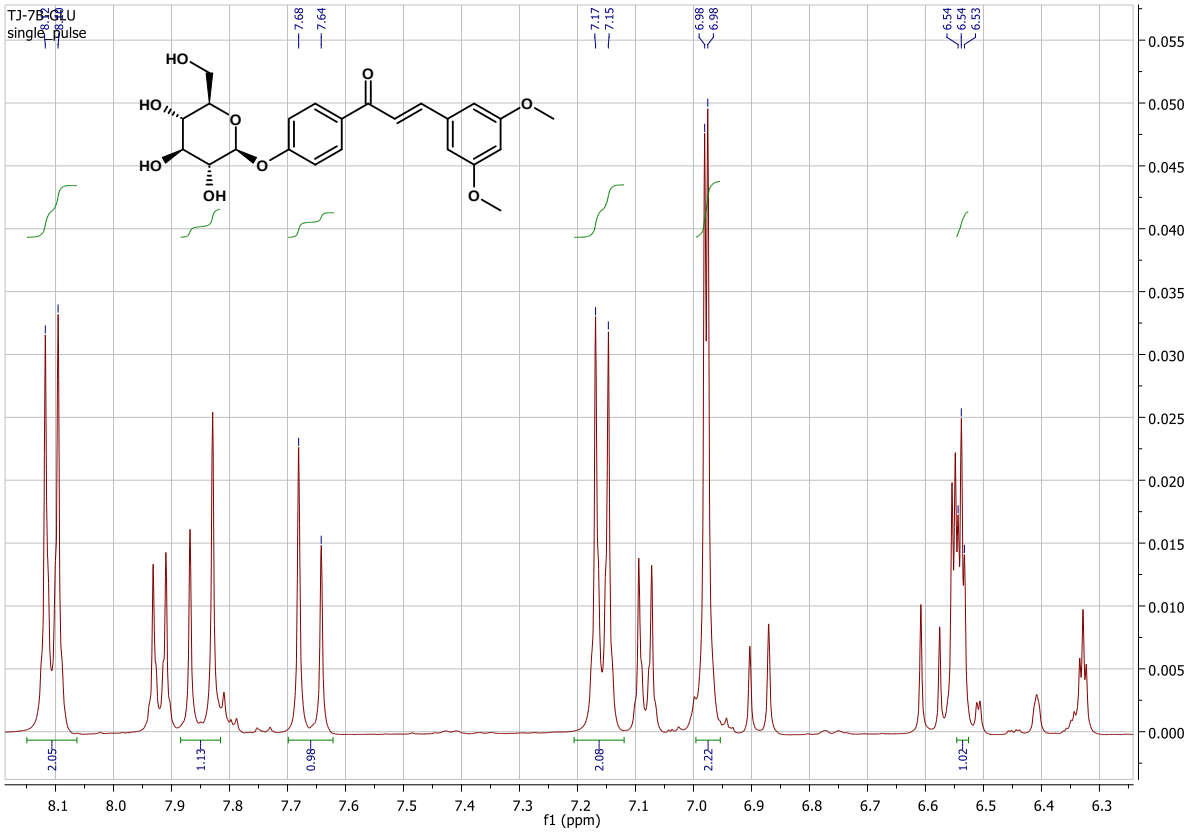

Figure S103 Flavonoid part of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

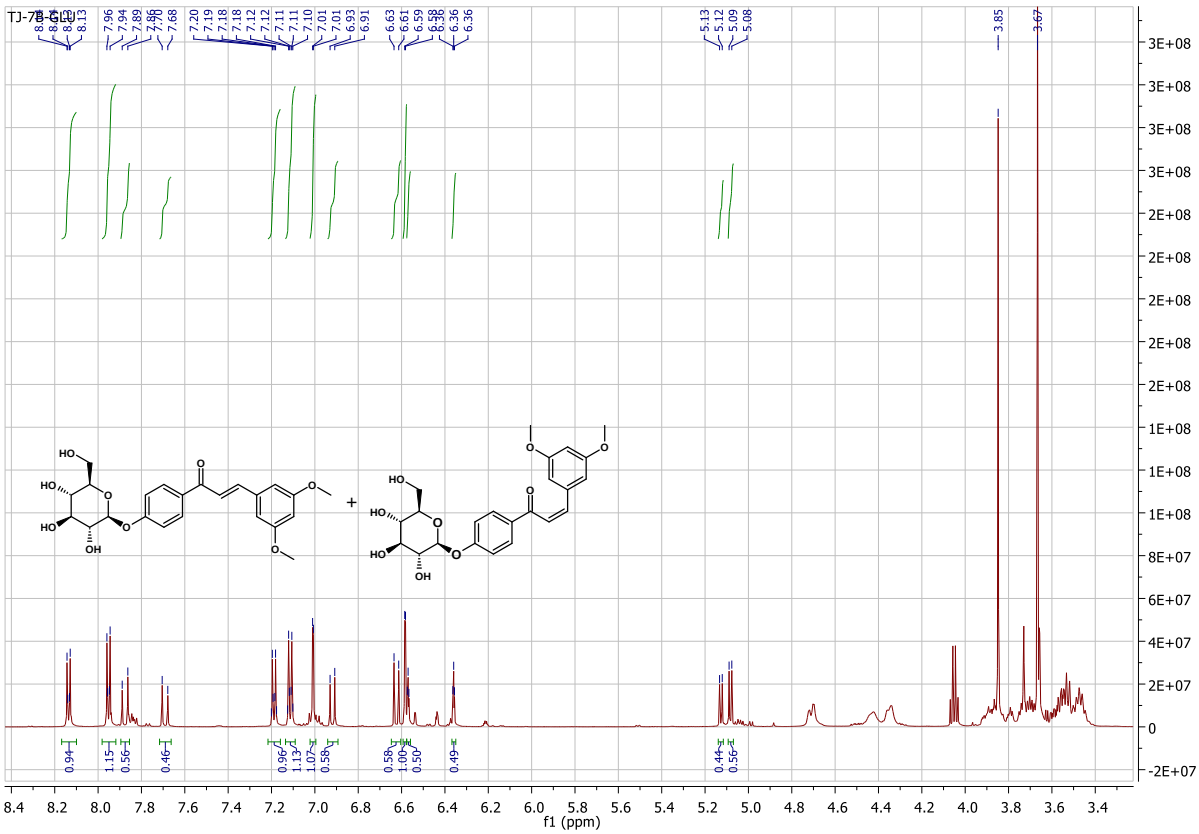

Figure S104 ^{1}H NMR spectrum of mixture of *trans*- and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (same probe as **Figure S102** measured second time after few days) (600MHz, Acetone-d$_6$)

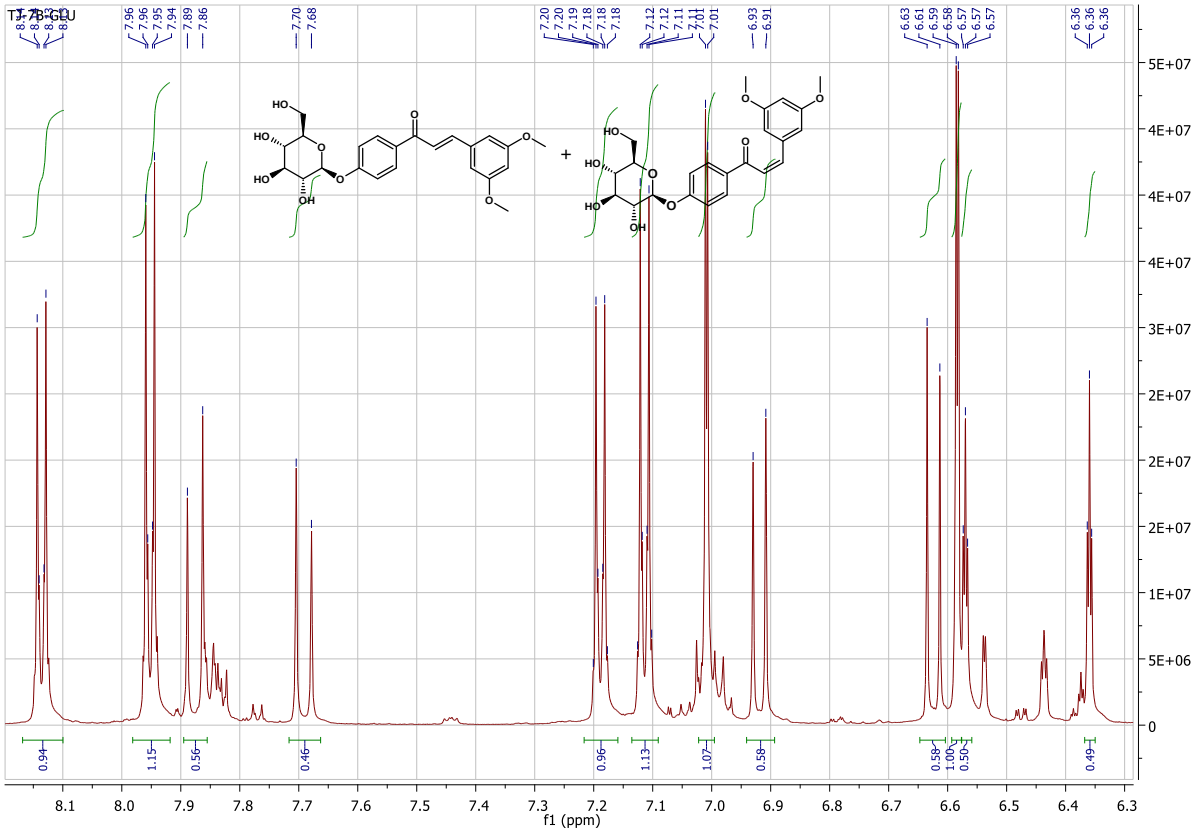

Figure S105 Flavonoid part of ^{1}H NMR spectrum of *trans*- and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (same probe as **Figure S103** measured second time after few days) (600MHz, Acetone-d_6)

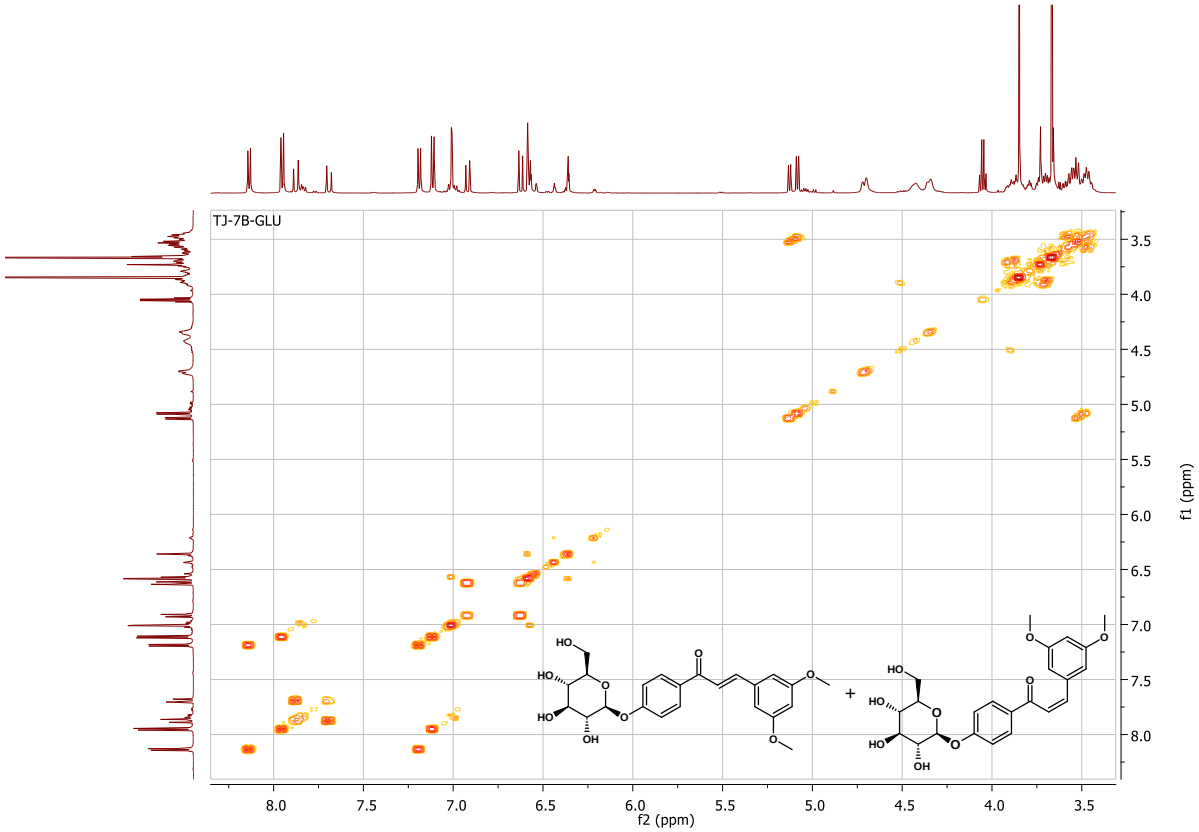

Figure S106 COSY NMR spectrum of *trans*- and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d_6)

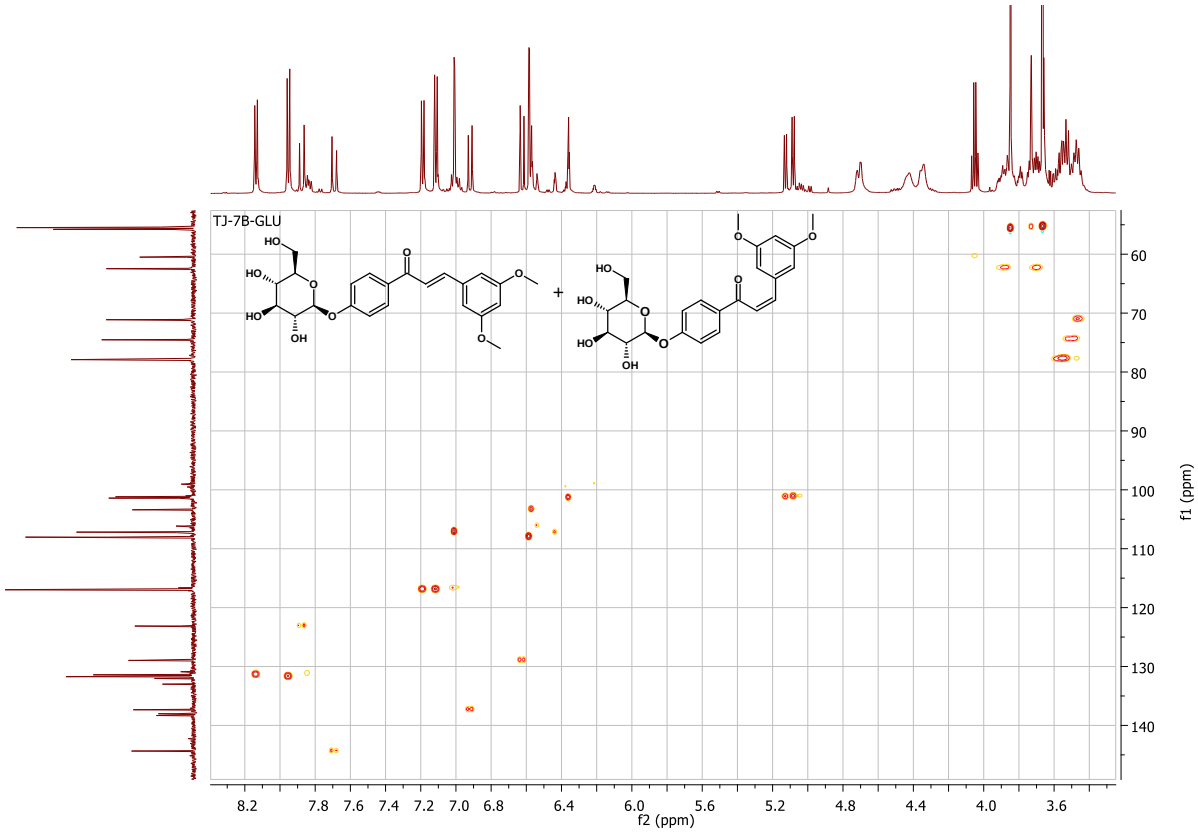

Figure S107 HMQC NMR spectrum of *trans*- and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

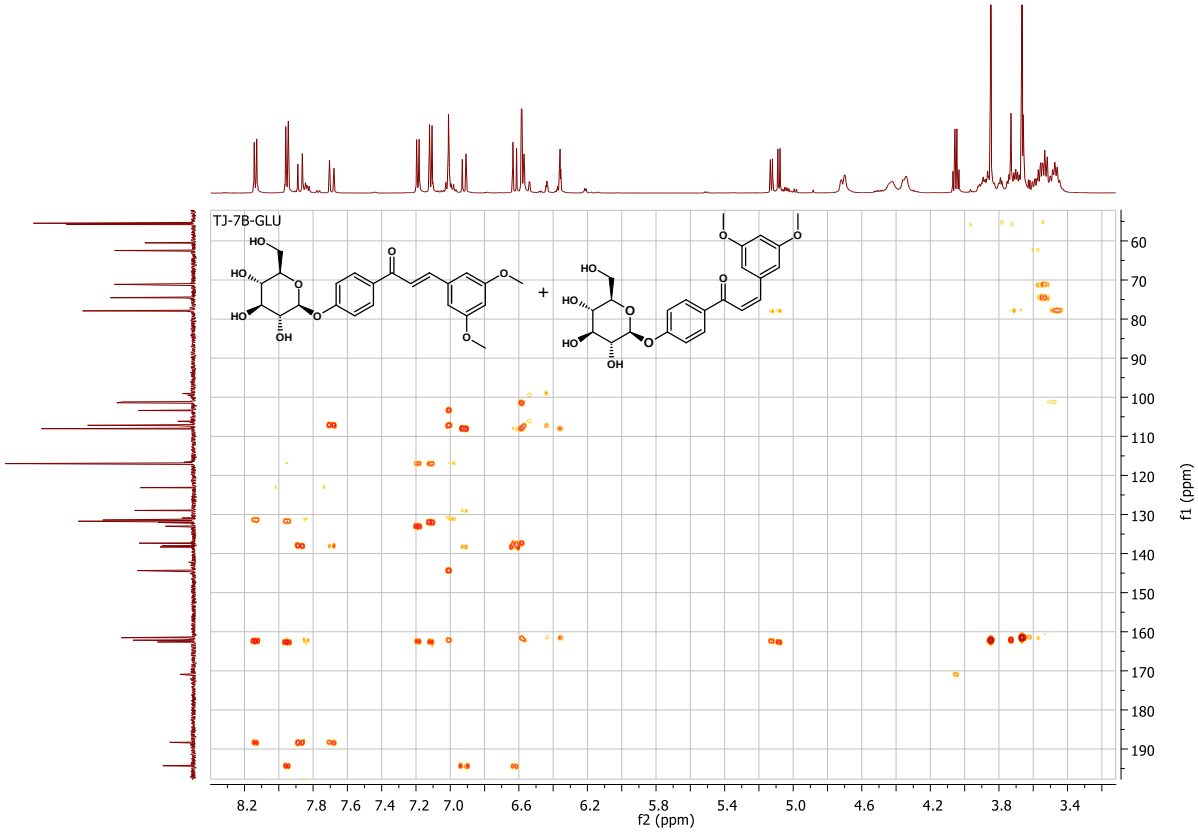

Figure S108 HMBC NMR spectrum of *trans*- and *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

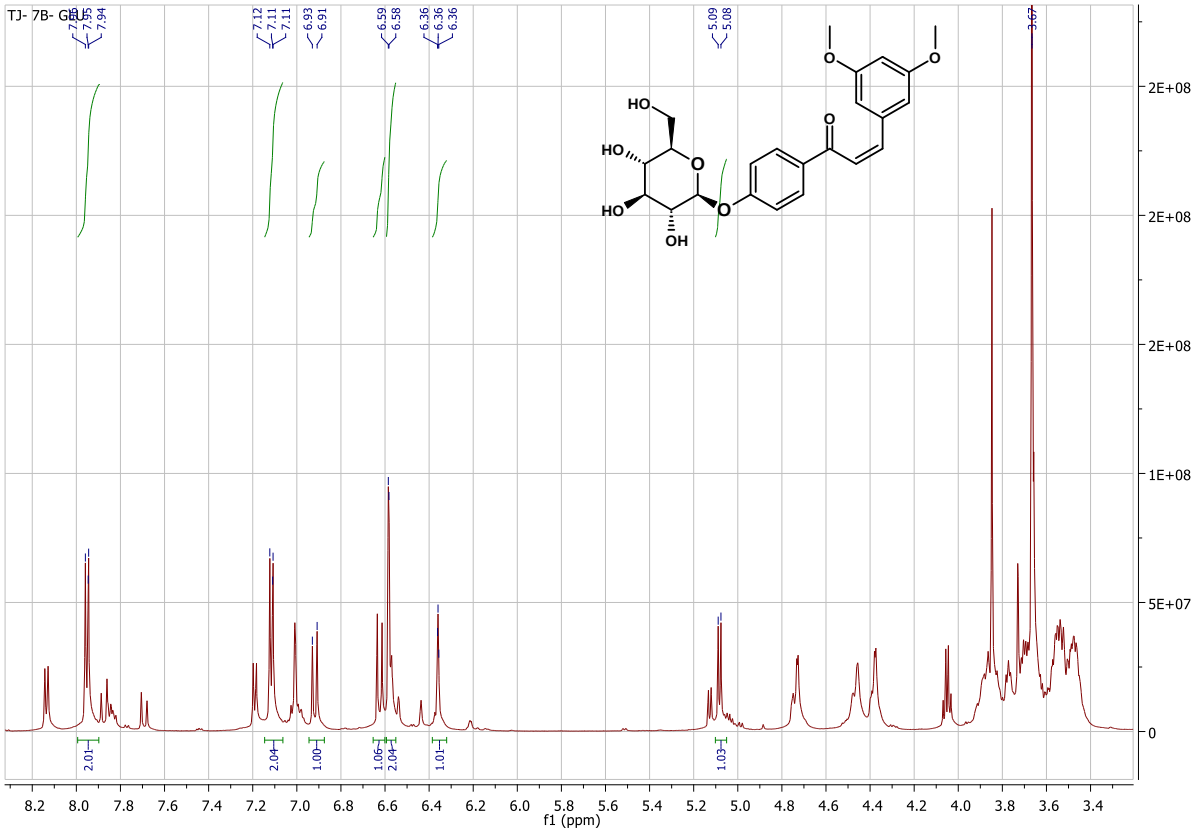

Figure S109 ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

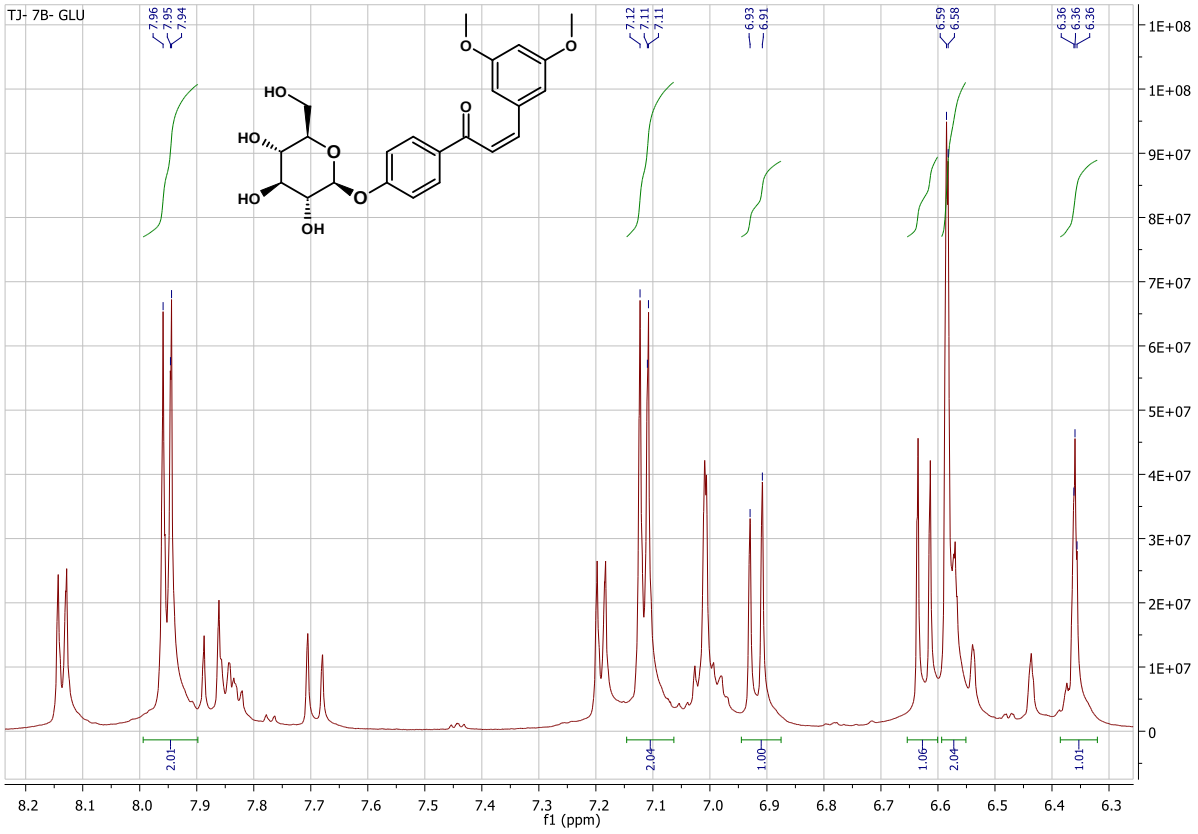

Figure S110 Flavonoid part of spectrum of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

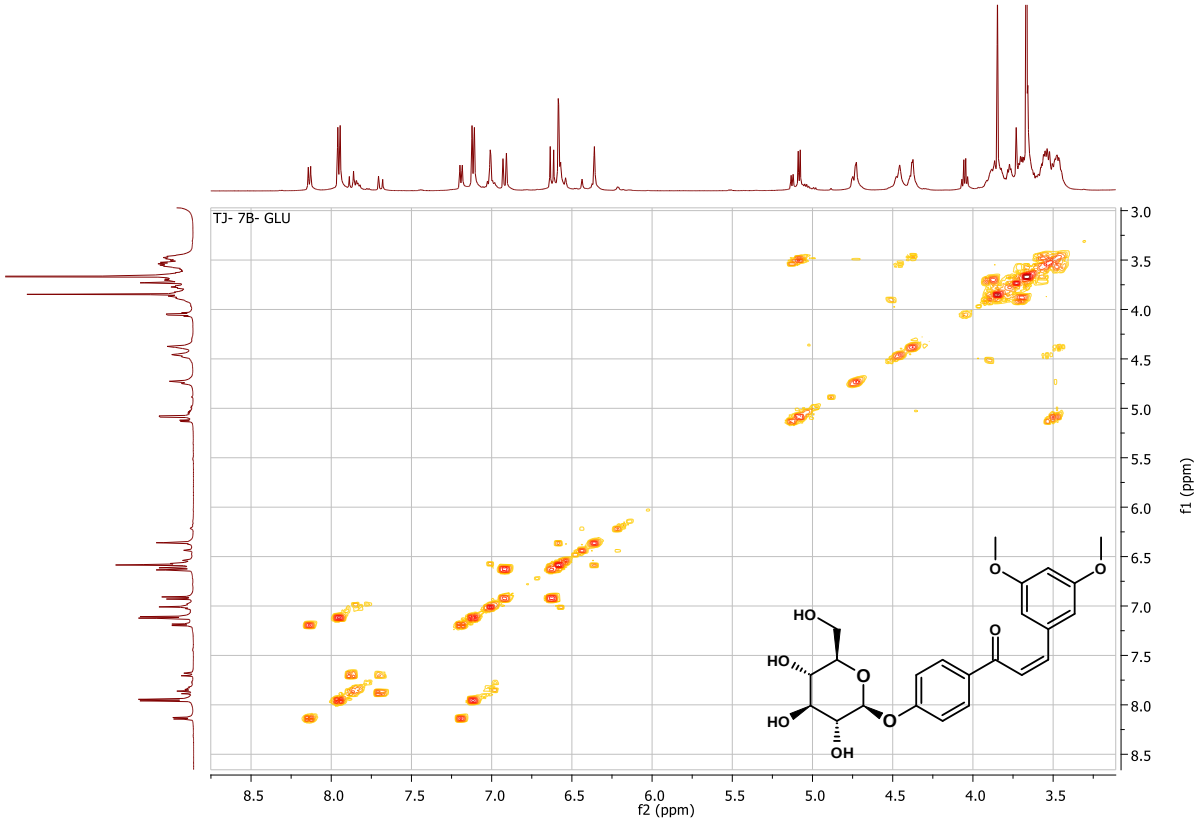

Figure S111 COSY NMR spectrum of ^{1}H NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

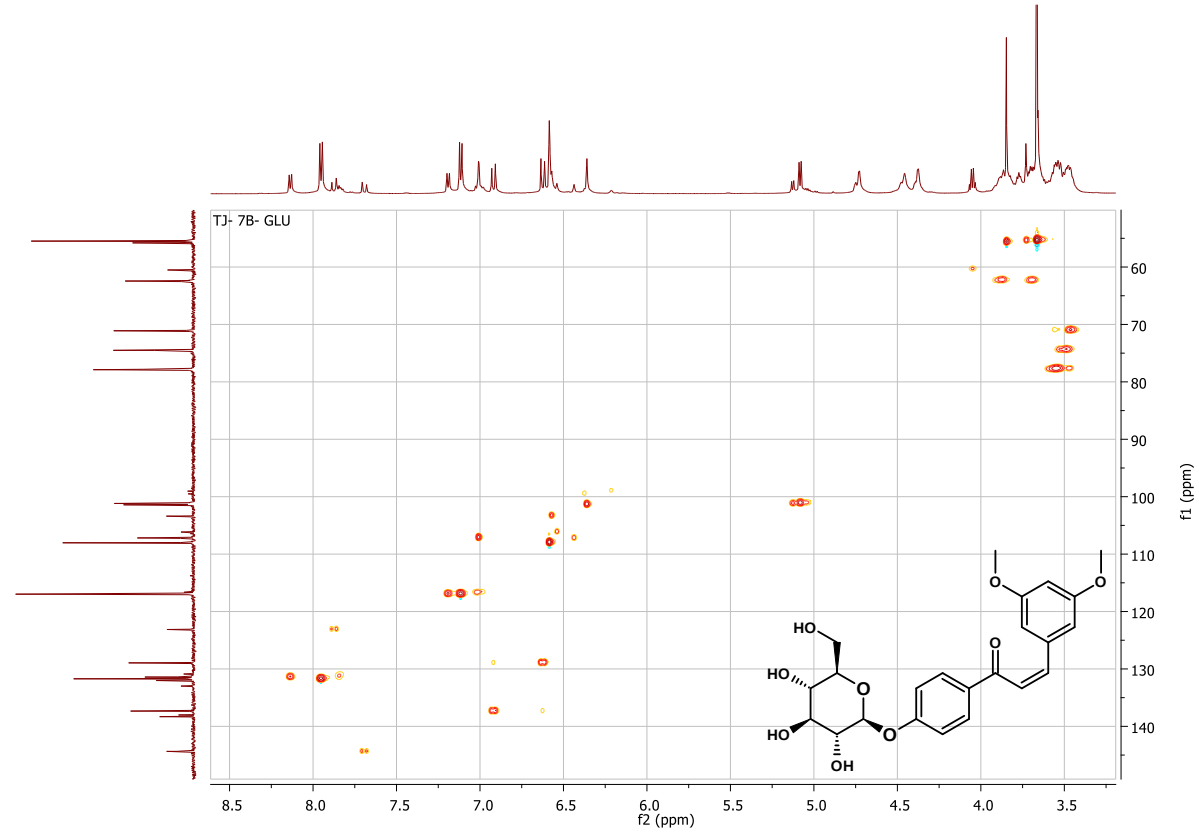

Figure S112 HMQC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d$_6$)

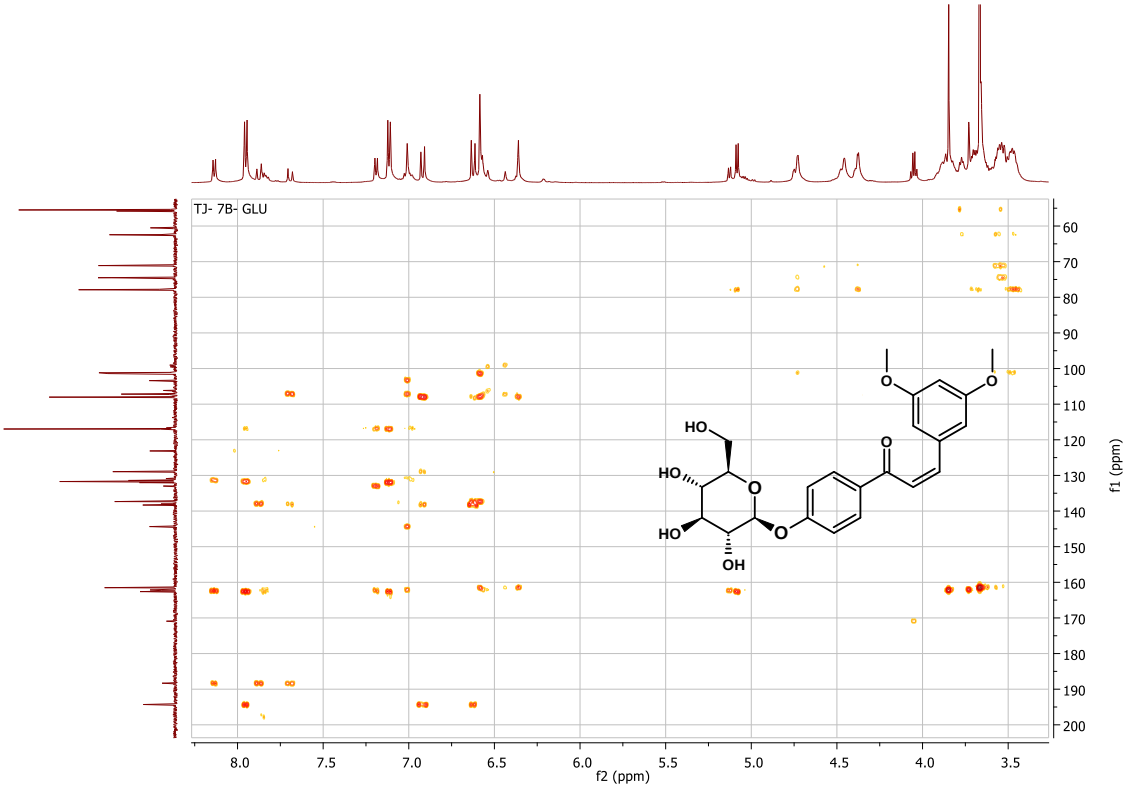

Figure S113 HMBC NMR spectrum of *cis*-4′-*O*-β-D-(glucopyranosyl)-3,5-dimethoxychalcone (600MHz, Acetone-d_6)

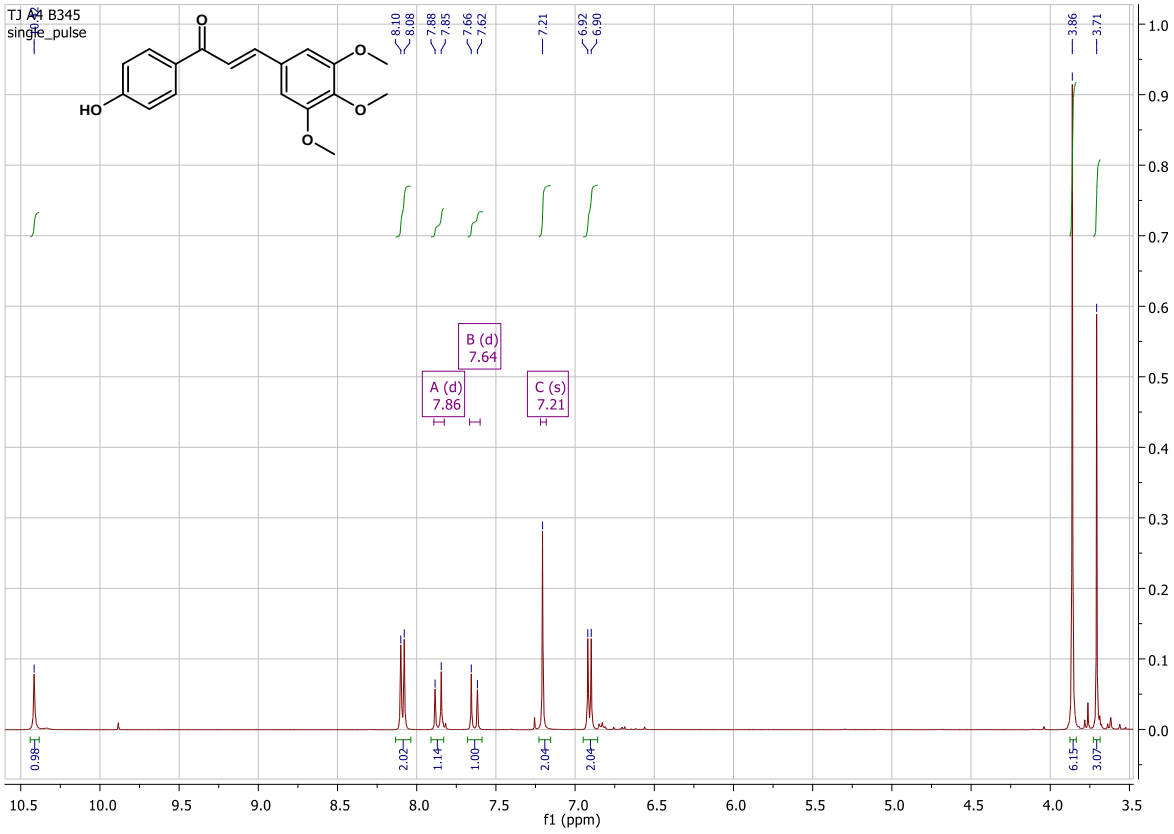

Figure S114 ^{1}H NMR of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (600MHz, DMSO-d_6)

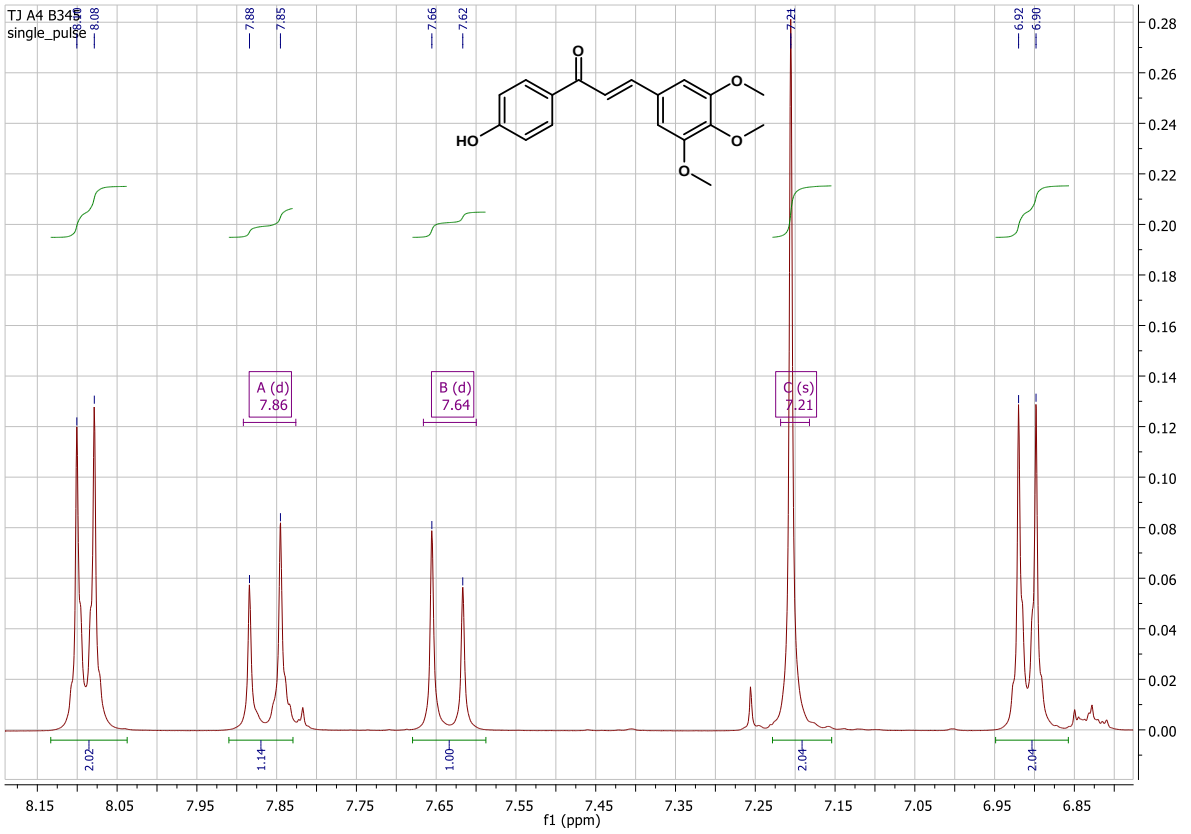

Figure S115 Flavonoid framgment of ^{1}H NMR spectrum of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (600MHz, DMSO-d$_6$)

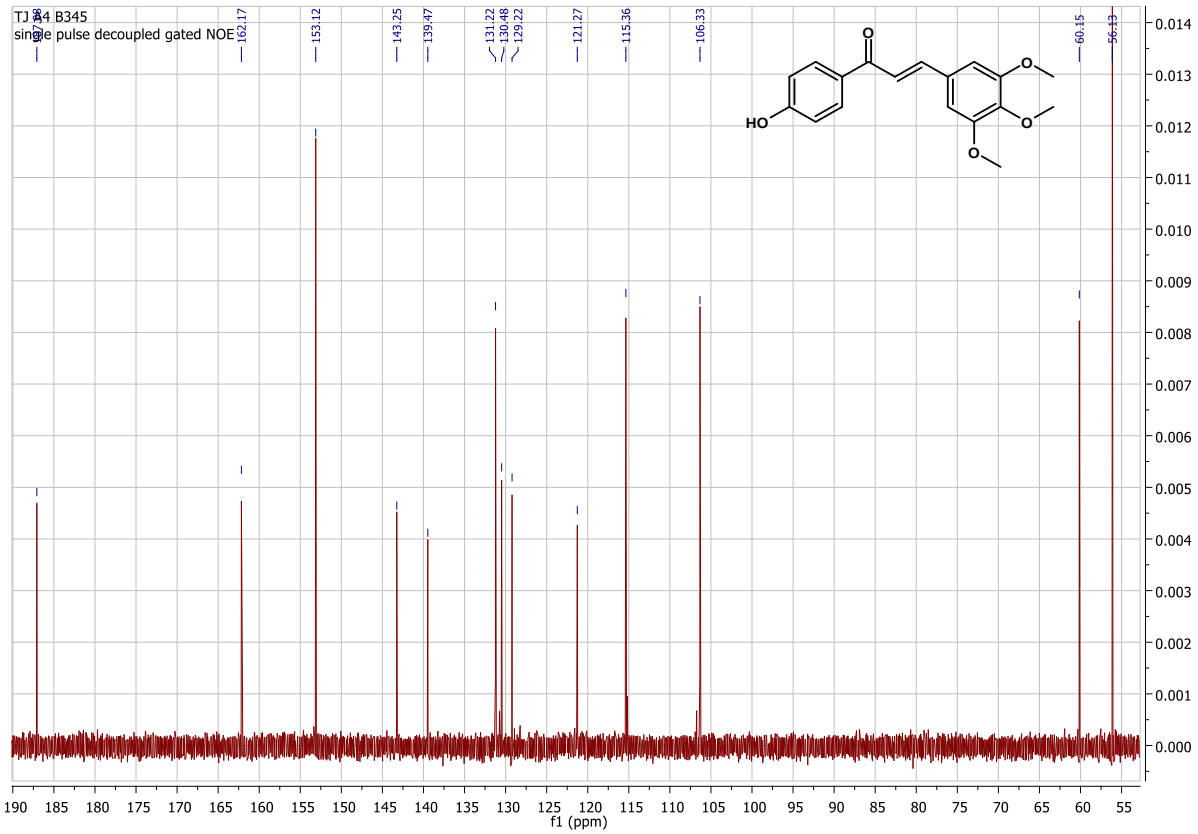

Figure S116 ^{13}C NMR of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (151MHz, DMSO-d$_6$)

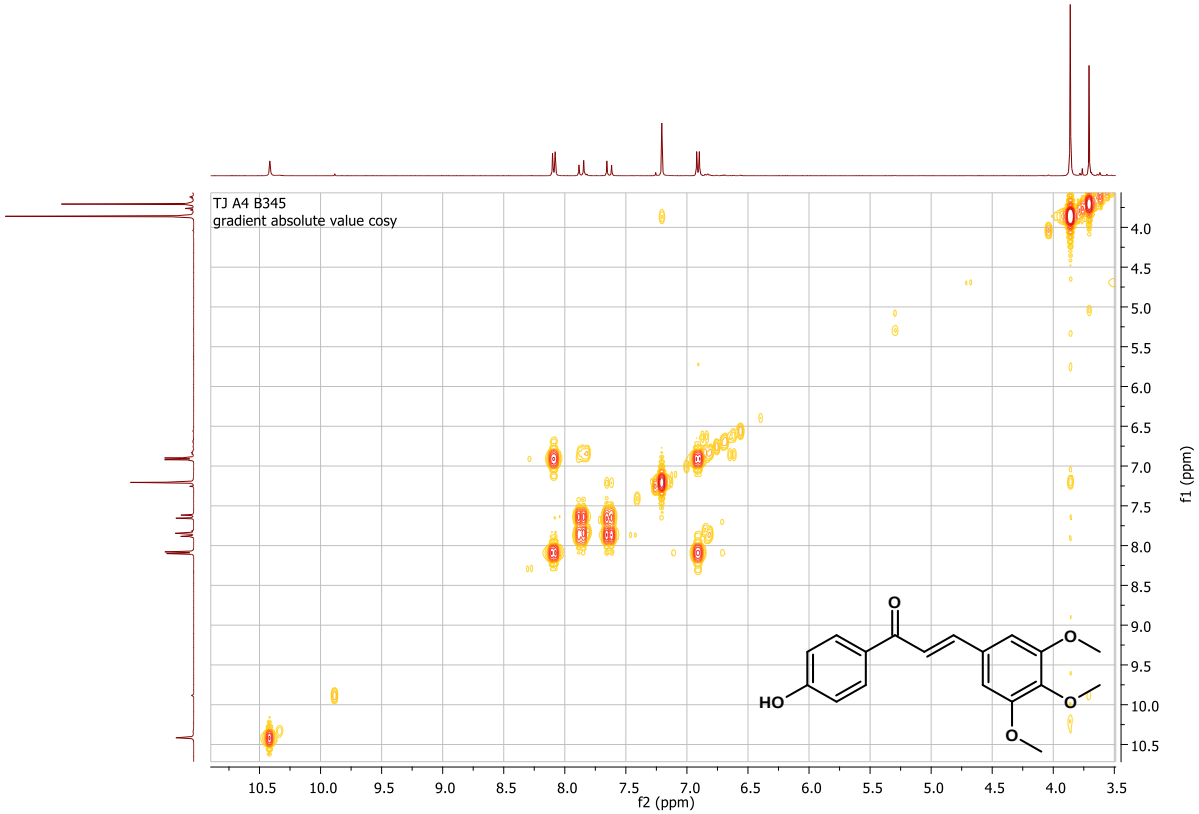

Figure S117 COSY NMR spectrum of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (600MHz, DMSO-d_6)

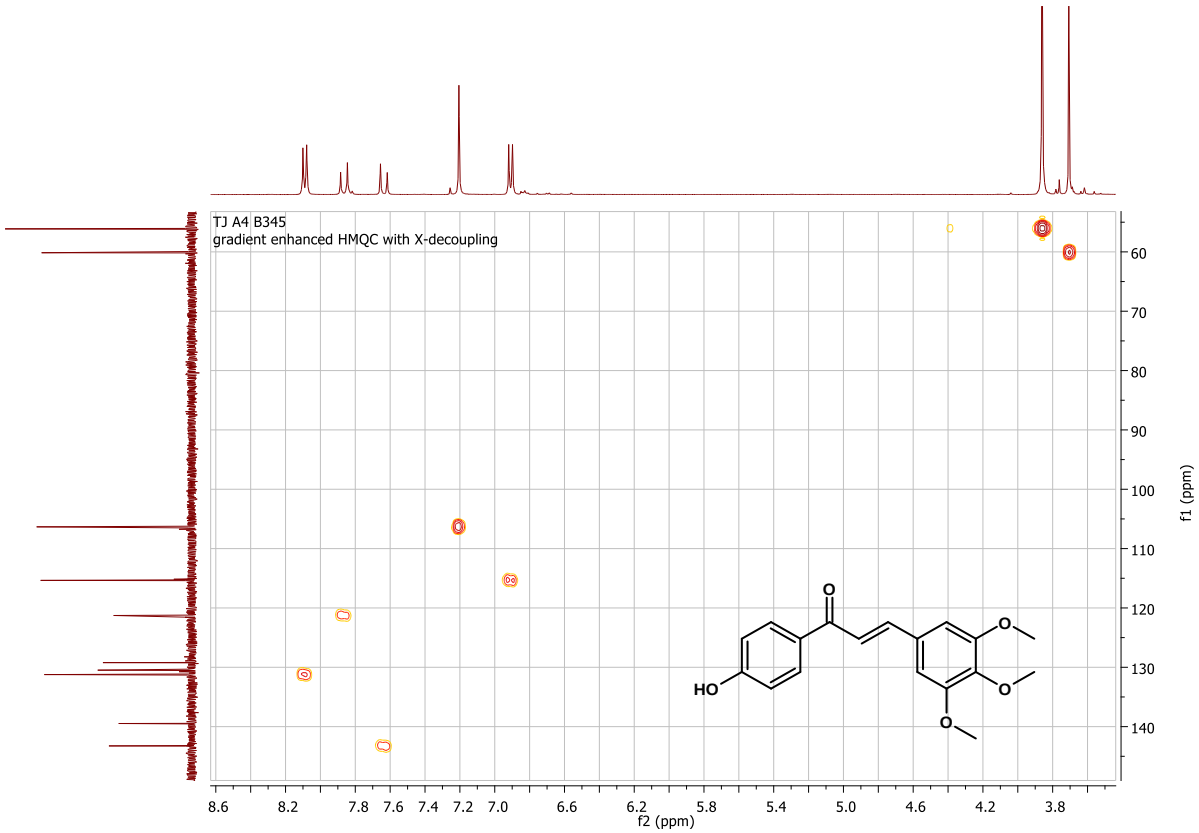

Figure S118 HMQC NMR spectrum of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (600MHz, DMSO-d_6)

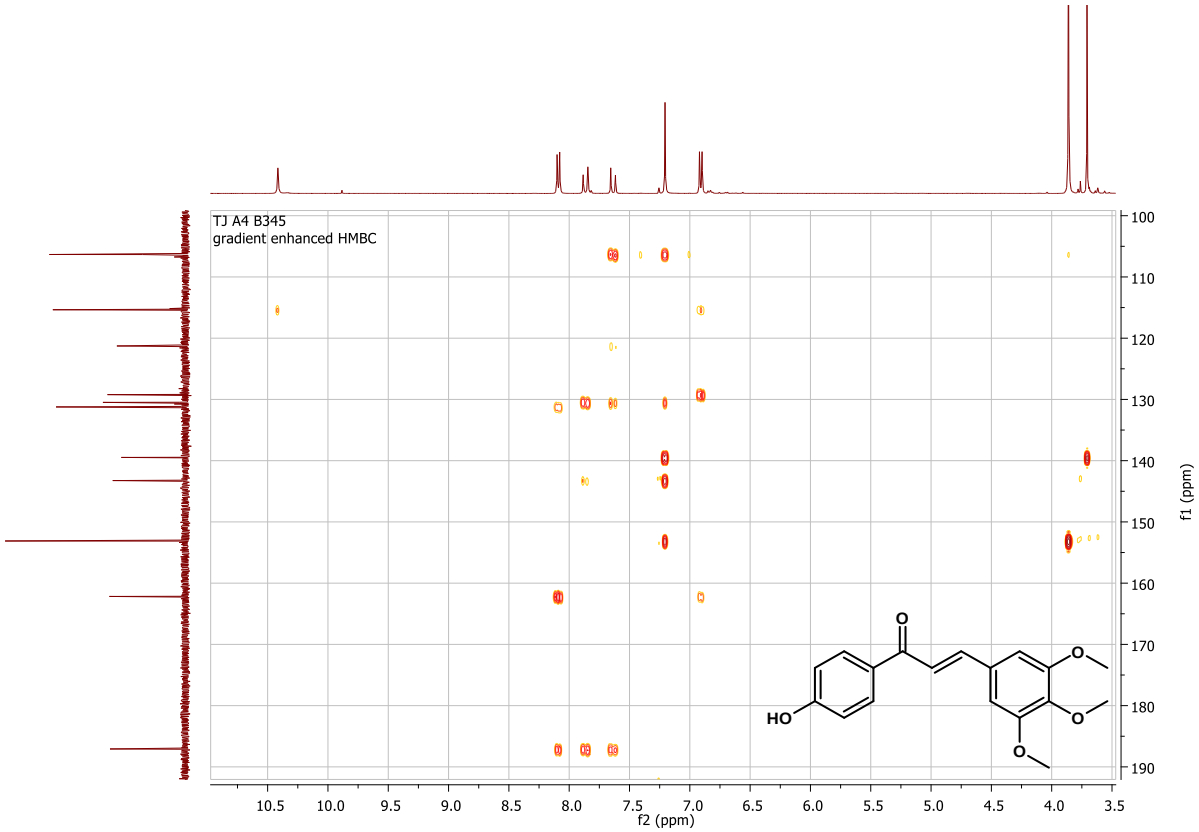

Figure S119 HMBC NMR spectrum of *trans*-4′-hydroxy-3,4,5-trimethoxychalcone (600MHz, DMSO-d_6)

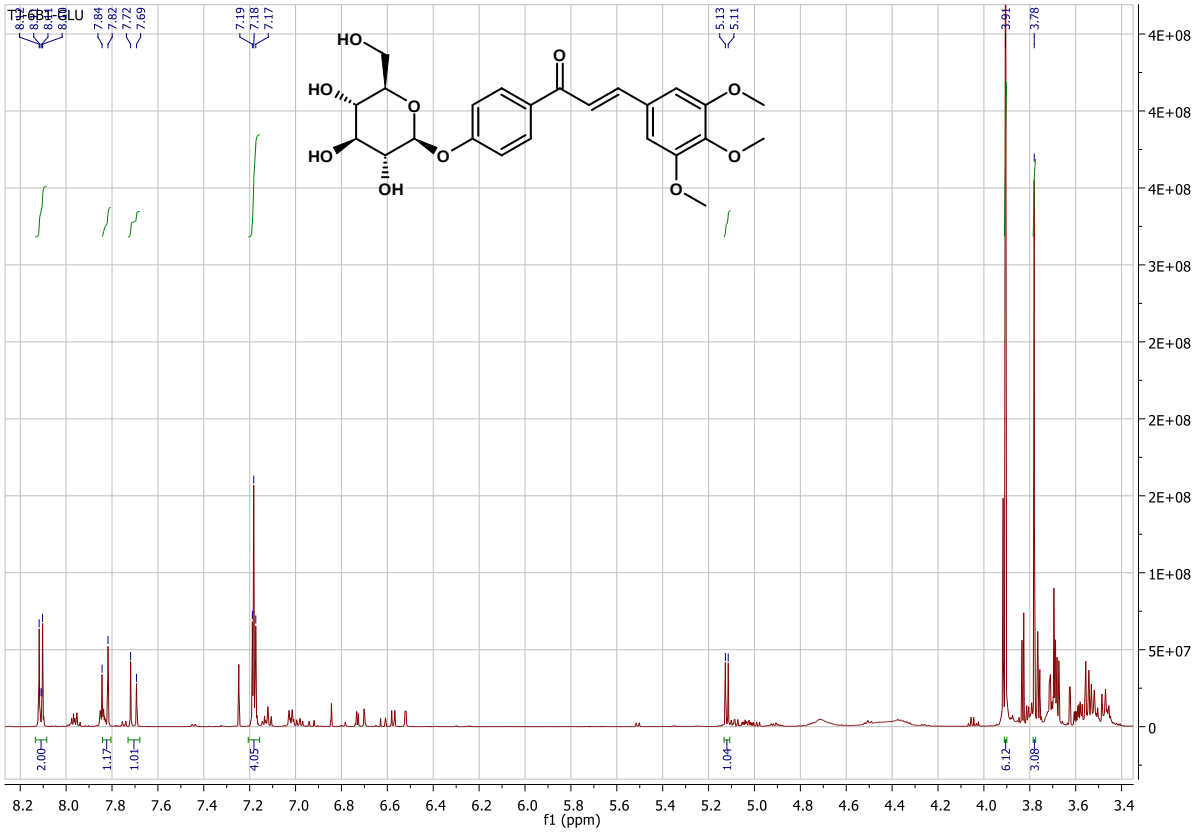

Figure S120 ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (600MHz, Acetone-d_6)

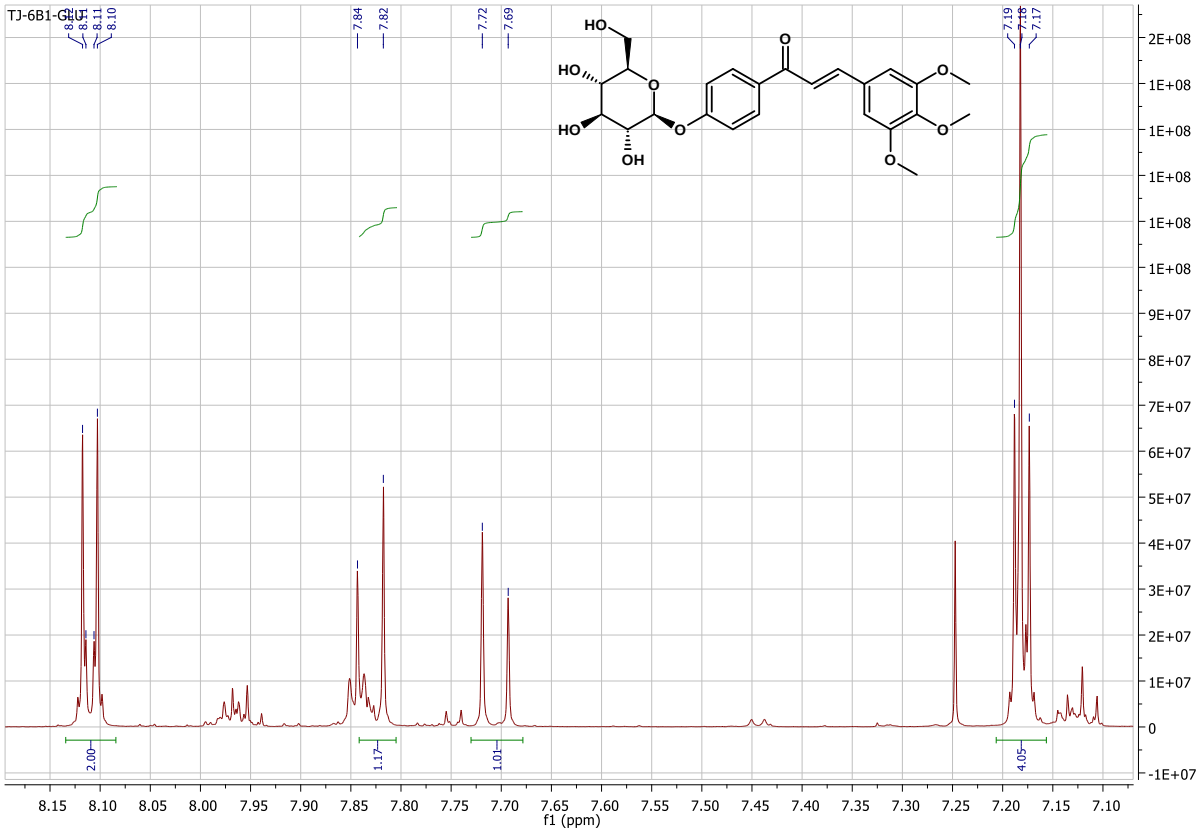

Figure S121 Flavonoid fragment of ^{1}H NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (600MHz, Acetone-d$_6$)

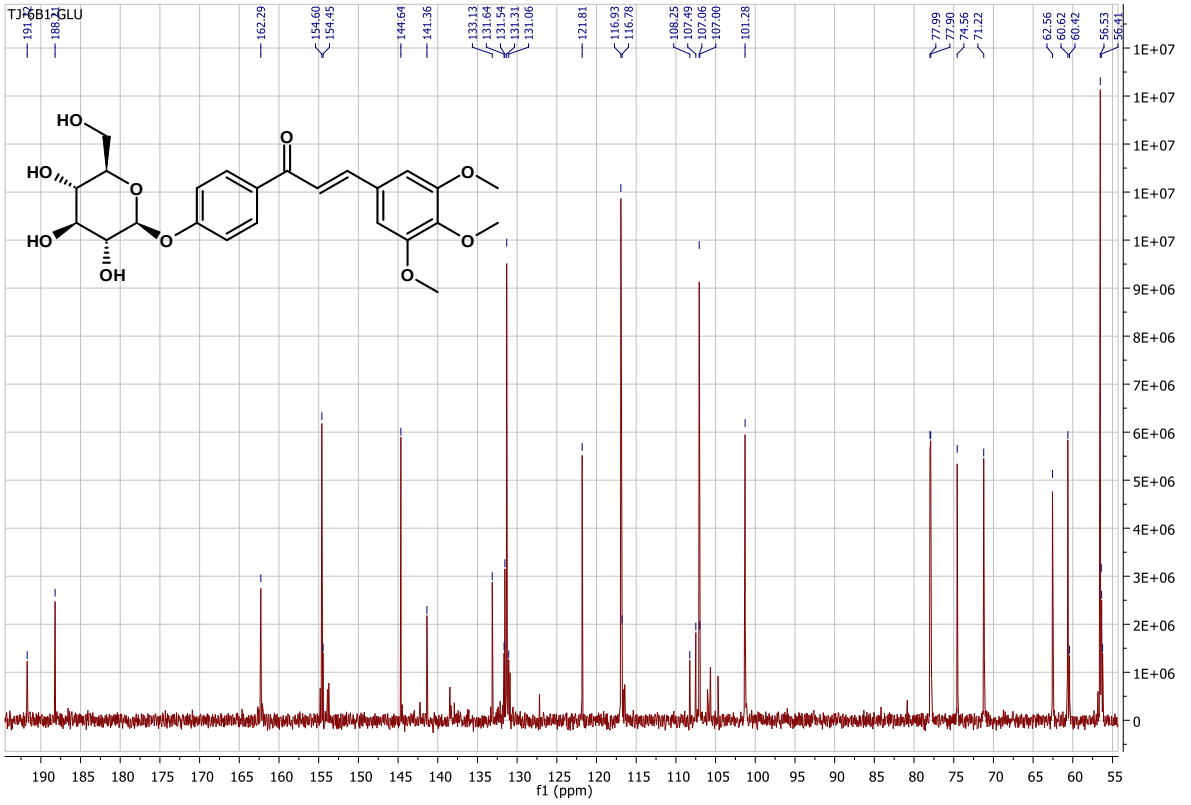

Figure S122 ^{13}C NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (151MHz, Acetone-d$_6$)

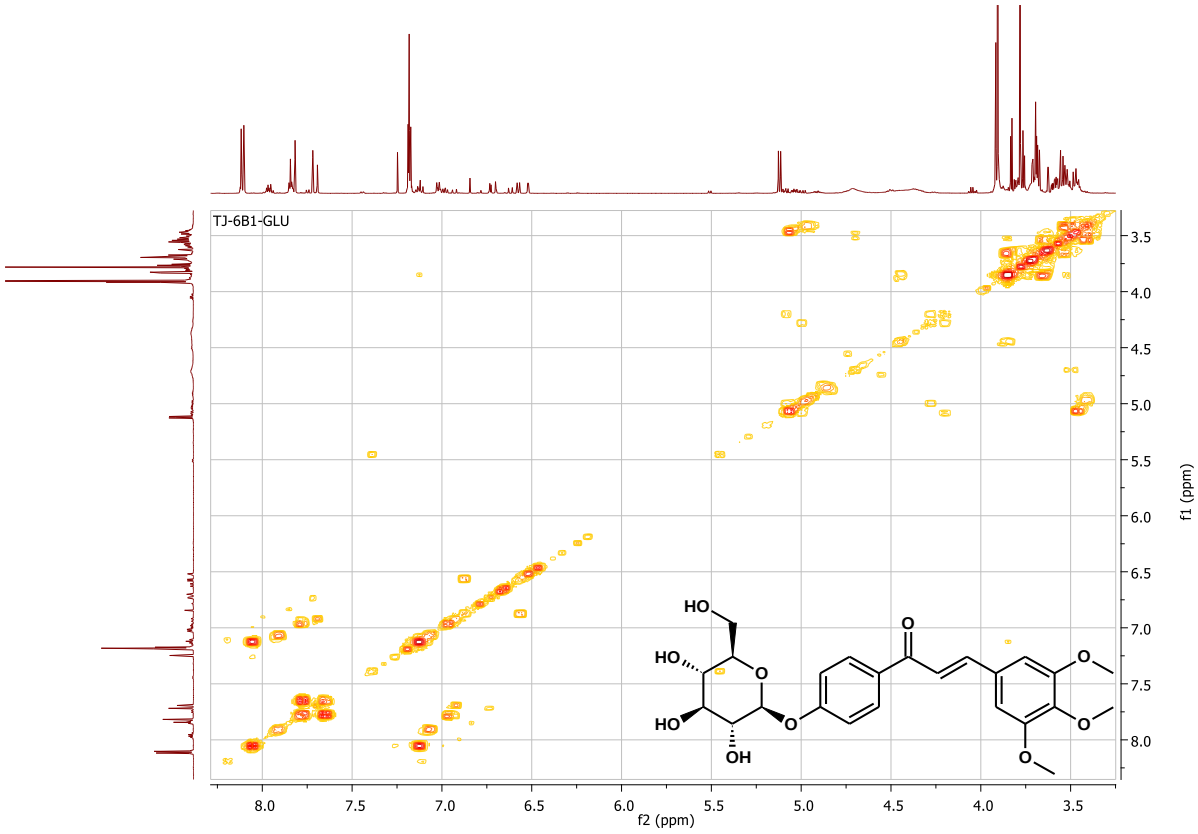

Figure S123 COSY NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (600MHz, Acetone-d$_6$)

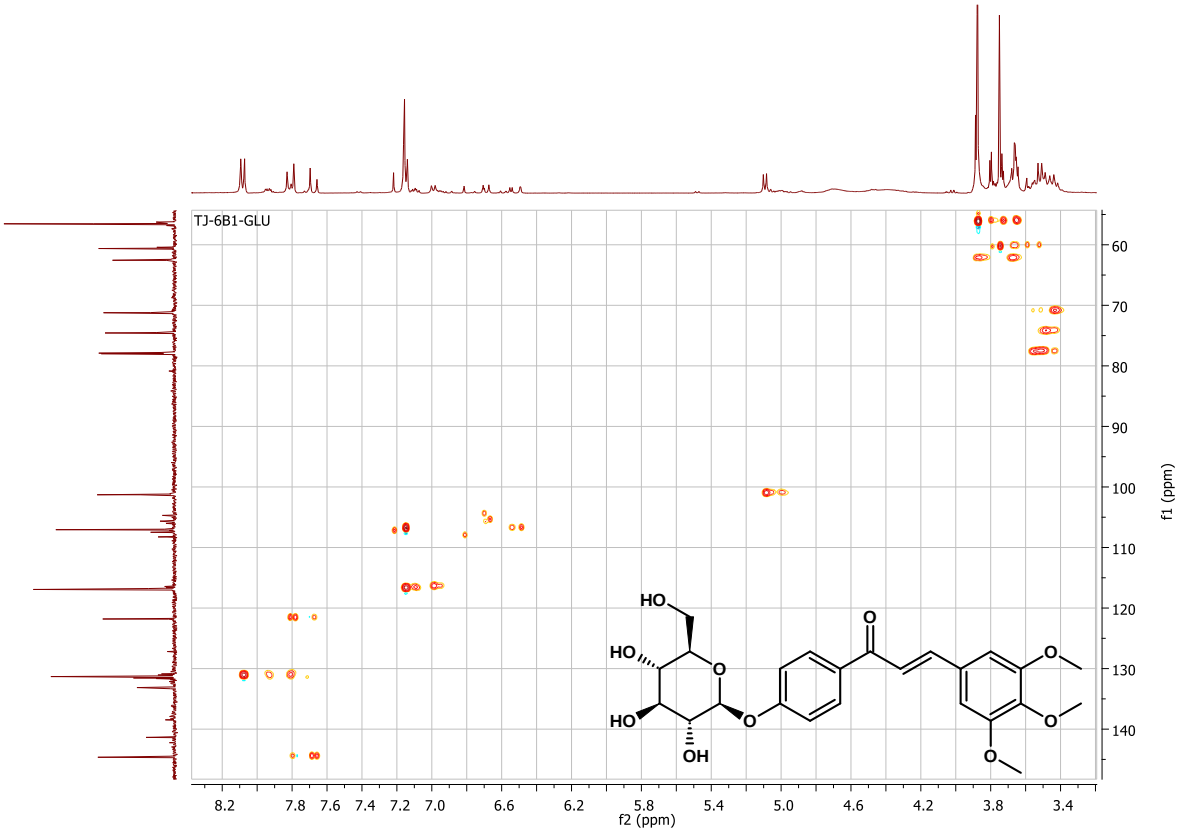

Figure S124 HMQC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (600MHz, Acetone-d$_6$)

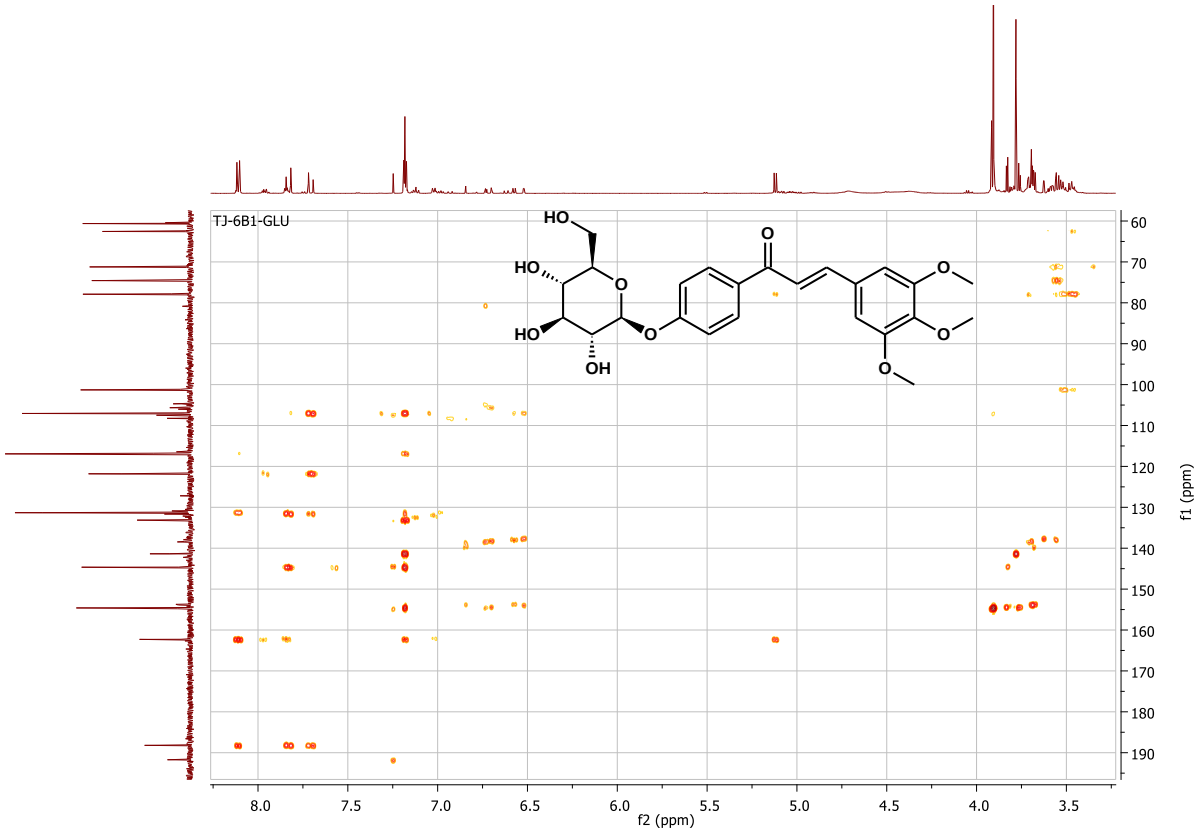

Figure S125 HMBC NMR spectrum of *trans*-4′-*O*-β-D-(glucopyranosyl)-3,4,5-trimethoxychalcone (600MHz, Acetone-d_6)

Table S1 List of recombinant enzymes used with related accession.

GT used in the study	Source organism	NCBI accession number
OleD	*Streptomyces antibioticus*	OR545369
YjiC	*Bacillus licheniformis*	OP381219
Sbaic7OGT	*Scutellaria baicalensis*	OR545367
Bet5OGT	*Cleretum bellidiforme*	OR545368
UGT88F2	*Malus x domestica*	FJ854496
UGT85A2	*Vitis vinifera*	XM_002285734.5
GgCGT	*Glycyrrhiza glabra*	MH998596.1
BbGT278	*Beauveria bassiana*	OR545370
GmSuSy	*Glycine max*	OP381218

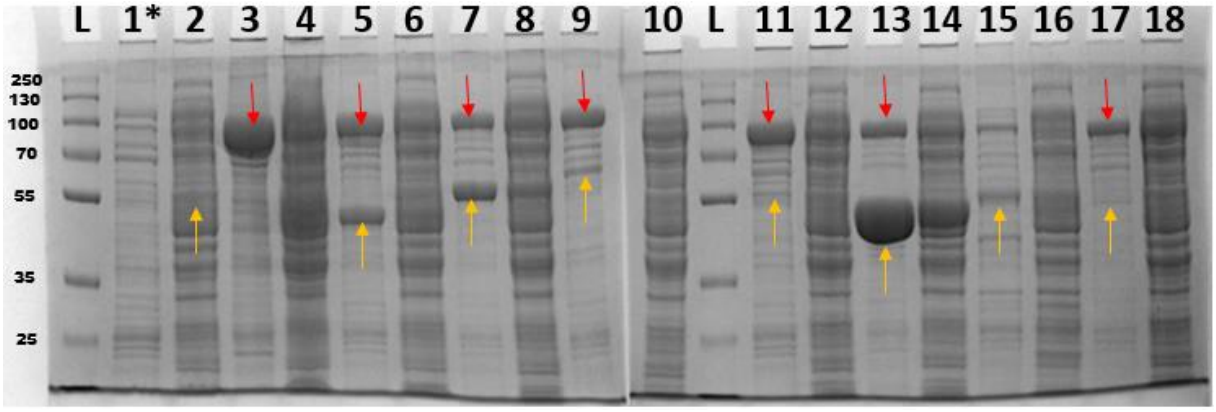

Figure S126 SDS-PAGE analysis of crude protein lysates 20 μg protein/well (Lane: **2**, **4**, **6**, **8**, **10**, **12**, **14**, **16**, **18**) and combined fractions after Ni-NTA purification 4 μg protein/well (Lane: **1**, **3**, **5**, **7**, **9**, **11**, **13**, **15**, **17**). Lane **L** - PageRuler Plus Prestained Protein Ladder (Thermo Fisher Scientific) lane **1**-**18** E. coli BL21 (DE3) cells expressing: **1**, **2** - UGT88F2; **3**, **4** - GmSuSy; **5**, **6** - YjiC and GmSuSy; **7**, **8** - Sbaic7OGT and GmSuSy; **9**, **10** – Bet5OGT and GmSuSy; **11**, **12** – BbGT278 and GmSuSy; **13**, **14** – OleD and GmSuSy; **15**, **16** – GgCGT; **17**, **18** – UGT85A2 and GmSuSy. * First purification of UGT88F2, failed, therefore activity of the cell lysate was confirmed with phloretin as substrate and purification was repeated once again. Calculated mass for enzymes used: UGT88F2 – 53.5 kDa, GmSuSy – 93.3 kDa, YjiC – 45.7 kDa, Sbaic7OGT – 54.1 kDa. Bet5OGT – 56.3 kDa, BbGT278 – 51.3 kDa, OleD – 46.3 kDa, GgCGT – 52.9 kDa, UGT85A2 – 53.9 kDa. Red arrow points GmSuSy, Yellow arrow points GTs.

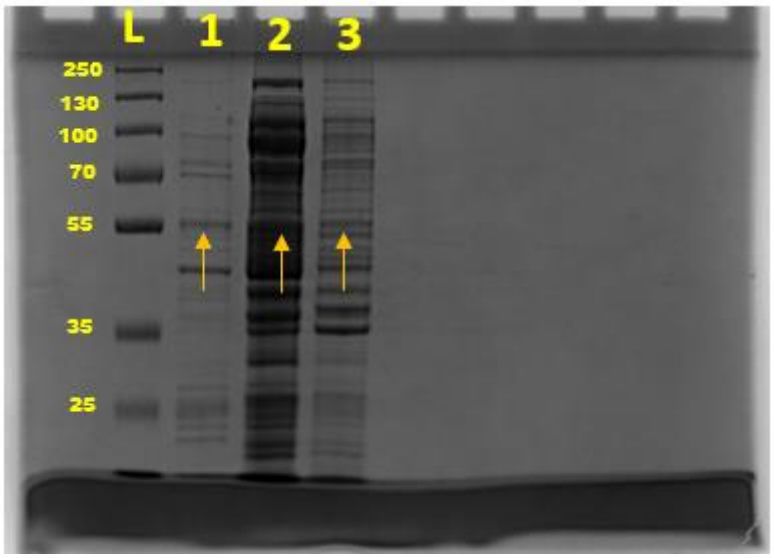

Figure S127 SDS-PAGE analysis of repeated purification of UGT88F2. Lane **L** - PageRuler Plus Prestained Protein Ladder (Thermo Fisher Scientific Waltham, MA, USA), lane **1** - combined fractions after Ni-NTA purification (5 μg protein/well); **2** – cell pellet; **3** – crude protein lysate 20 μg (protein/well). Yellow arrow points UGT88F2.

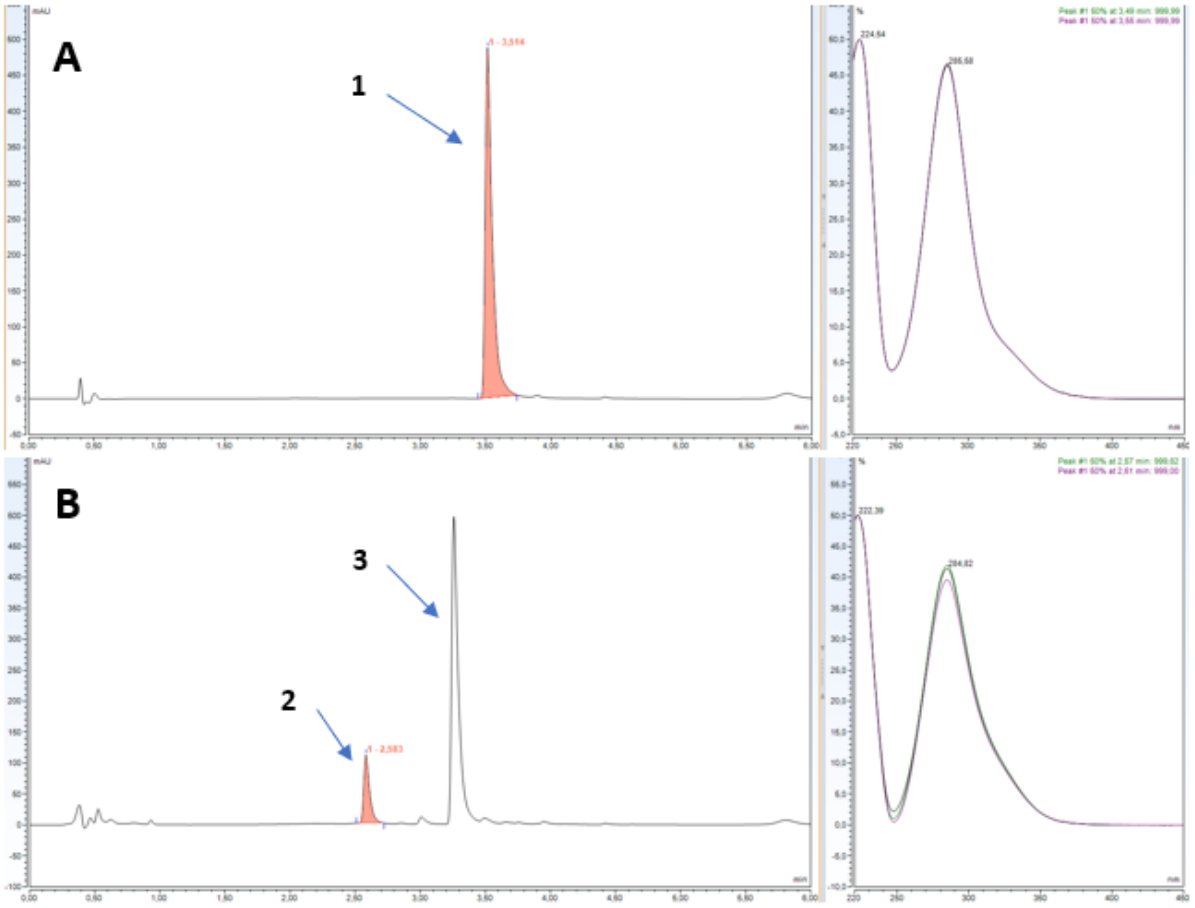

Figure S128 UPLC chromatograms of **A** – phloretin standard, **B** – control cascade reaction of UGT88F2 crude fraction with GmSuSy performed to verify its activity. Right side are UV-Vis spectra of peaks selected in the chromatogram. **1** – phloretin; **2** – phloridzin; **3** – indole from crude cell lysate.