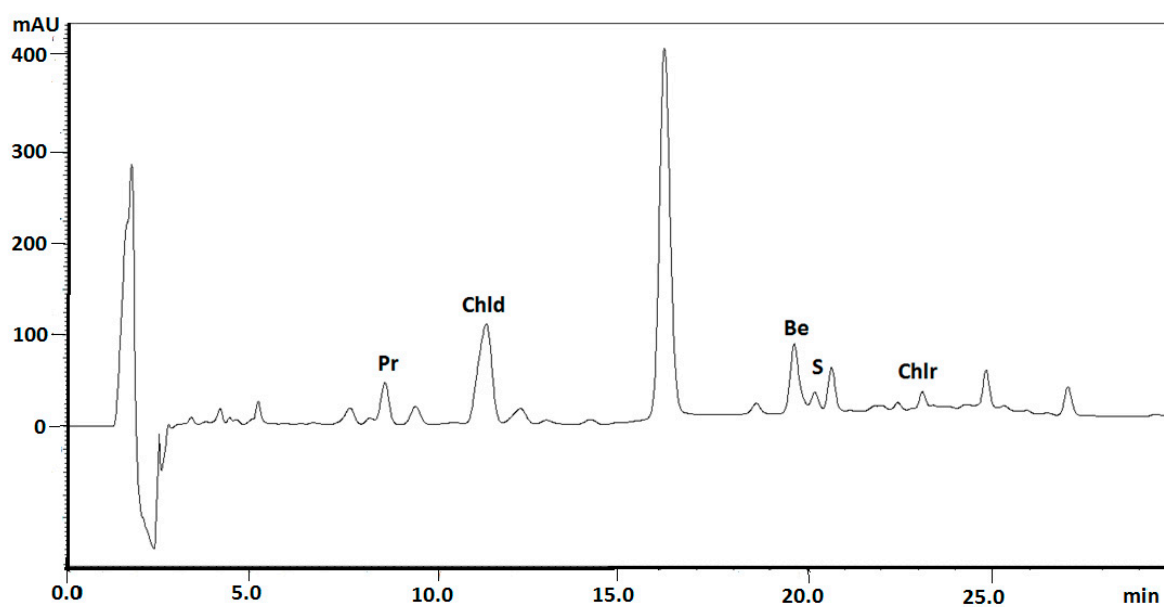
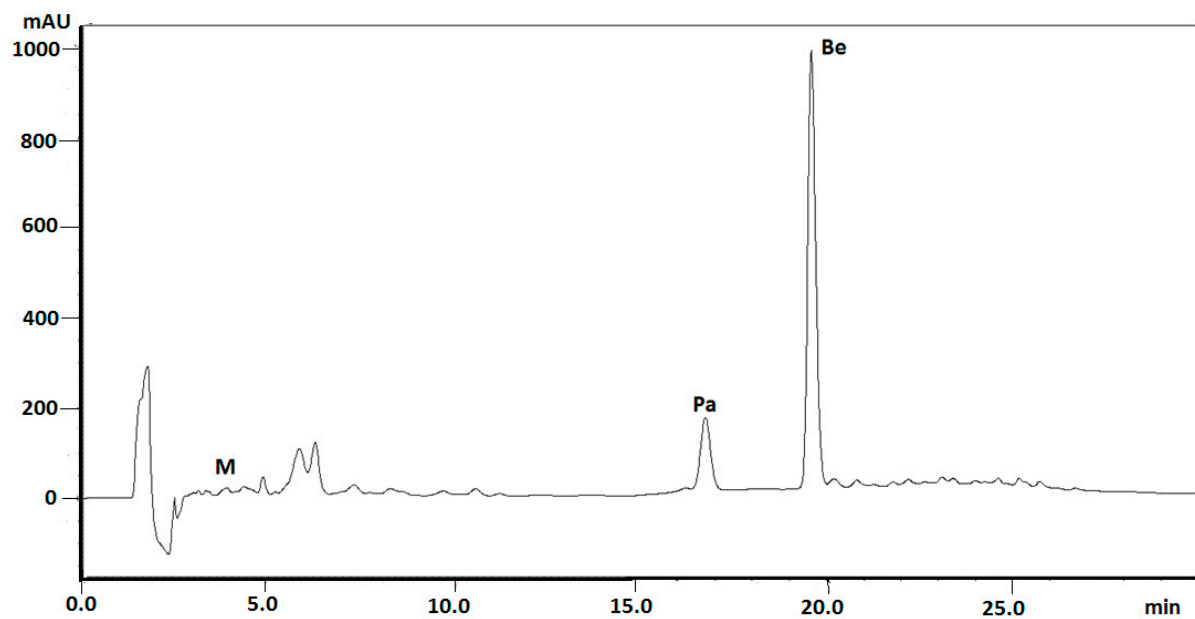


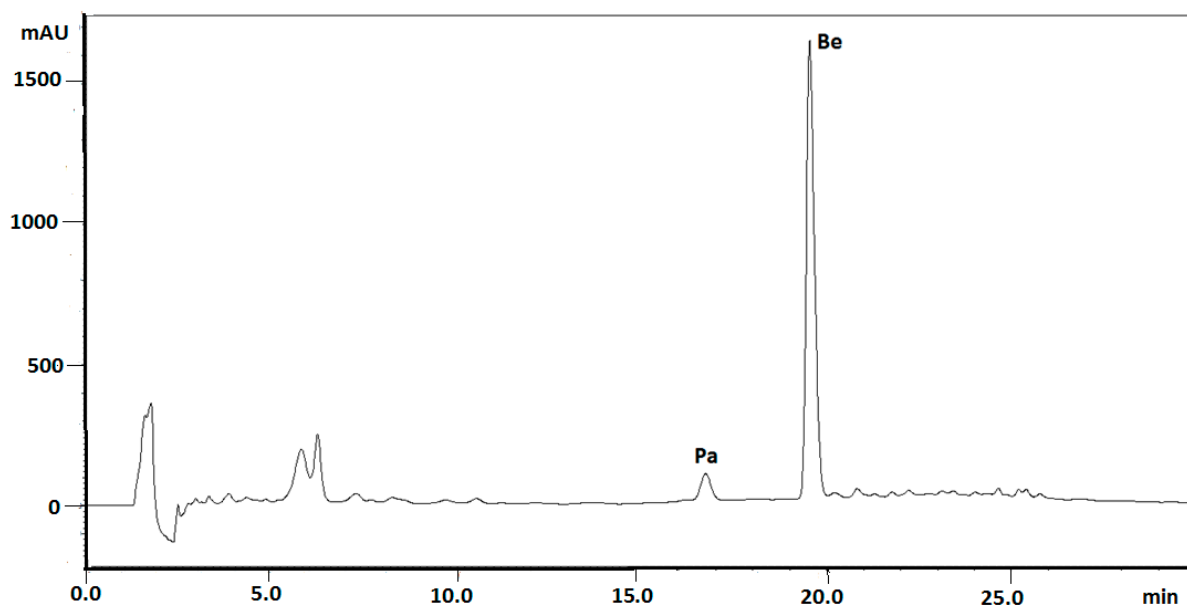
**Figure S1. A.** Chromatogram obtained for *Chelidonium majus* root extract from plant material collected during flowering. Abbreviations: Pr-protopine, Chld-chelidone, Be-berberine, S-sanquinarine, Chlr-chelerythrine.



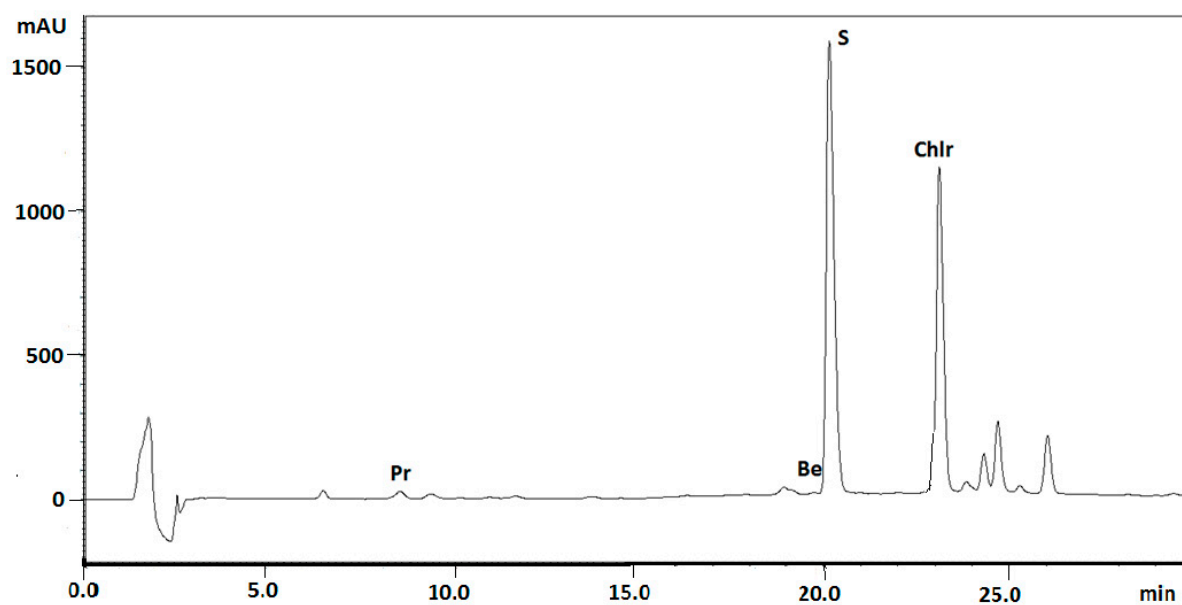
**Figure S1. B.** Chromatogram obtained for *Chelidonium majus* herb extract from plant material collected during flowering. Abbreviations: Pr-protopine, Chld-chelidone, Be-berberine, S-sanquinarine, Chlr-chelerythrine.



**Figure S1. C.** Chromatogram obtained for *Mahonia aquifolium* cortex extract from plant material collected during flowering. Abbreviations: M-magnoflorine, Pa-palmatine, Be-berberine.

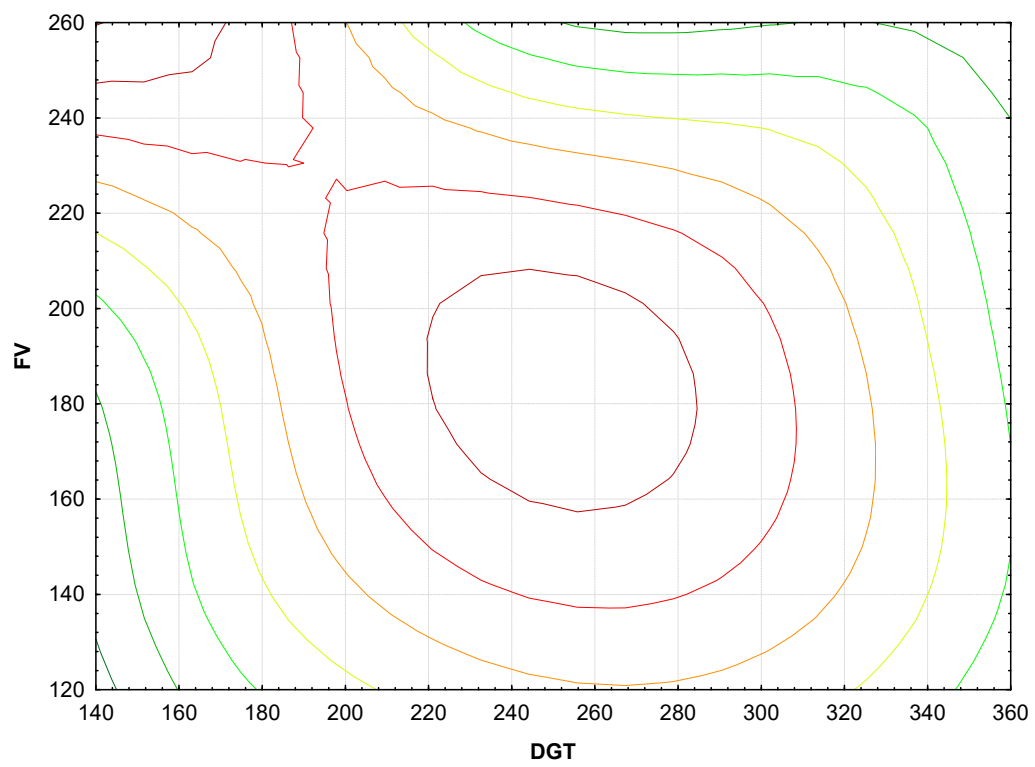


**Figure S1. D.** Chromatogram obtained for *Mahonia aquifolium* root extract from plant material collected during flowering. Abbreviations: M-magnoflorine, Pa-palmatine, Be-berberine.

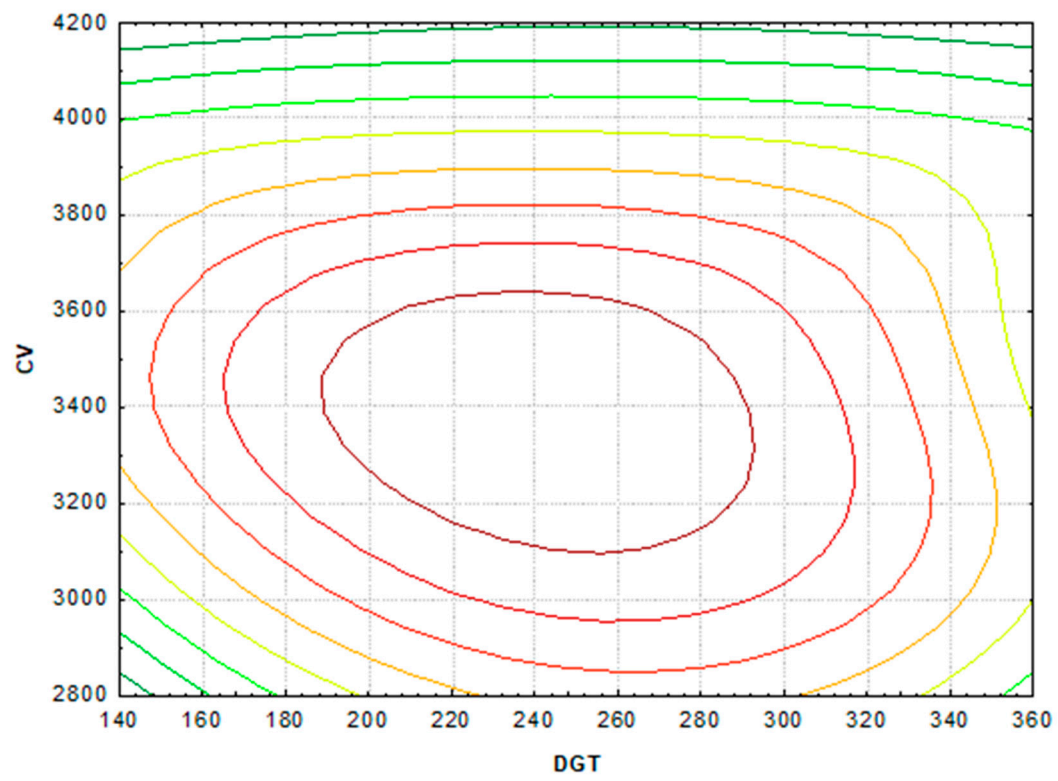


**Figure S1. E.** Chromatogram obtained for *Sanguinaria canadensis* extract from plant material collected during flowering. Abbreviations: Pr-protopine, Be-berberine, S-sanquinarine, Chlr-chelerythrine.

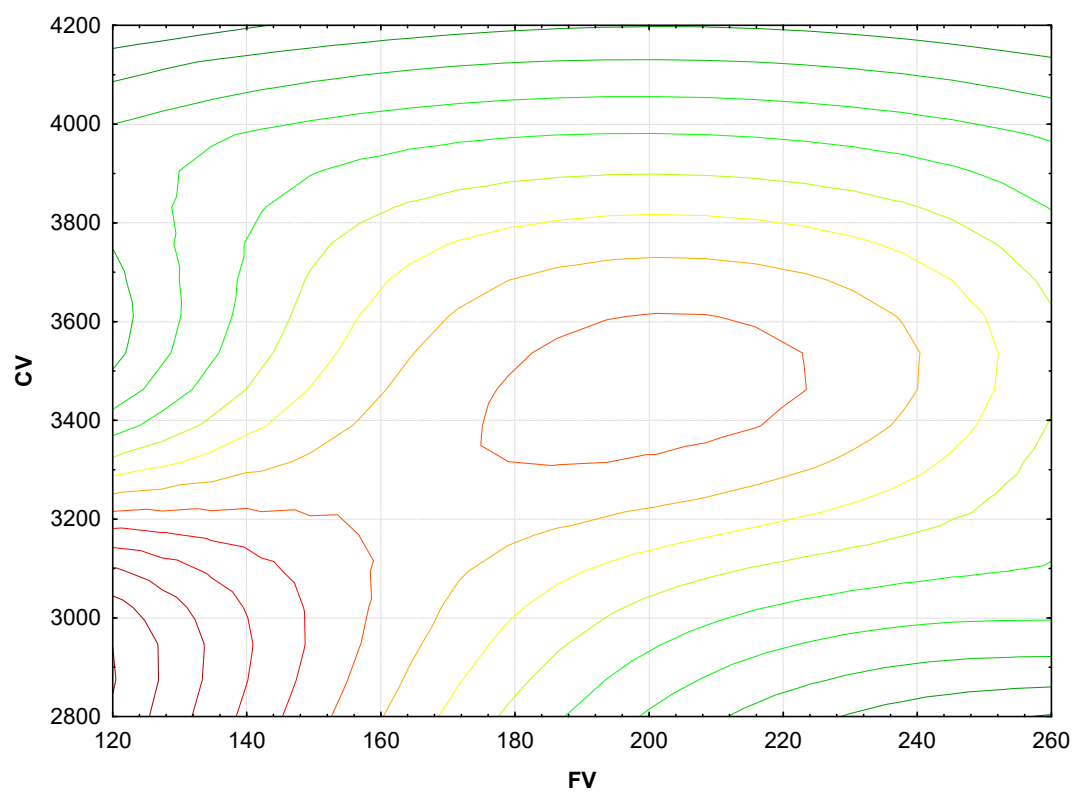
a)



(b)

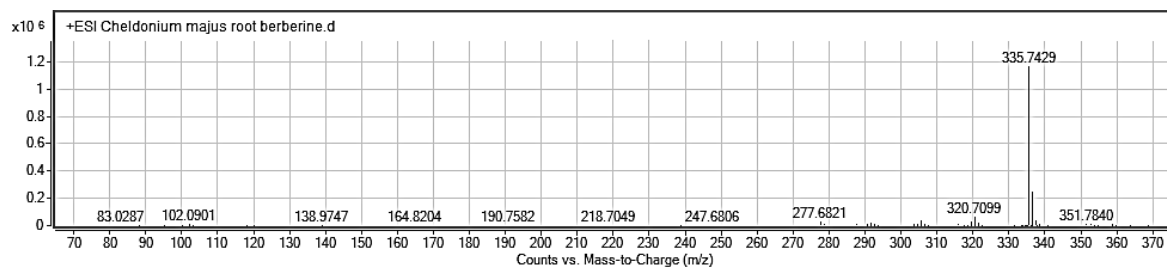


(c)

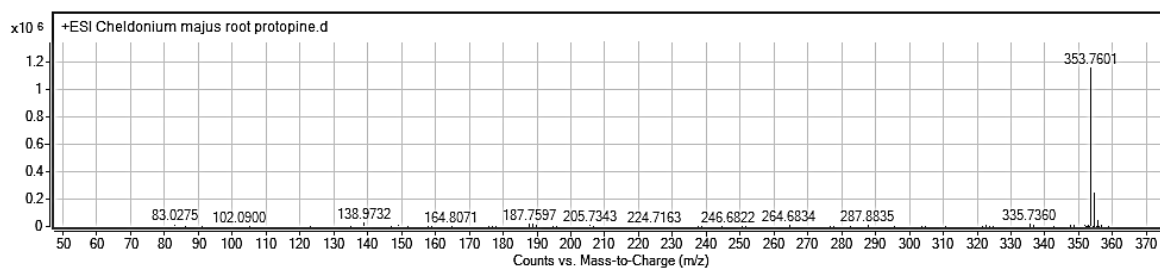


**Figure S2.** Exemplary of 2D contour plots obtained plotting Box-Behnken for Q-TOF-MS optimization for berberine. Colored zones contain points where the Y function (peak area) fall in the same range, (a) FV *vs.* DGT is plotted; (b) CV *vs.* DGT is plotted; (c) CV *vs.* FV is plotted.

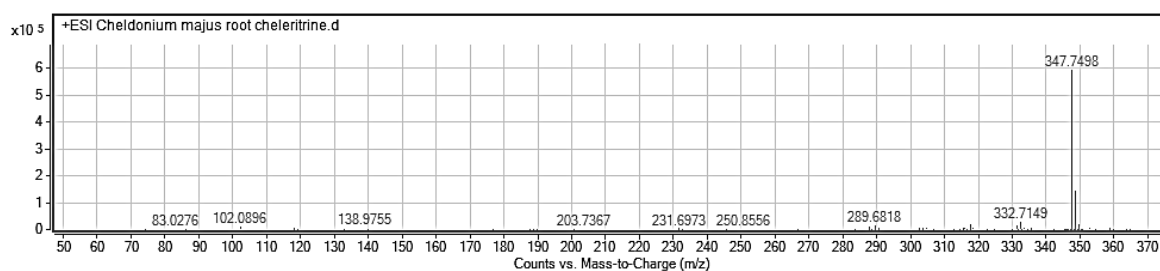
a)



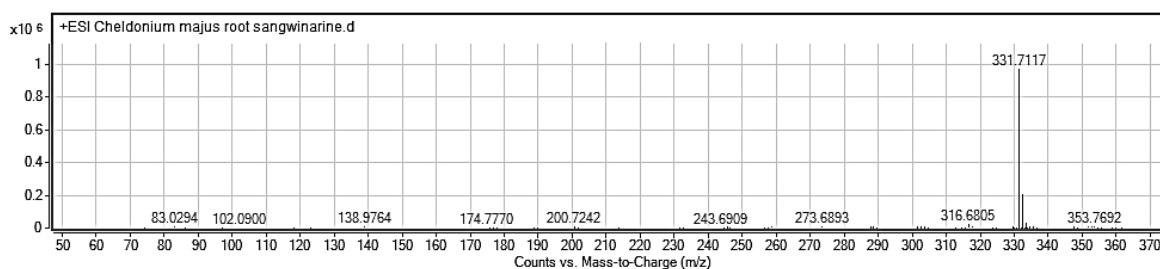
b)



c)



d)



**Figure S3.** Exemplary of MS spectra obtained for (a) berberine, (b) protopine, (c) chelerythrine, (d) sanguinarine from *Chelidonium majus*.