

Supplementary Materials: In Vitro Evaluation of the Phytopharmacological Potential of *Sargassum incisifolium* for the Treatment of Inflammatory Bowel Diseases

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Sargassum incisifolium



Figure S1. Photograph of *S. incisifolium* specimen used in this study.

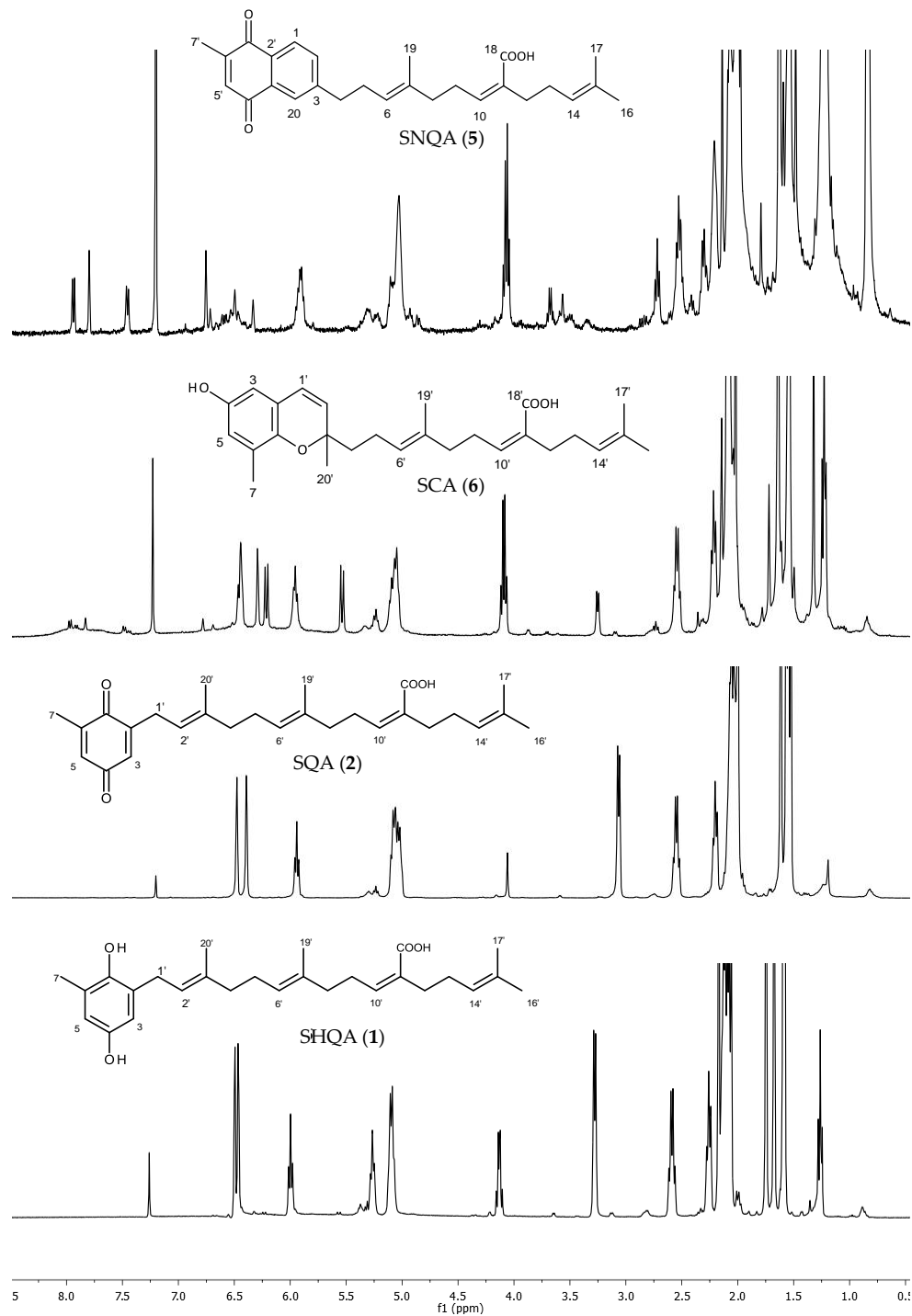


Figure S2. ^1H NMR spectra (CDCl₃, 400 MHz) for sargahydroquinic acid (1), sargaquinoic acid (2), sargachromenoic acid (6) and sarganaphthoquinic acid (5).

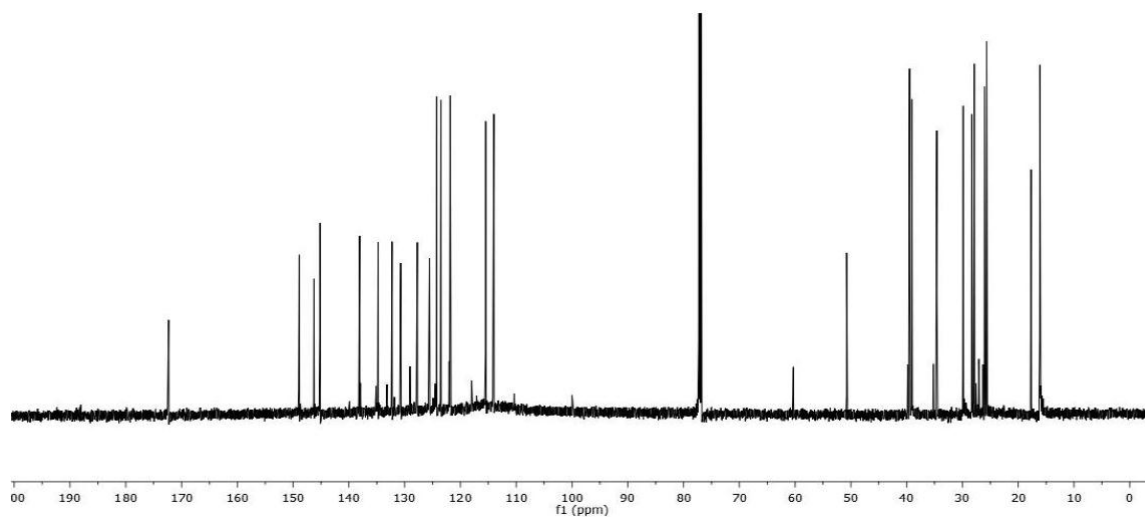


Figure S3. ^{13}C NMR spectrum (CDCl_3 , 100 MHz) of sargahydroquinoic acid (1).

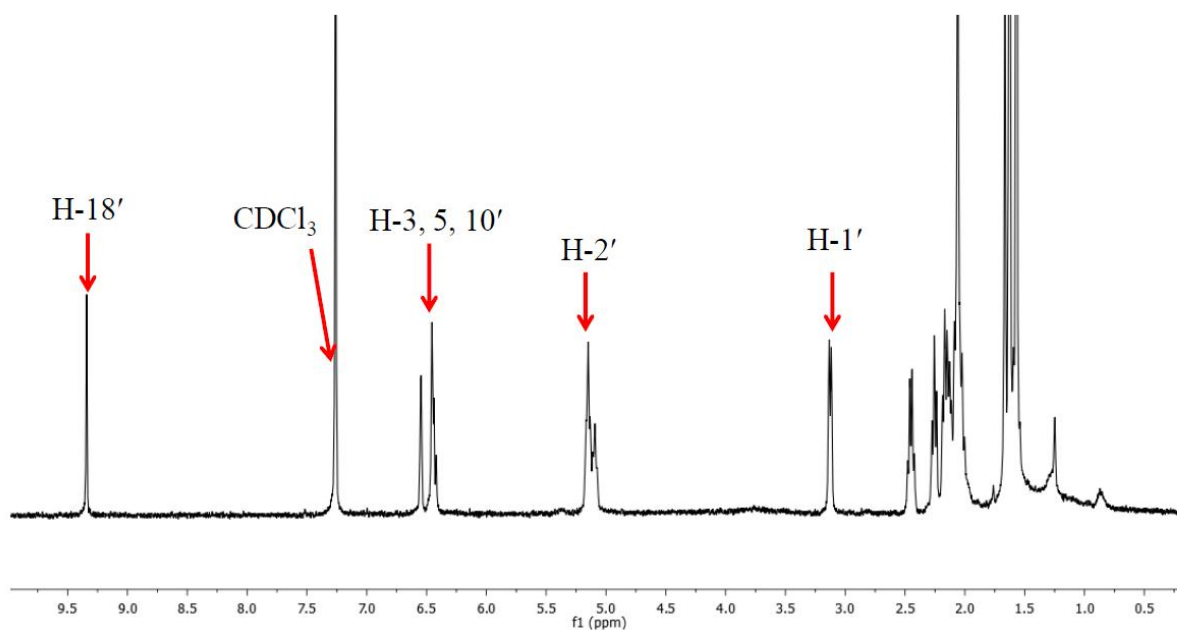


Figure S4. ^1H NMR spectrum (CDCl_3 , 400 MHz) of $10'E$ -sargaquinal (4).

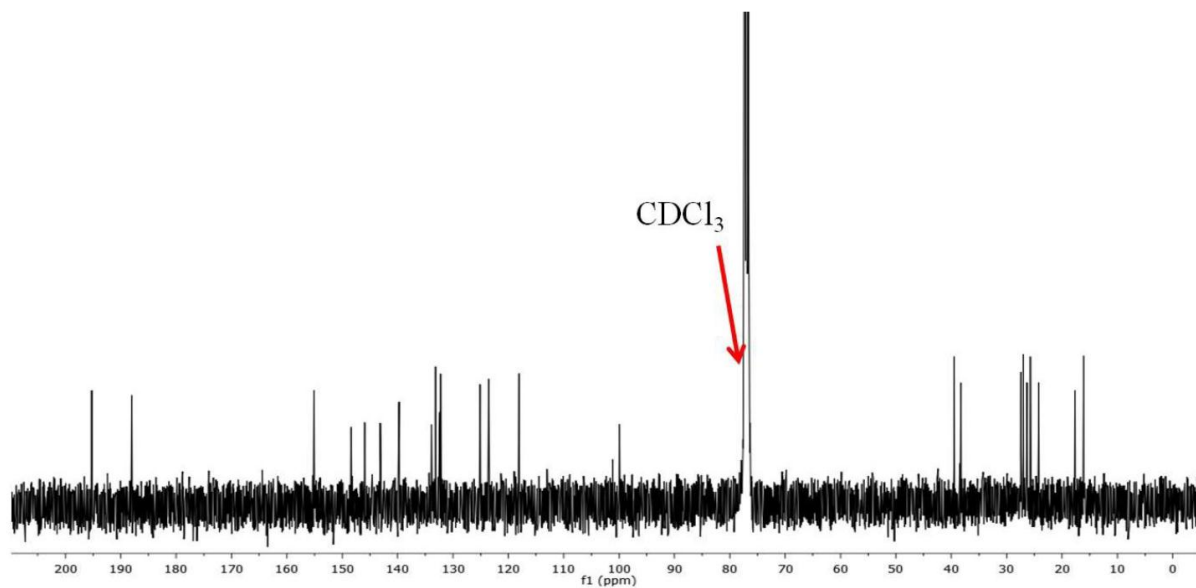


Figure S5. ^{13}C NMR spectrum (CDCl_3 , 100 MHz) of 10'E-sargaquinal (4).

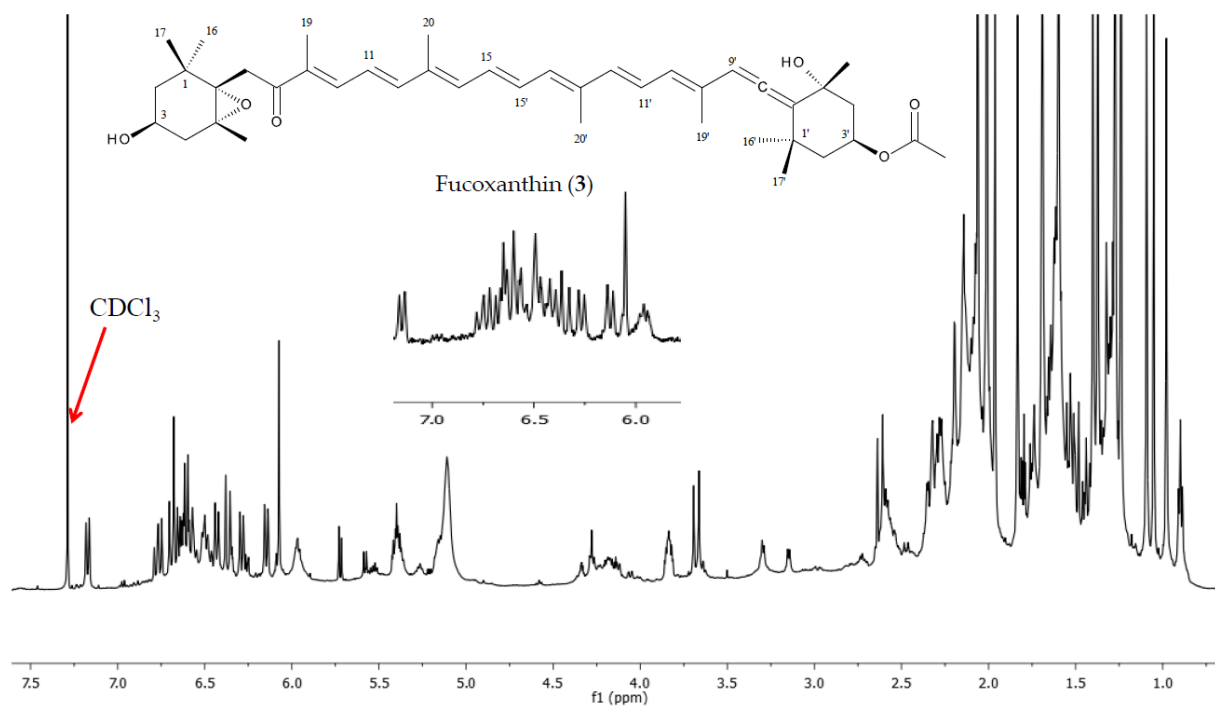


Figure S6. ^1H NMR spectrum (CDCl_3 , 400 MHz) of fucoxanthin (3).

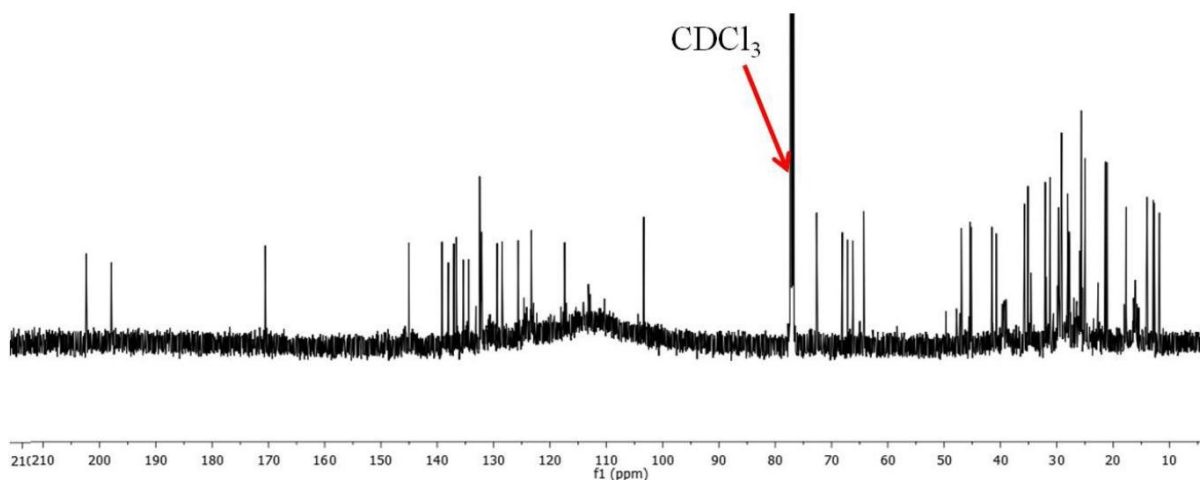


Figure S7. ¹³C NMR spectrum (CDCl₃, 100 MHz) of fucoxanthin (3).

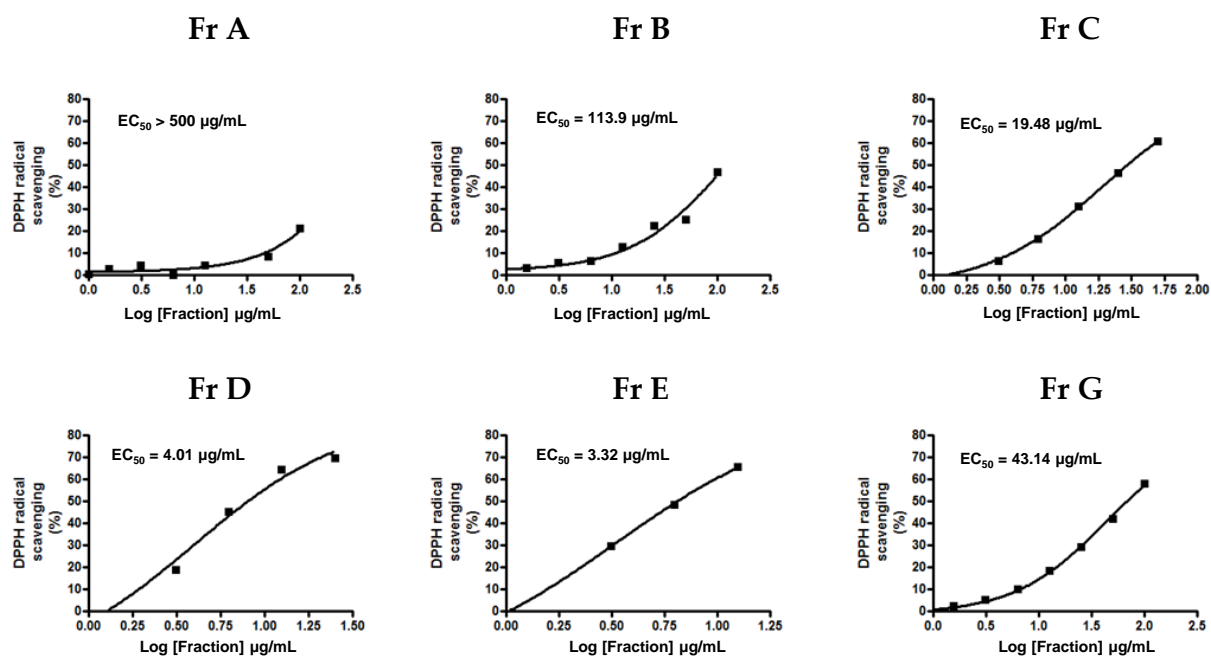


Figure S8. Titration curves for the DPPH radical scavenging activity of *Sargassum incisifolium* crude fractions Fr A, Fr B, Fr C, Fr D, Fr E and Fr G.

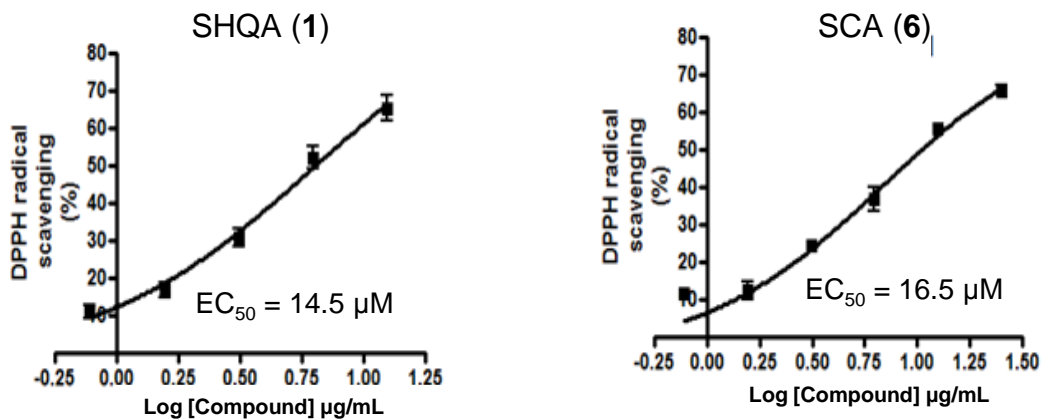


Figure S9. Titration curves for the DPPH radical scavenging activity of SHQA (1) and SCA (6).

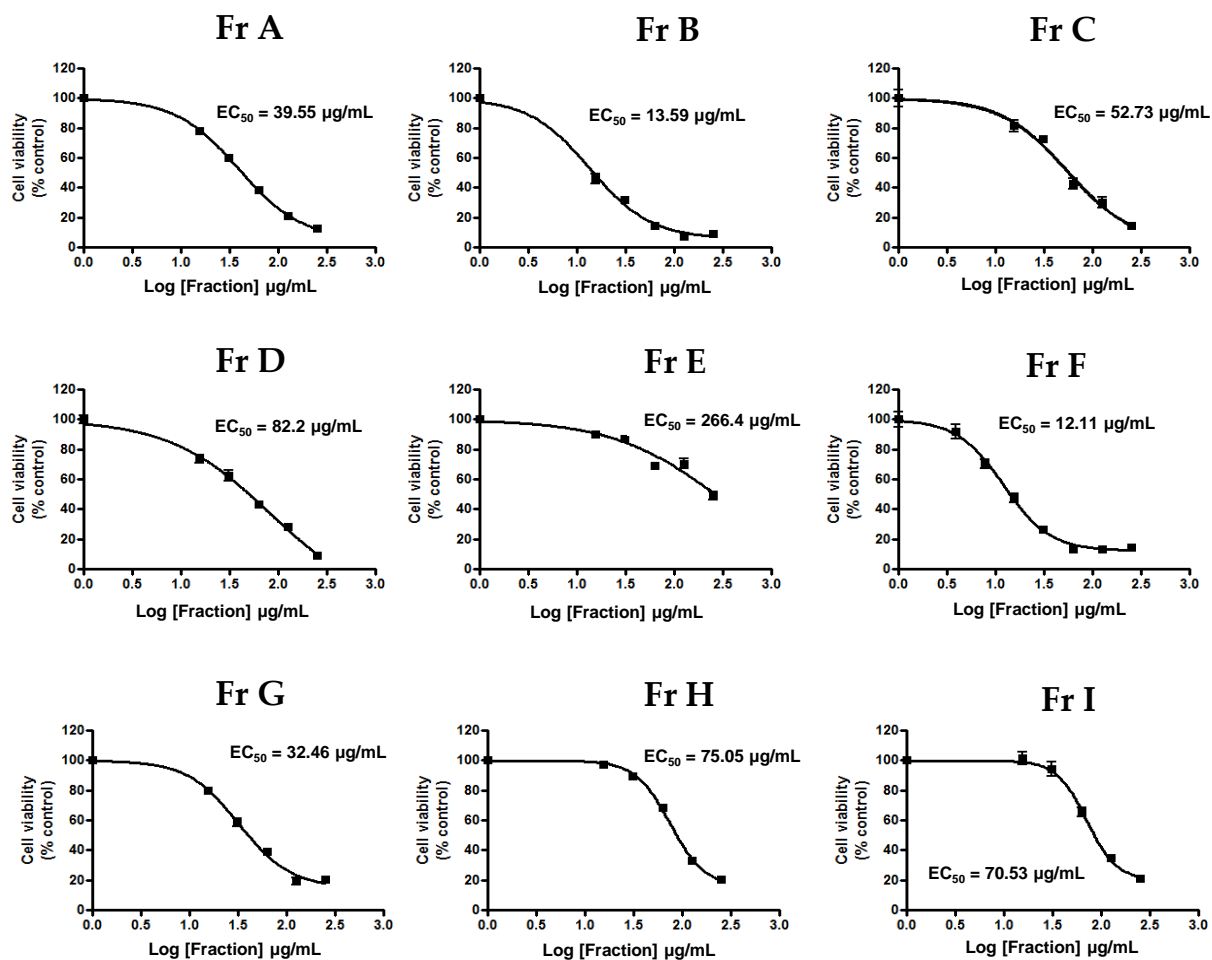


Figure S10. Dose dependent inhibition of HeLa cell viability by *S. incisifolium* fractions Fr A–I.

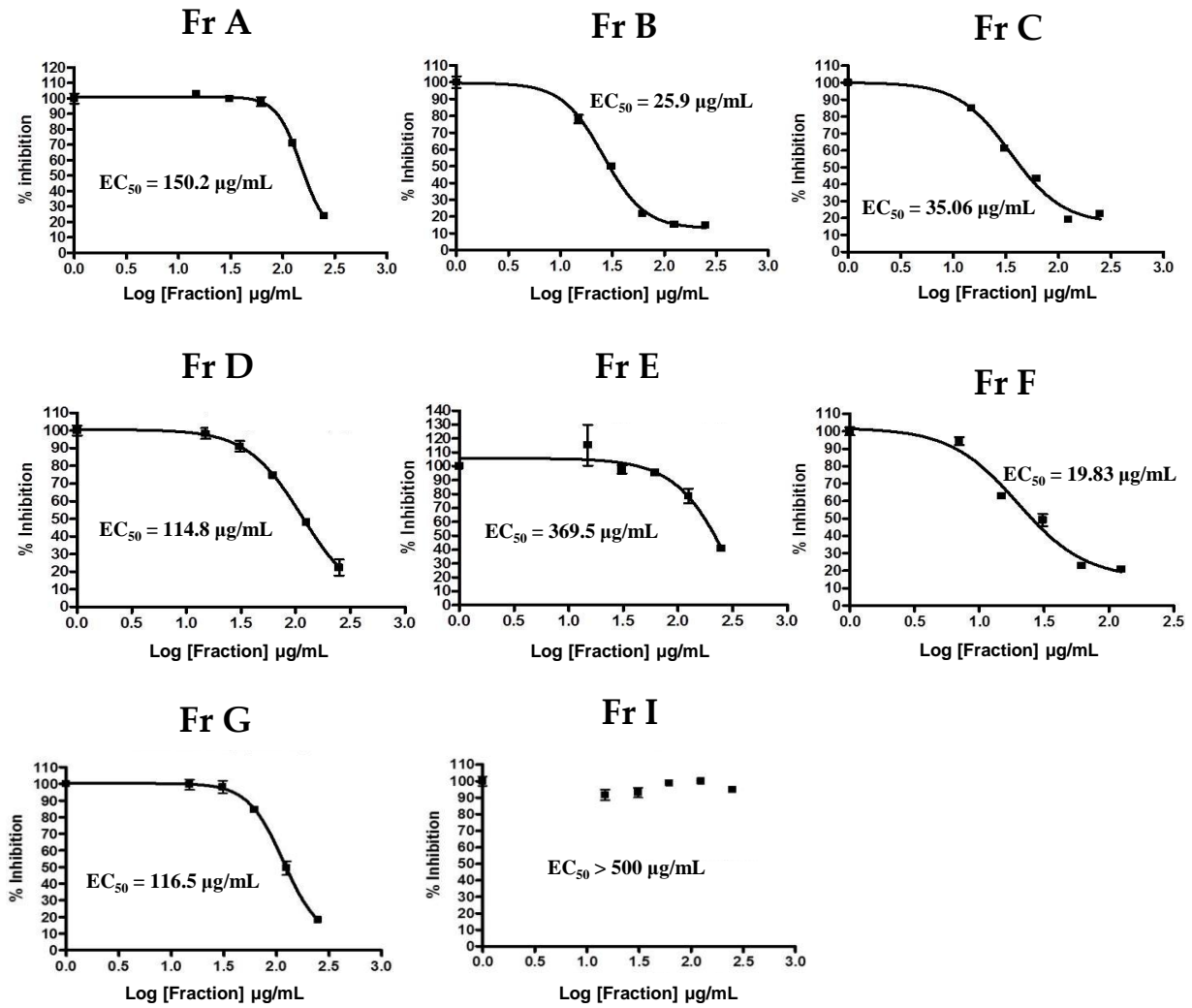


Figure S11. Dose dependent inhibition of HT-29 cell viability by *S. incisifolium* fractions.

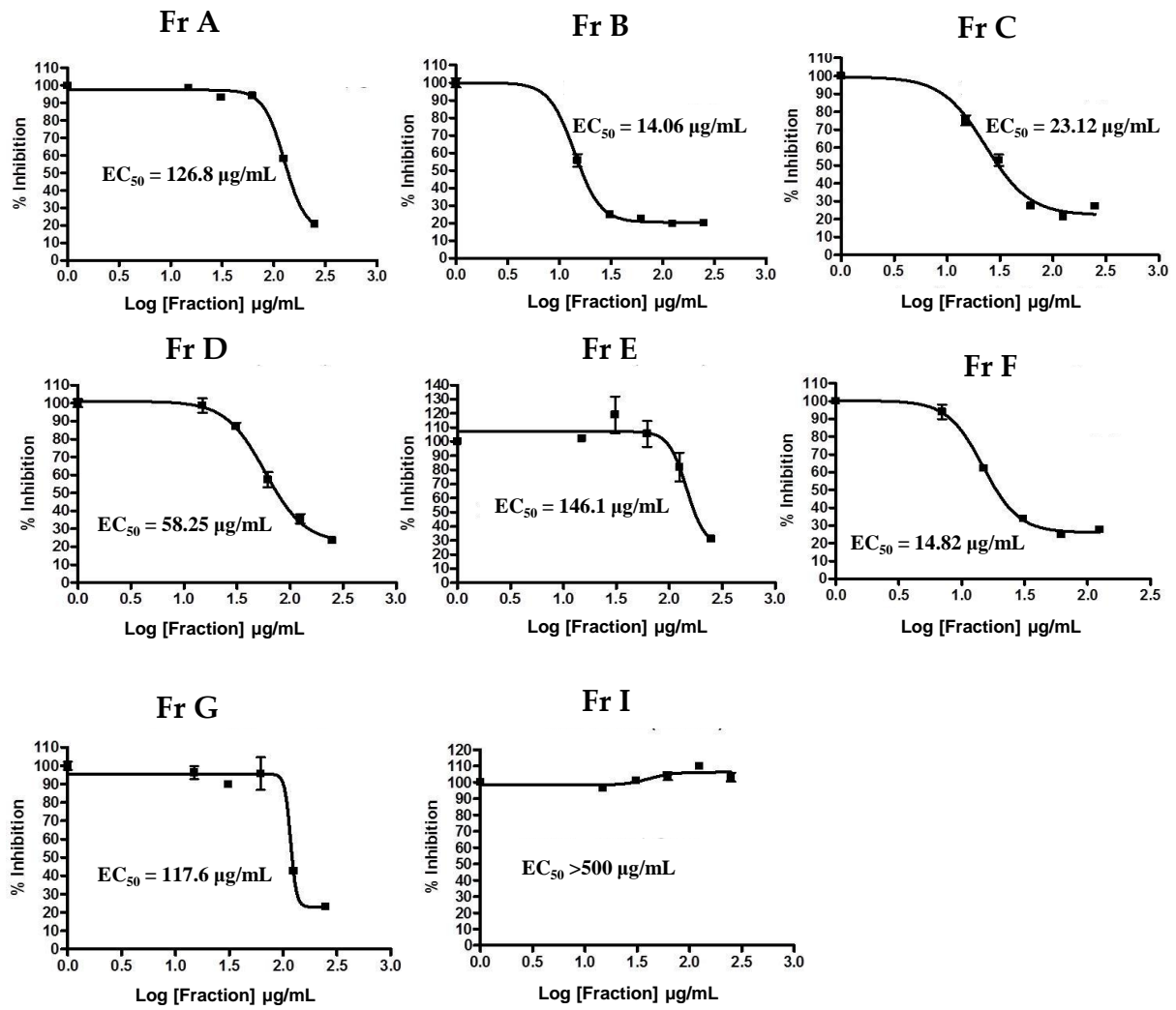


Figure S12. Dose dependent inhibition of Caco-2 cell viability by *S. incisifolium* fractions.

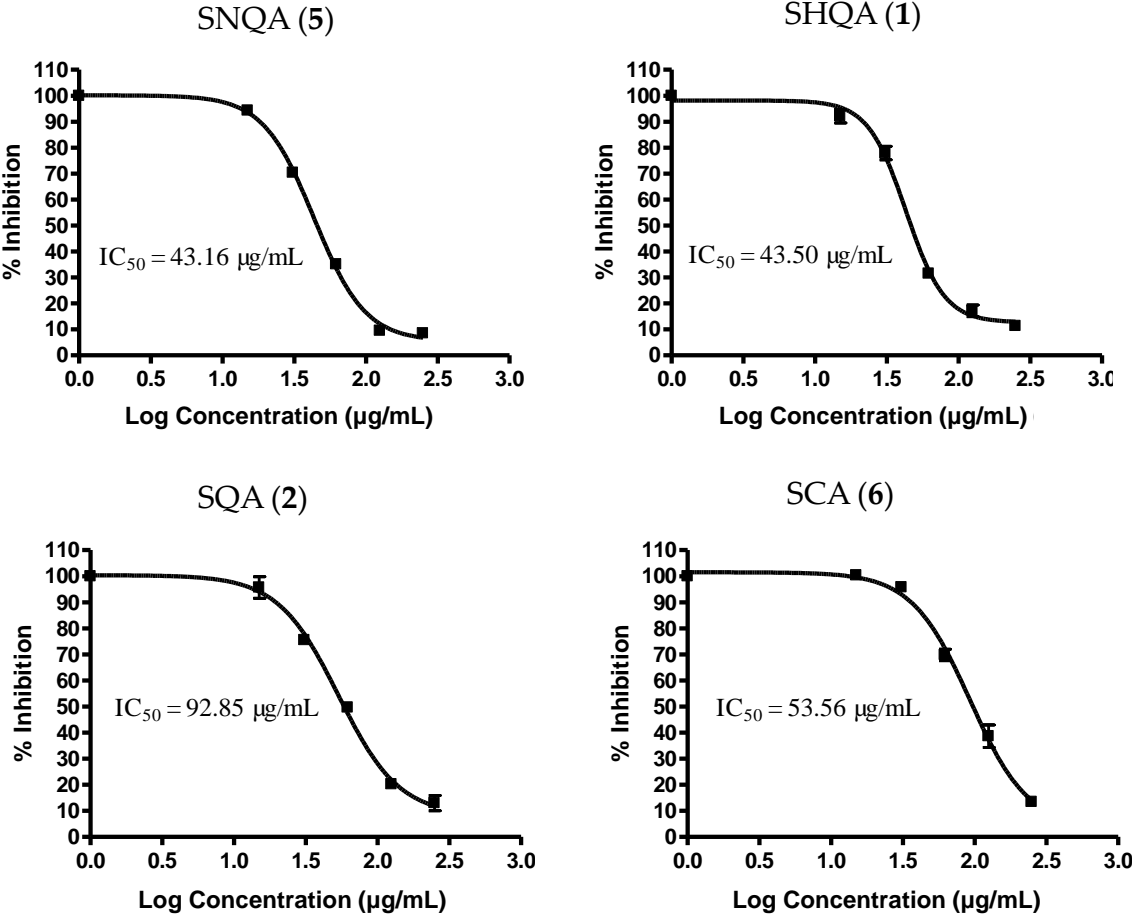
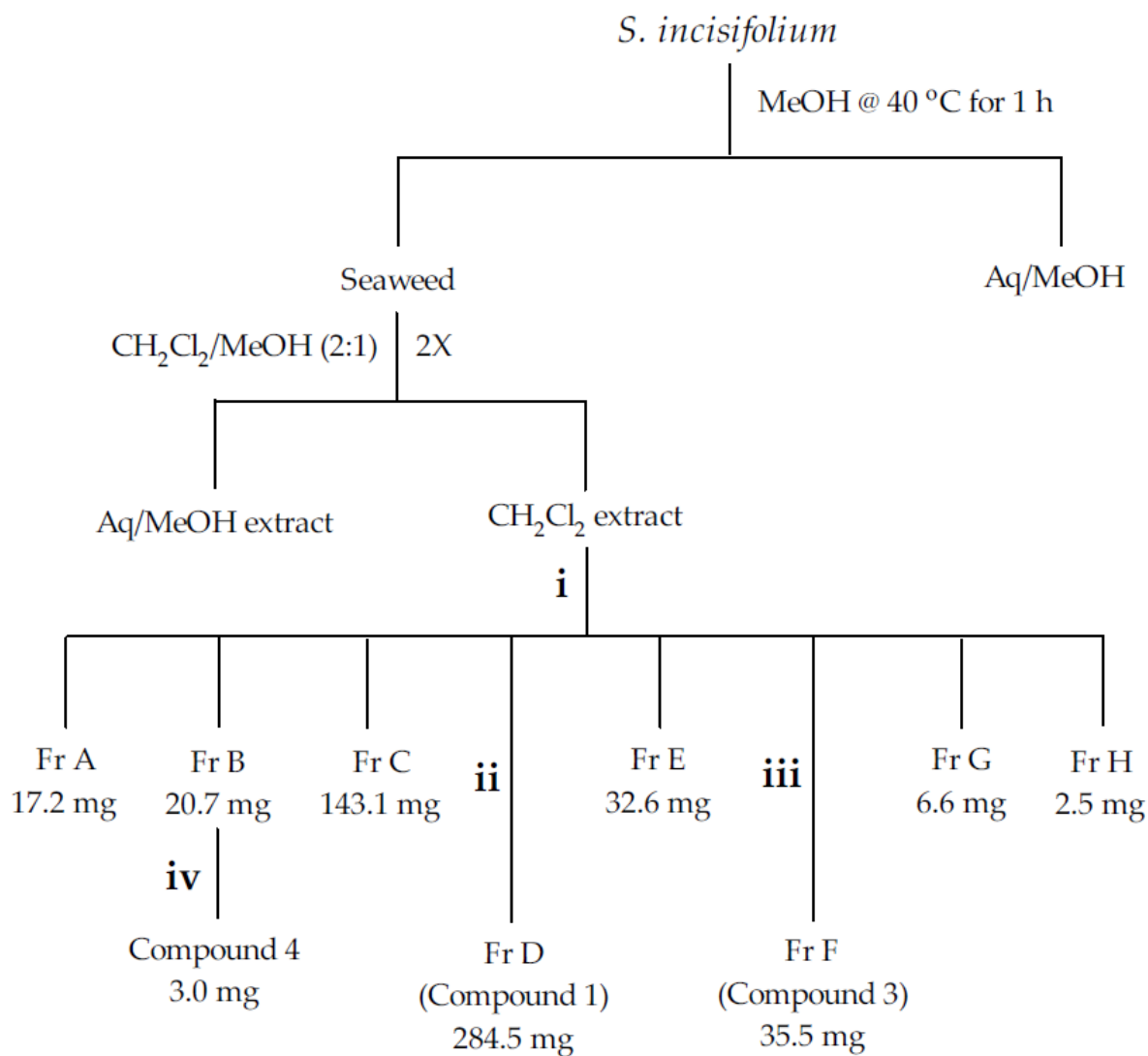
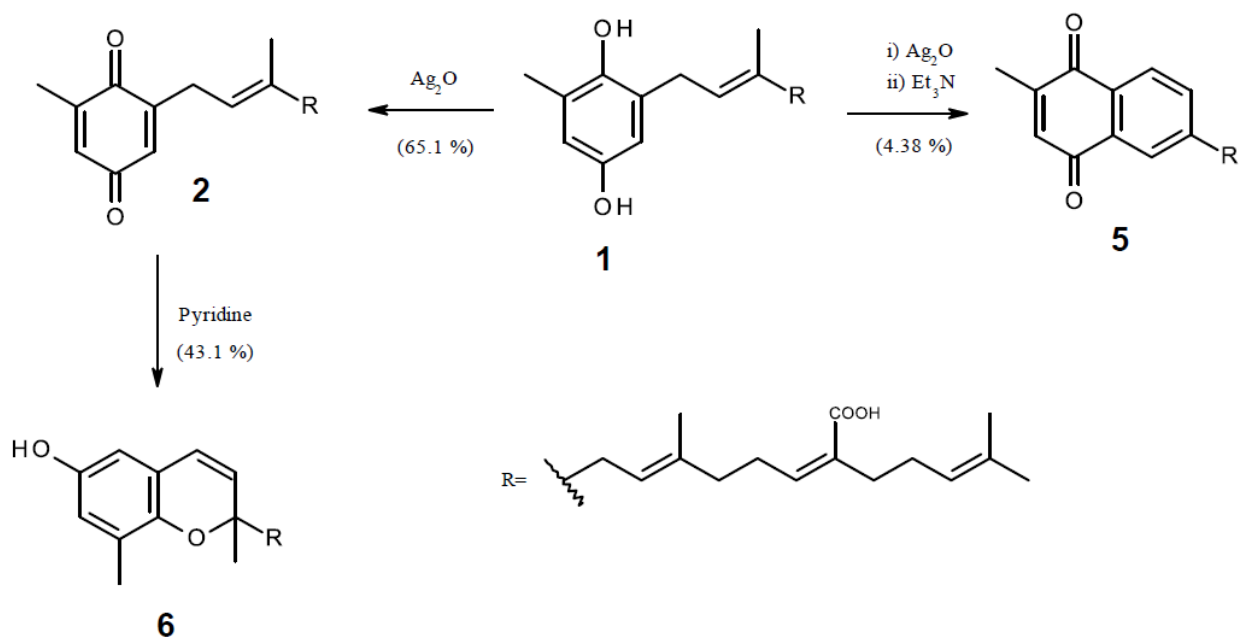


Figure S13. Dose dependent inhibition of HeLa cell viability by sarganaphthoquinic acid (5), sargahydroquinic acid (1), sargaquinic acid (2) and sargachromenoic acid (6).

Extraction and isolation



Scheme S1. Isolation of compounds **1**, **3**, and **4** from *S. incisifolium*. Conditions: (i) Step gradient silica gel column chromatography, mobile phase *n*-hexane-EtOAc. (ii) Silica gel column fraction, *n*-hexane-EtOAc (7:3). (iii) Silica gel column fraction, *n*-hexane-EtOAc (4:6). (iv) Normal Phase HPLC fraction, *n*-hexane-EtOAc (9:1).



Scheme S2. Semi-synthetic derivatization of sargahydroquinoinic acid (1) analogs; 2, 5, and 6.