

Supporting Figures

Figure S1 ^1H NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy-4-keto α -carotene (3'-hydroxy- β,ϵ -echinenone) (**1**) in CDCl_3 .

Figure S2 ^{13}C NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy-4-keto α -carotene (3'-hydroxy- β,ϵ -echinenone) (**1**) in CDCl_3 .

Figure S3 ^1H NMR spectrum of canthaxanthin (**2**) in CDCl_3 .

Figure S4 ^{13}C NMR spectrum of canthaxanthin (**2**) in CDCl_3 .

Figure S5 ^1H NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy α -carotene (α -cryptoxanthin) (**3**) in CDCl_3 .

Figure S6 ^{13}C NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy α -carotene (α -cryptoxanthin) (**3**) in CDCl_3 .

Figure S7 ^1H NMR spectrum of (3*R*,3'*R*,6'*R*)-3,3'-dihydroxy-4-keto α -carotene (fritschiellaxanthin (4-ketolutein)) (**4**) in CDCl_3 .

Figure S8 ^{13}C NMR spectrum of (3*R*,3'*R*,6'*R*)-3,3'-dihydroxy-4-keto α -carotene (fritschiellaxanthin (4-ketolutein)) (**4**) in CDCl_3 .

Figure S9 ^1H NMR spectrum of zeaxanthin (**5**) in CDCl_3 .

Figure S10 ^{13}C NMR spectrum of zeaxanthin (**5**) in CDCl_3 .

Figure S11 ^1H NMR spectrum of adonixanthin (**6**) in CDCl_3 .

Figure S12 ^{13}C NMR spectrum of adonixanthin (**6**) in CDCl_3 .

Figure S13 ^1H NMR spectrum of (3*R*,3'*R*,6'*R*)-3,3'-dihydroxy α -carotene (lutein) (**7**) in CDCl_3 .

Figure S14 ^{13}C NMR spectrum of (3*R*,3'*R*,6'*R*)-3,3'-dihydroxy α -carotene (lutein) (**7**) in CDCl_3 .

Figure S1 ^1H NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy-4-keto α -carotene (3'-hydroxy- β,ϵ -echinenone) (**1**) in CDCl_3 .

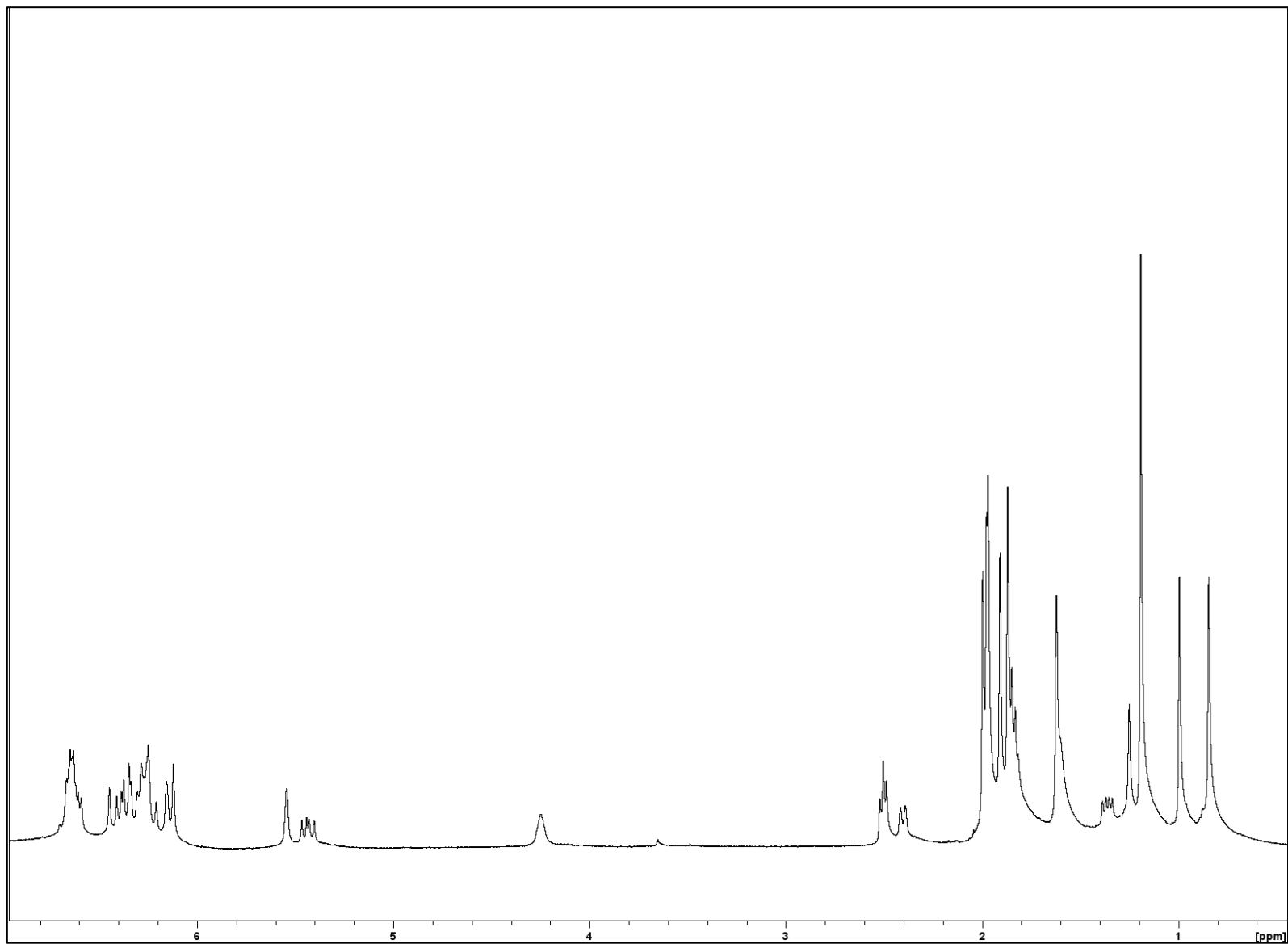


Figure S2 ^{13}C NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy-4-keto α -carotene (3'-hydroxy- β,ϵ -echinenone) (**1**) in CDCl_3 .

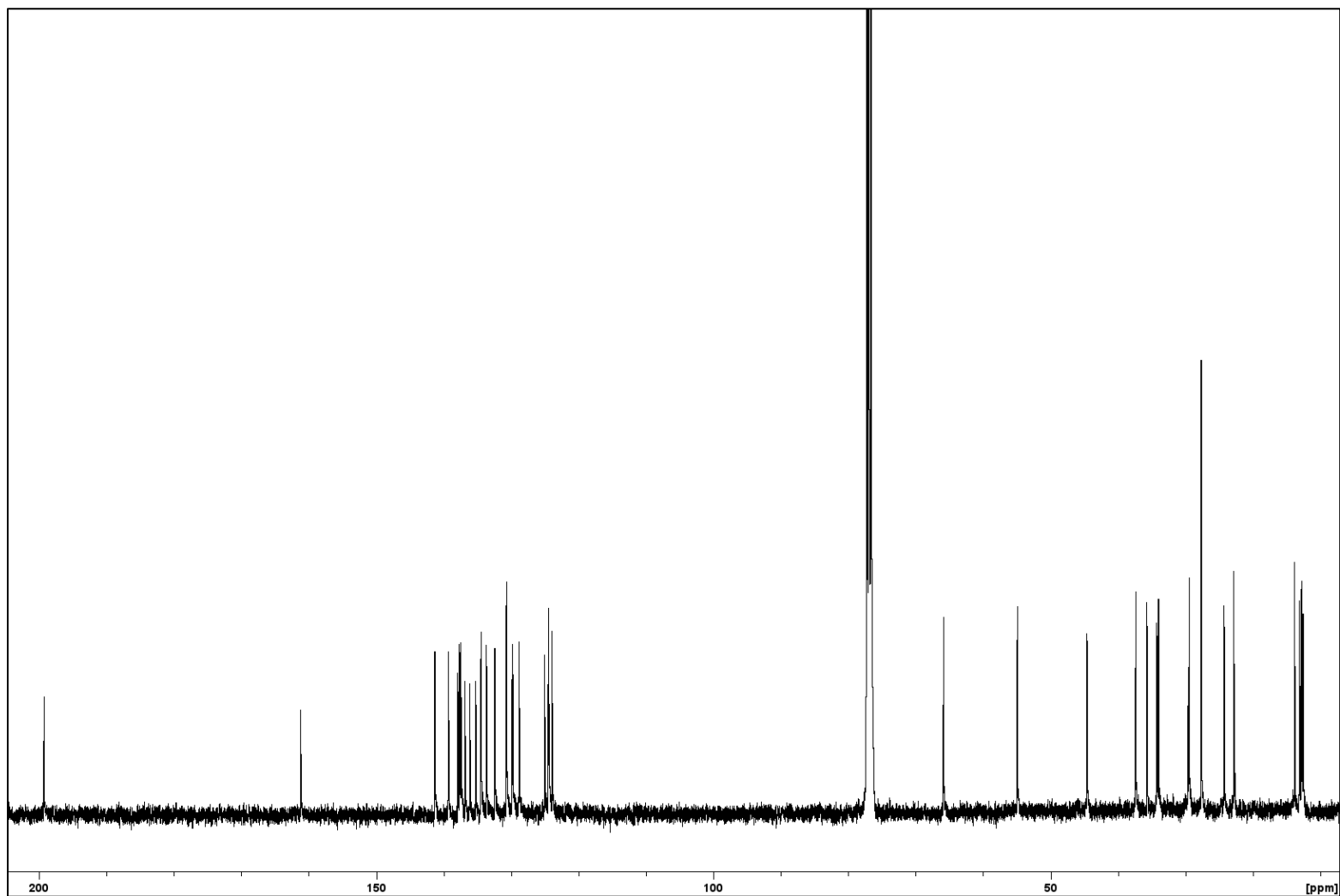


Figure S3 ^1H NMR spectrum of canthaxanthin (**2**) in CDCl_3 .

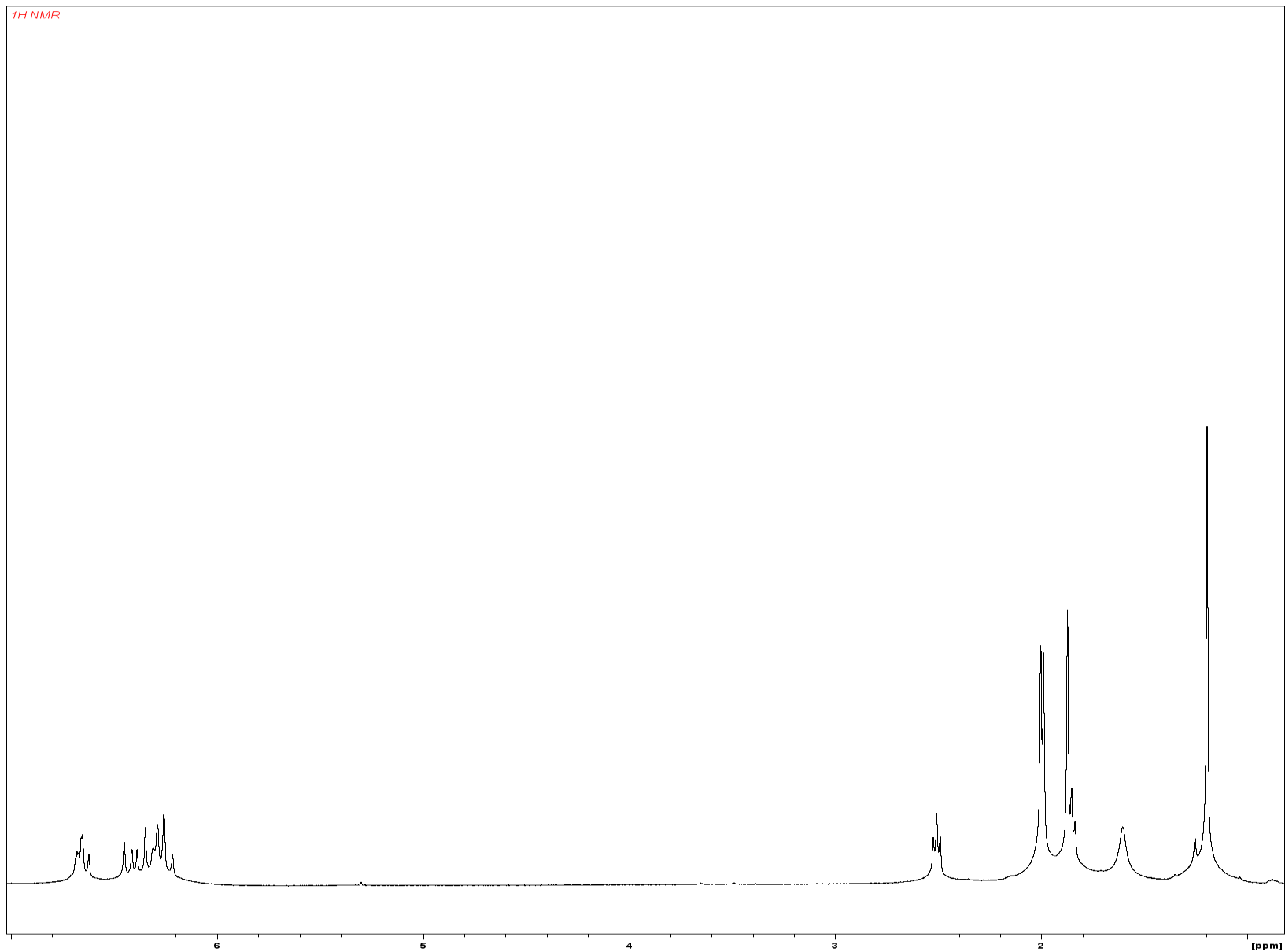


Figure S4 ^{13}C NMR spectrum of canthaxanthin (**2**) in CDCl_3 .

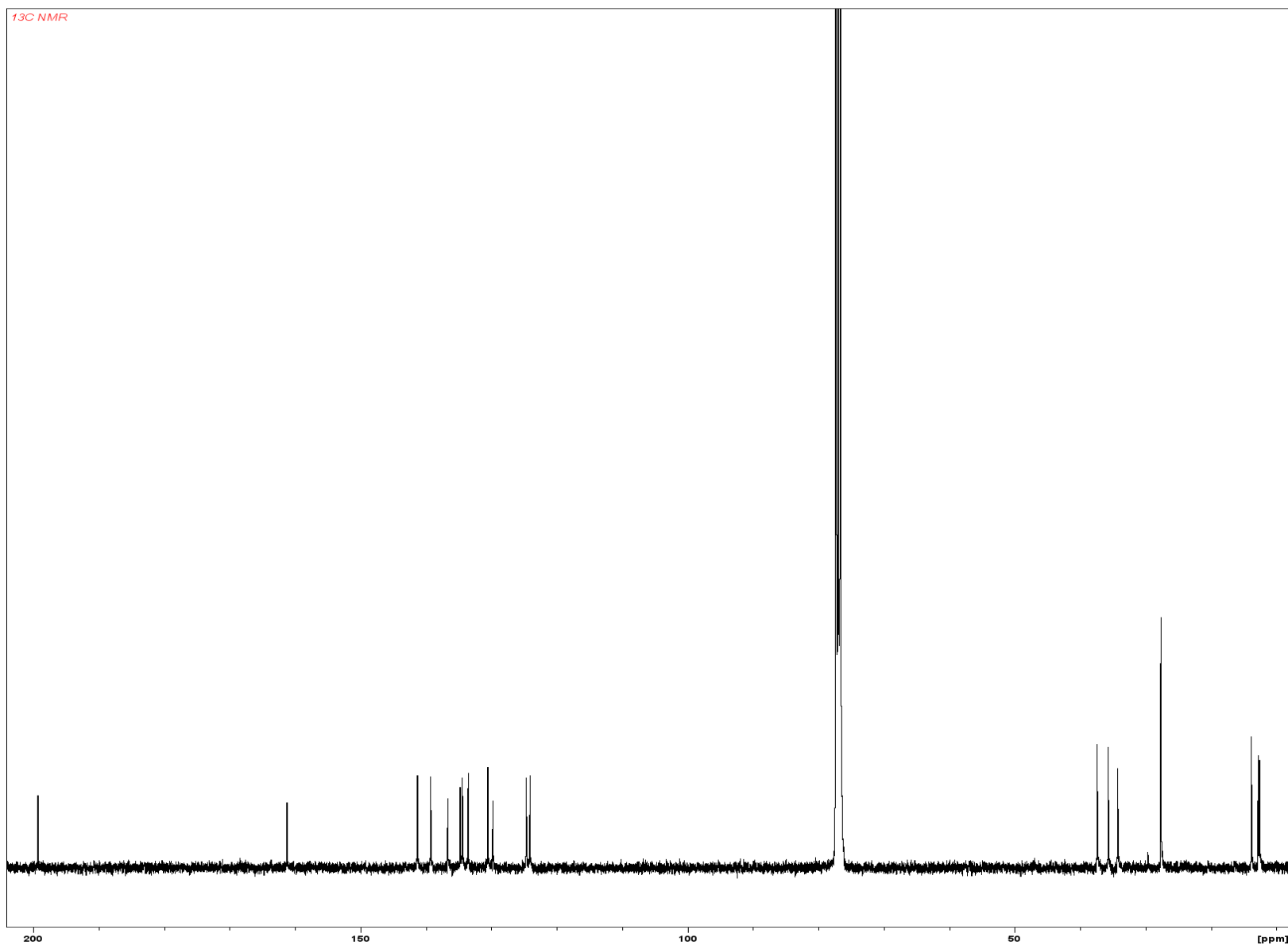


Figure S5 ^1H NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy α -carotene (α -cryptoxanthin) (**3**) in CDCl_3 .

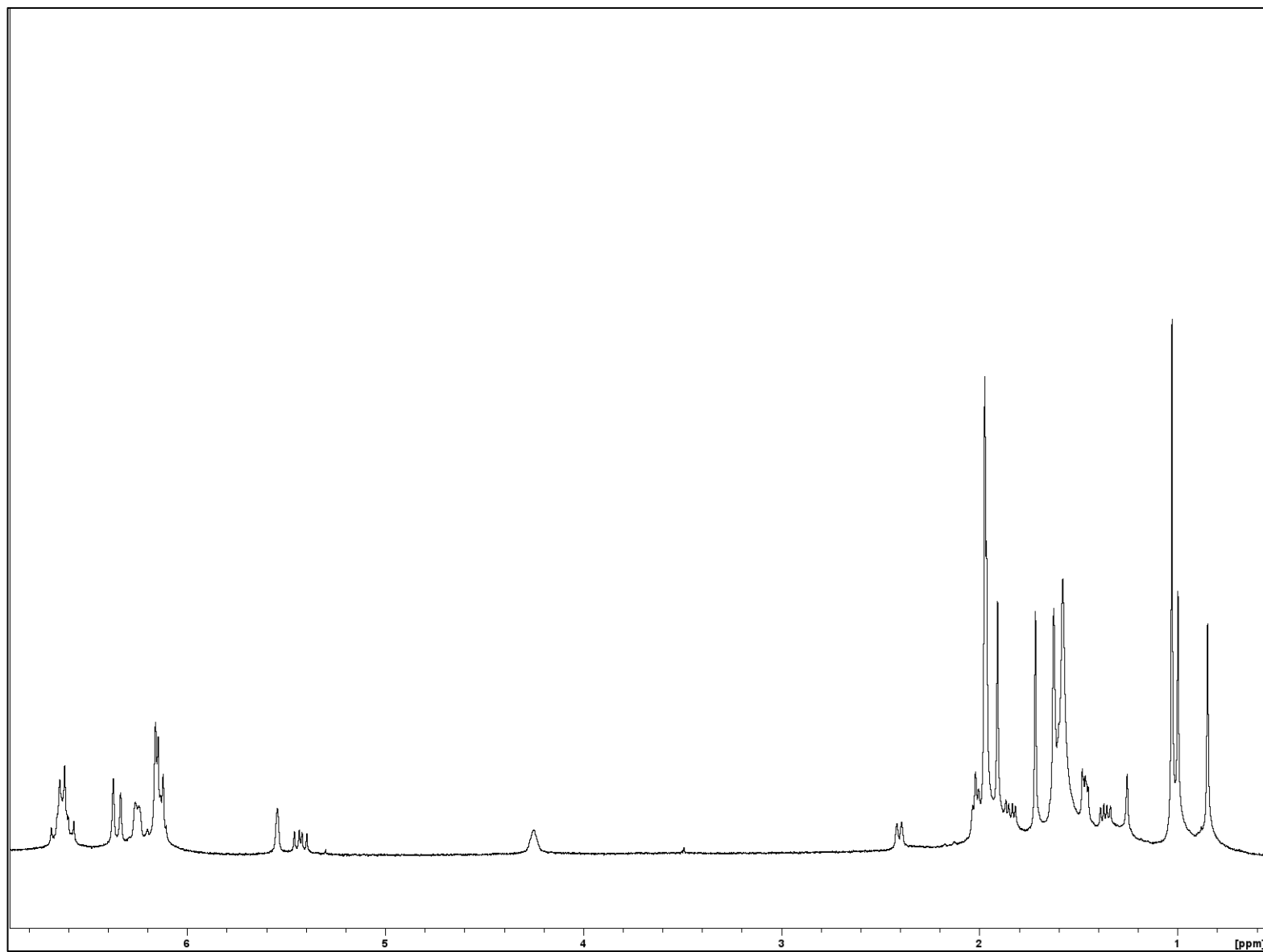


Figure S6 ^{13}C NMR spectrum of (3'*R*,6'*R*)-3'-hydroxy α -carotene (α -cryptoxanthin) (**3**) in CDCl_3 .

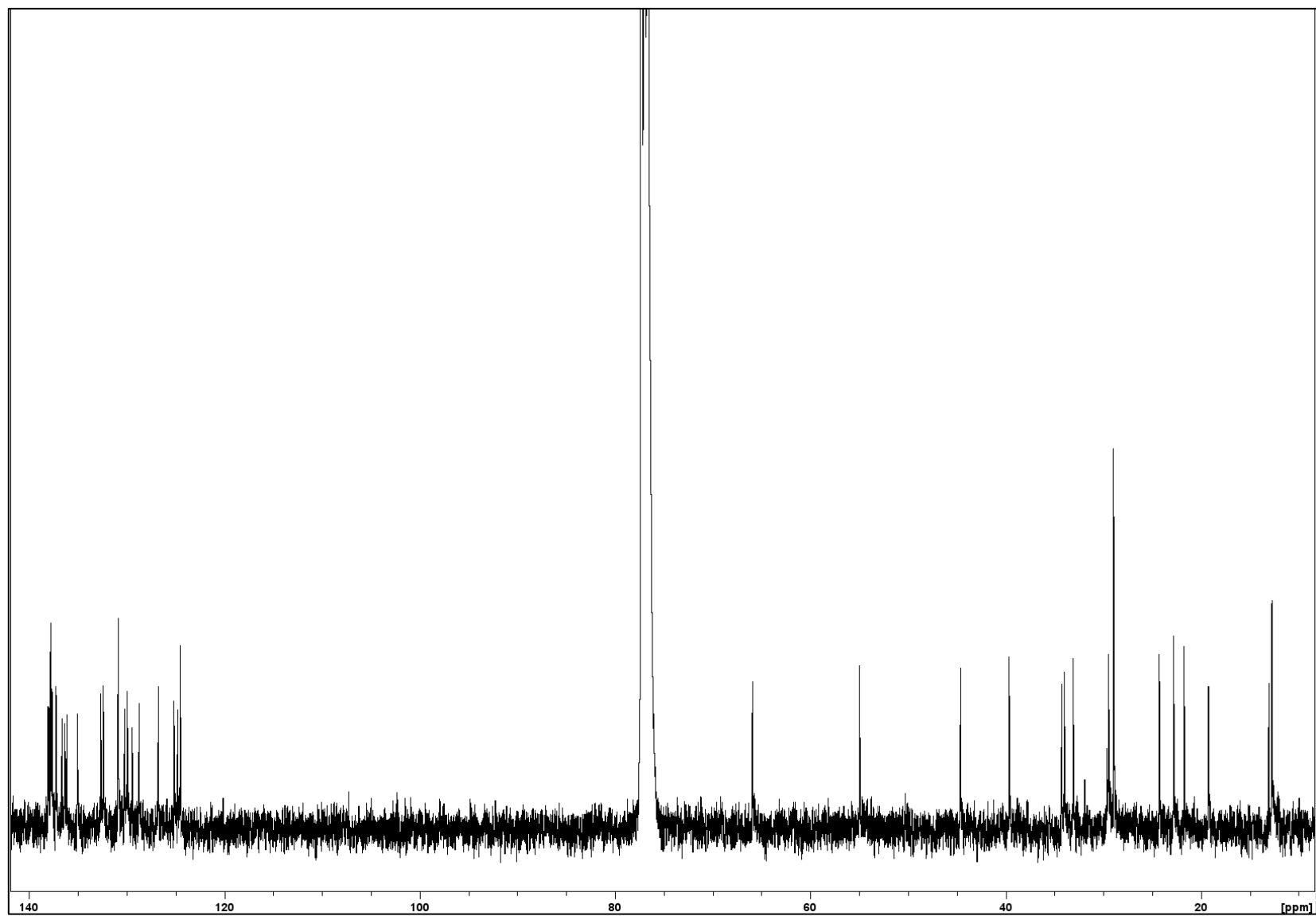


Figure S7 ^1H NMR spectrum of (3R,3'R,6'R)-3,3'-dihydroxy-4-keto α -carotene (fritschiellaxanthin (4-ketolutein)) (**4**) in CDCl_3 .

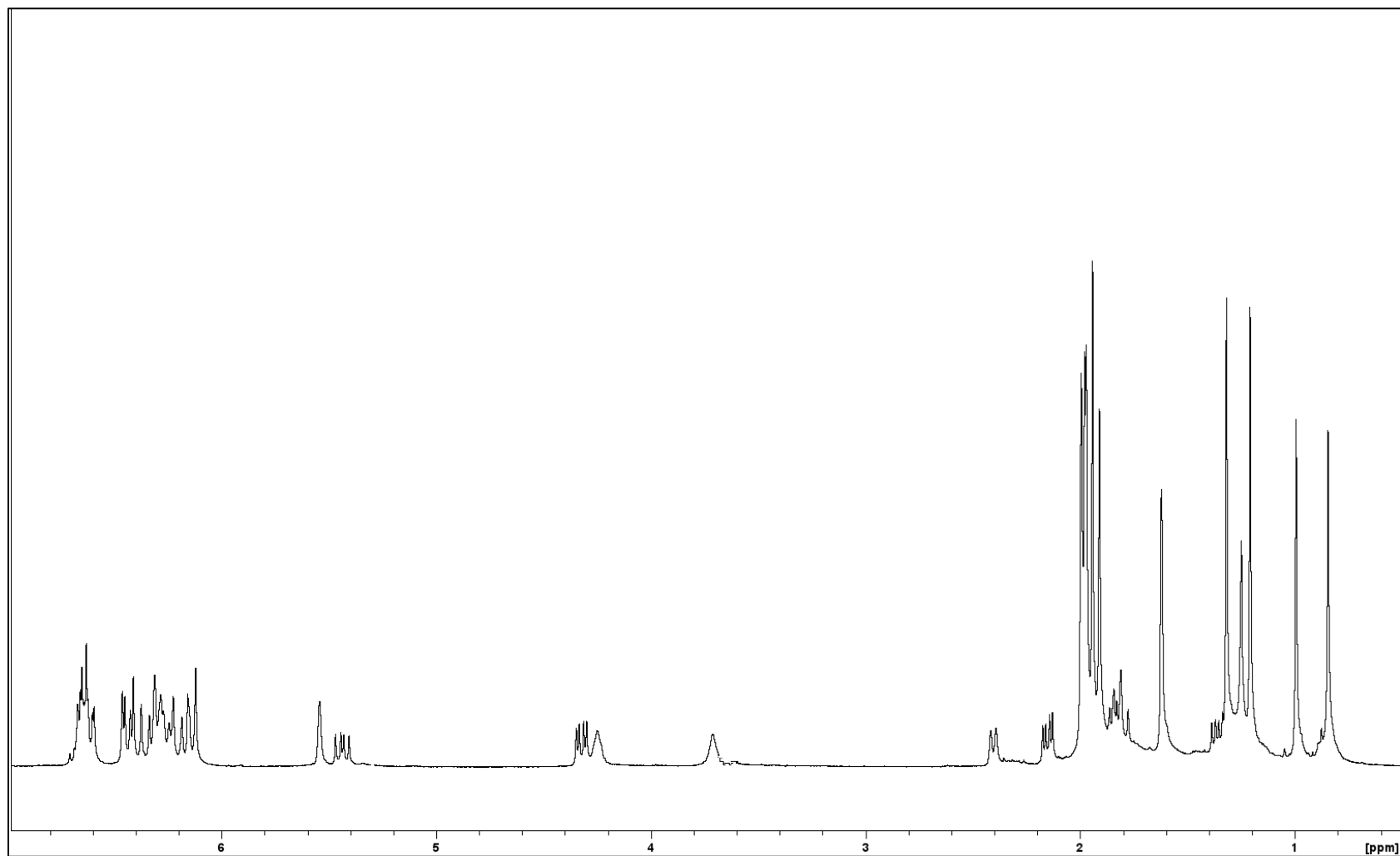


Figure S8 ^{13}C NMR spectrum of (3*R*,3'*R*,6'*R*)- 3,3'-dihydroxy-4-keto α -carotene (fritschiellaxanthin (4-ketolutein)) (**4**) in CDCl_3 .

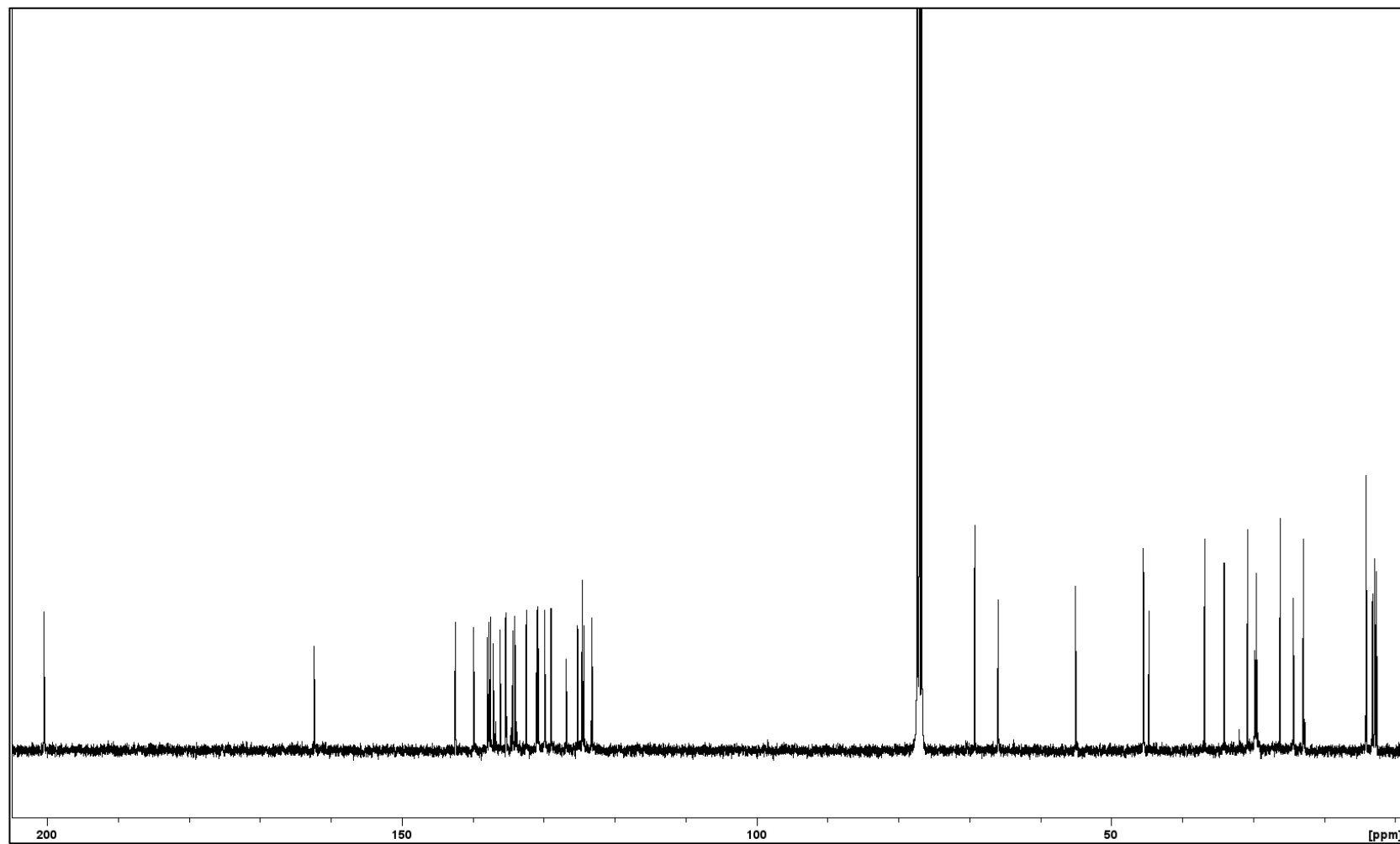


Figure S9 ^1H NMR spectrum of zeaxanthin (**5**) in CDCl_3 .

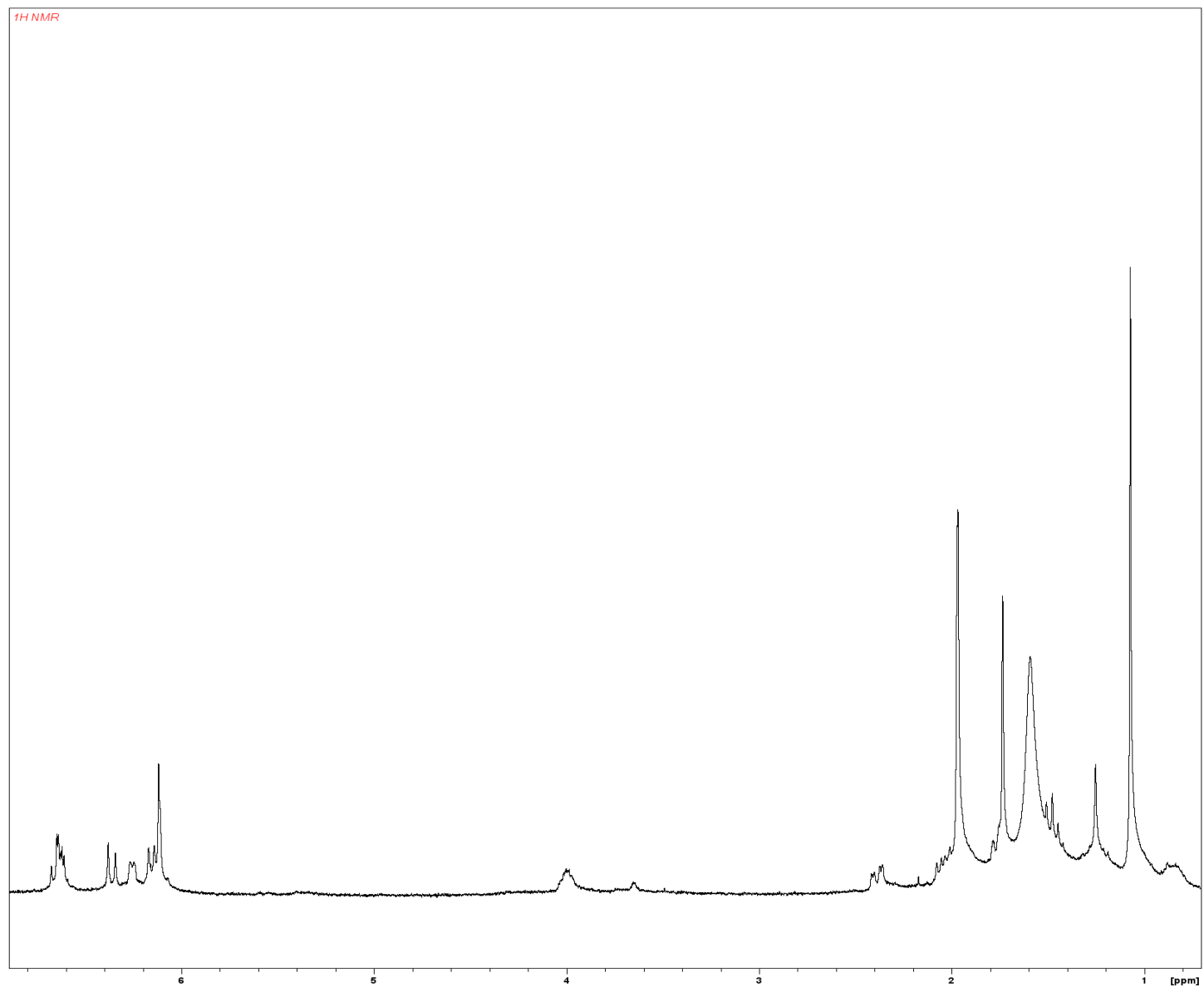


Figure S10 ^{13}C NMR spectrum of zeaxanthin (**5**) in CDCl_3 .

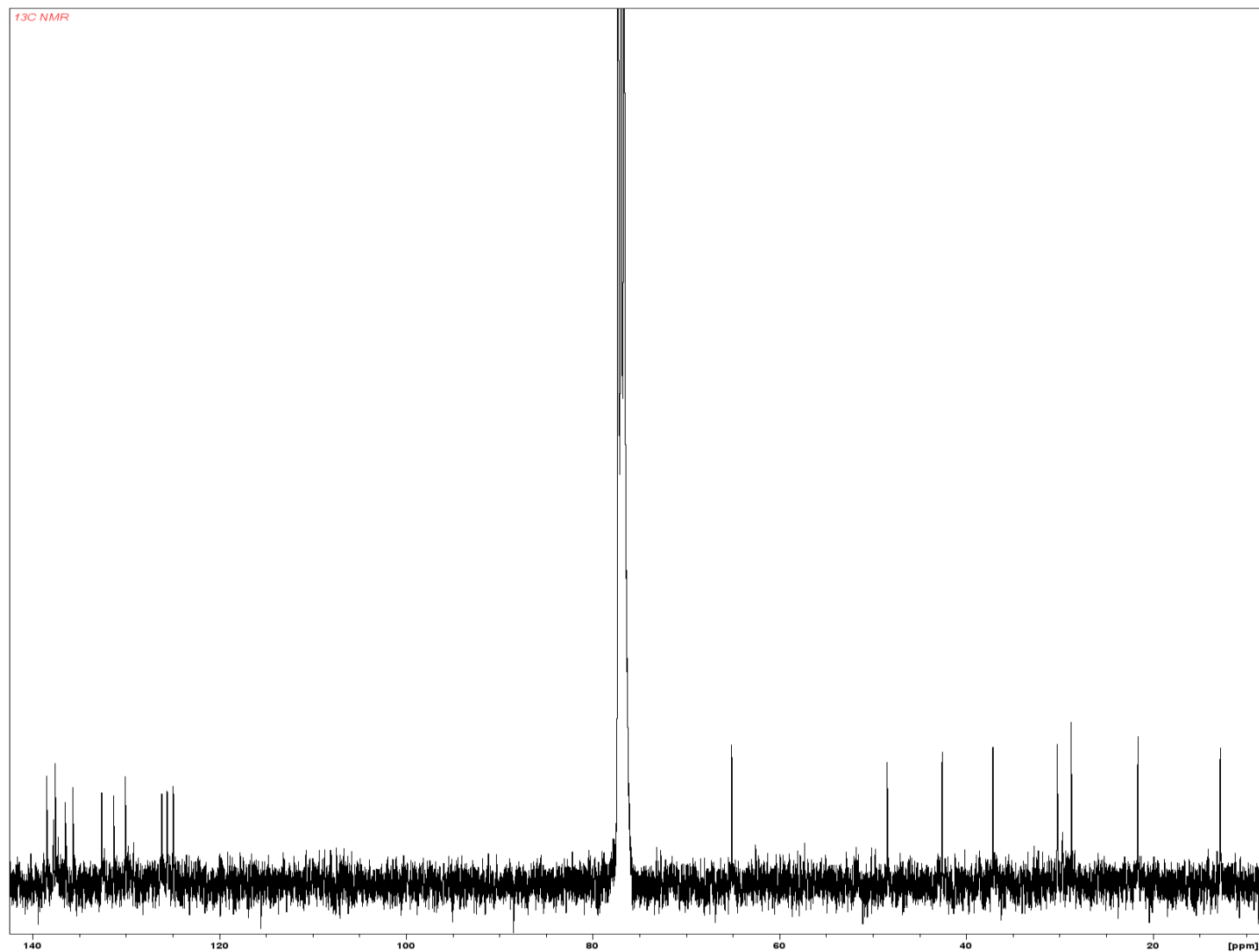


Figure S11 ^1H NMR spectrum of adonixanthin (**6**) in CDCl_3 .

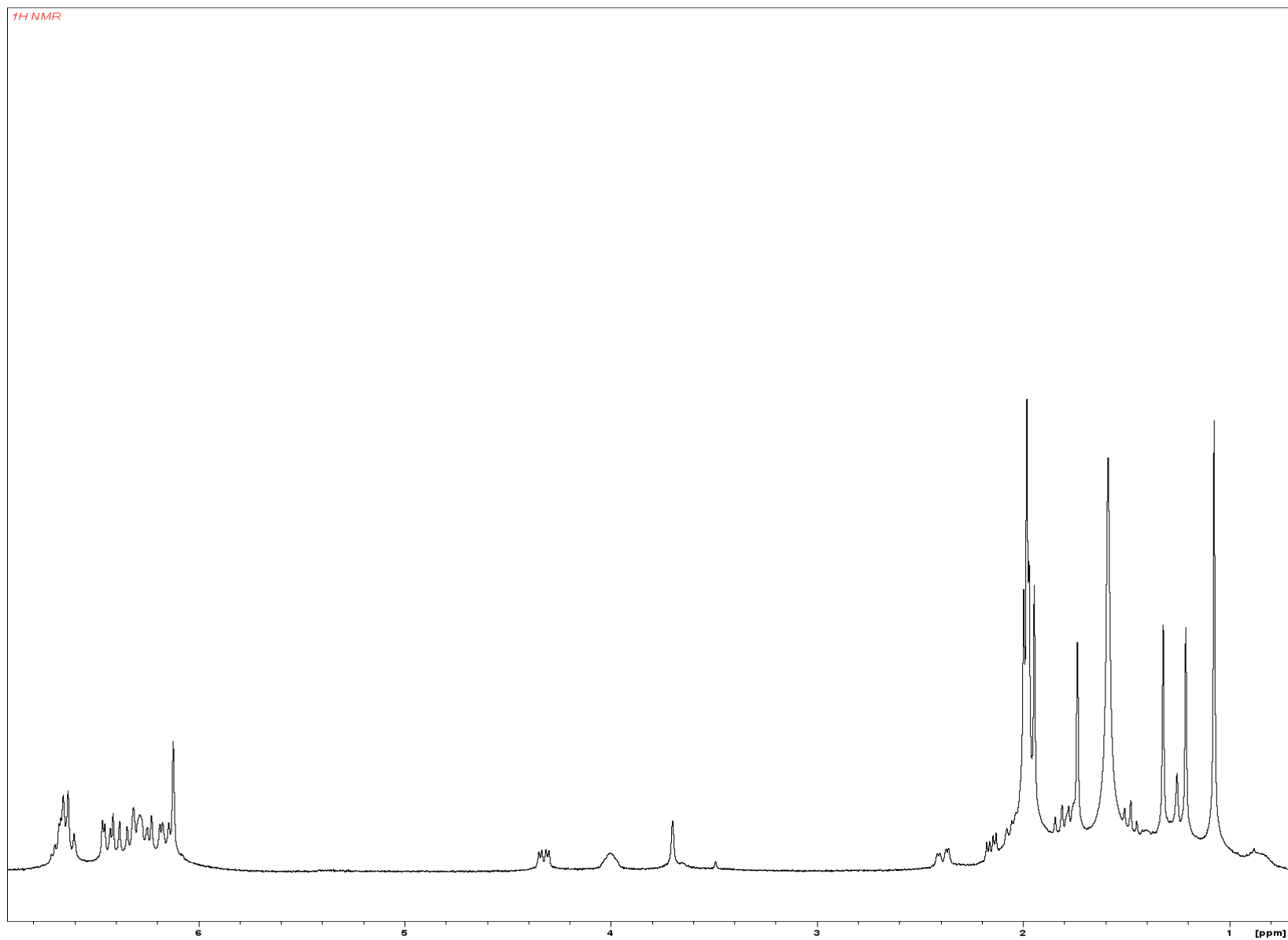


Figure S12 ^{13}C NMR spectrum of adonixanthin (**6**) in CDCl_3 .

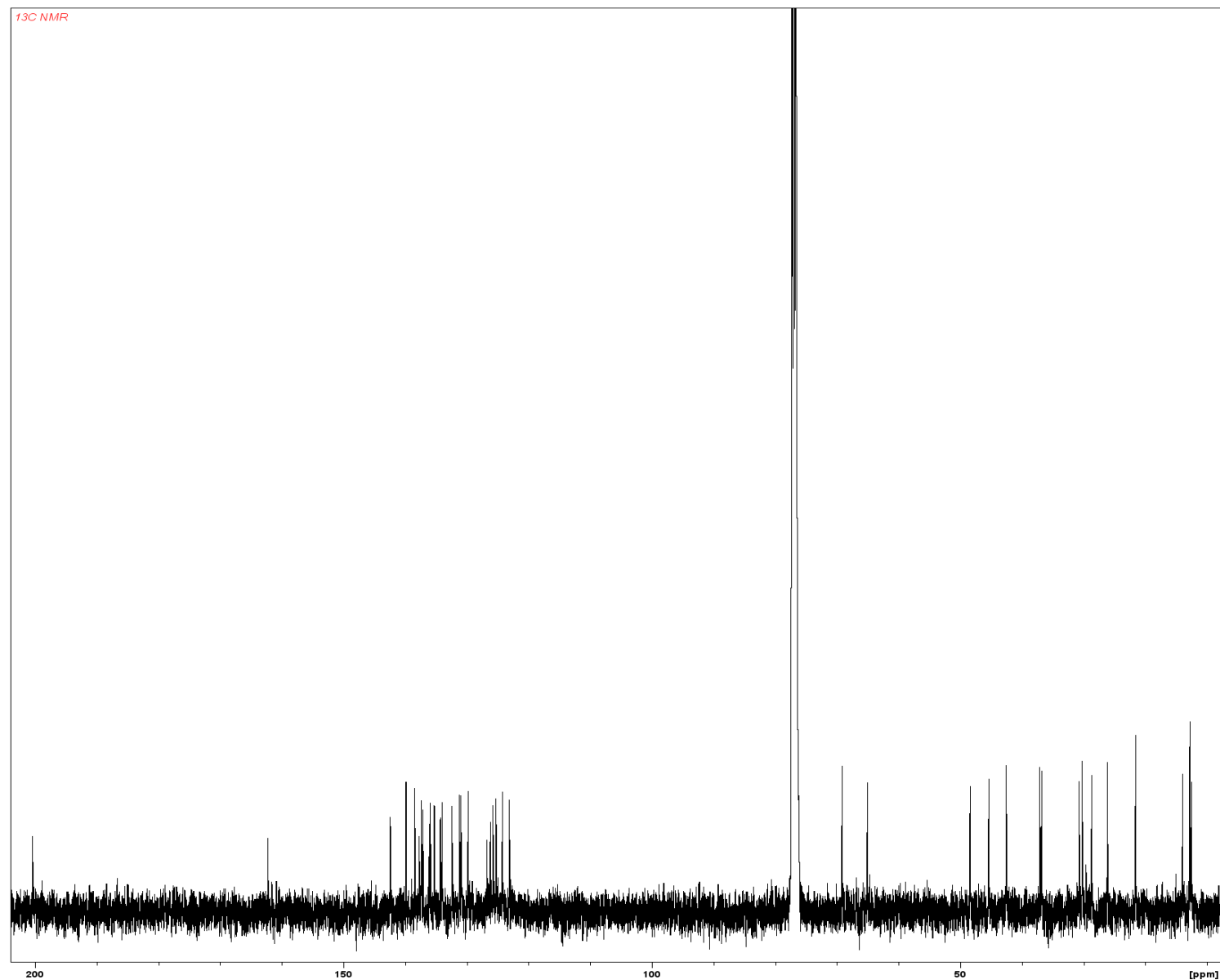


Figure S13 ^1H NMR spectrum of (3*R*,3'*R*,6'*R*)- 3,3'-dihydroxy α -carotene (lutein) (**7**) in CDCl_3 .

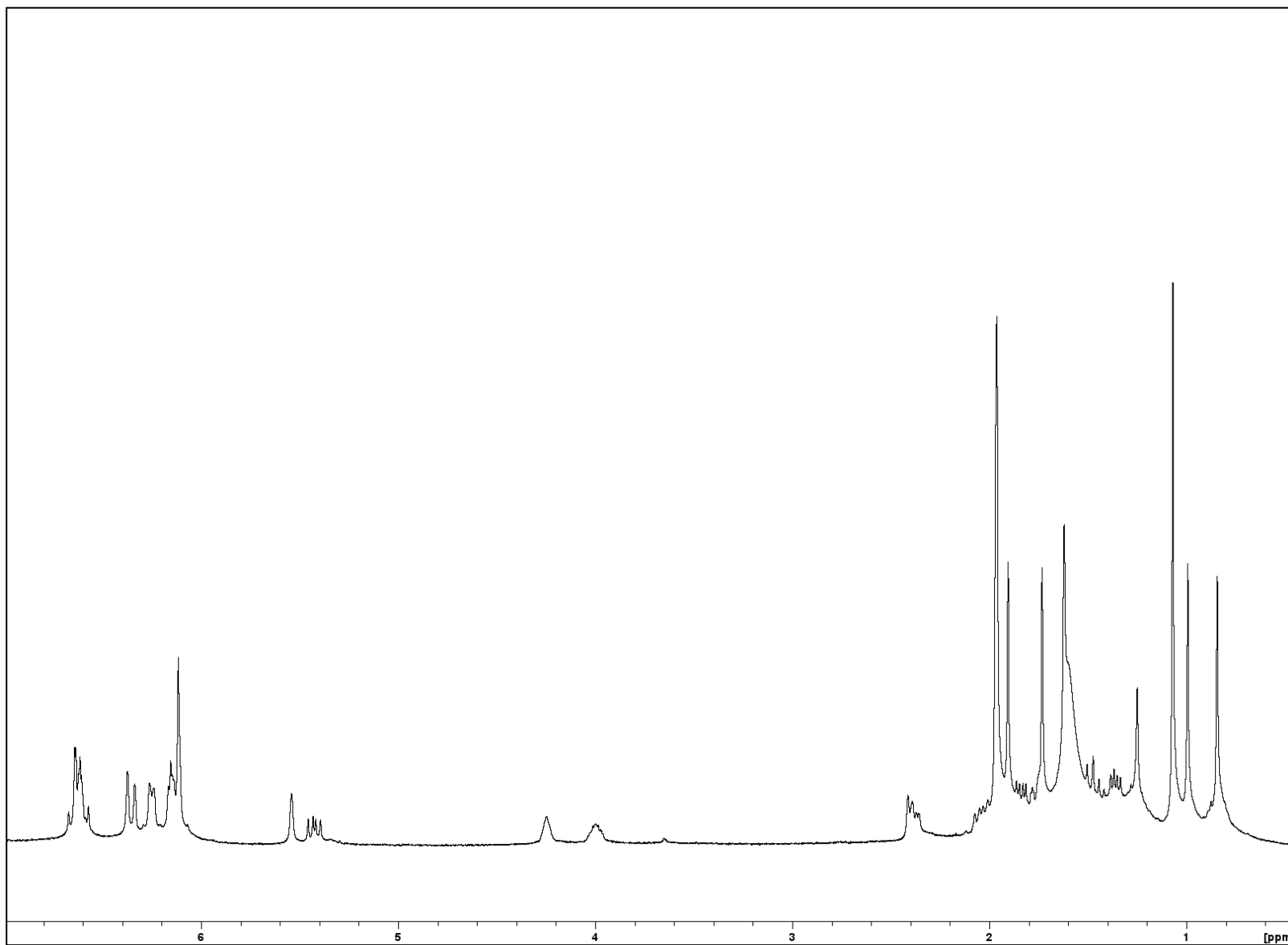


Figure S14 ^{13}C NMR spectrum of (3*R*,3'*R*,6'*R*)- 3,3'-dihydroxy α -carotene (lutein) (**7**) in CDCl_3 .

