

Supplementary Information

Figure S1. Anti-aging activities of the four sterol compounds at doses of 0.3, 1, 3, 10 μM . **(A)** Effect of cholesterol on the replicative lifespan of K6001. The average lifespan for the K6001 control group was 8.0 ± 0.43 generations; resveratrol at 10 μM , 9.7 ± 0.44 **; cholesterol at 0.3 μM , 8.9 ± 0.51 ; at 1 μM , 9.9 ± 0.47 **; at 3 μM , 9.8 ± 0.47 **; and at 10 μM , 7.7 ± 0.37 ; **(B)** Effect of brassicasterol on the replicative lifespan of K6001. The average lifespan for the K6001 control group was 8.0 ± 0.43 generations; resveratrol at 10 μM , 9.7 ± 0.44 **; brassicasterol at 0.3 μM , 8.4 ± 0.38 ; at 1 μM , 9.9 ± 0.47 **; at 3 μM , 9.8 ± 0.39 **; and at 10 μM , 8.8 ± 0.39 ; **(C)** Effect of crinosterol on the replicative lifespan of K6001. The average lifespan for the K6001 control group was 8.0 ± 0.43 generations; resveratrol at 10 μM , 9.7 ± 0.44 **; crinosterol at 0.3 μM , 9.6 ± 0.47 *; at 1 μM , 10.0 ± 0.46 **; at 3 μM , 10.0 ± 0.51 **; and at 10 μM , 9.2 ± 0.39 *; **(D)** Effect of 24-methylenecholesterol on the replicative lifespan of K6001. The average lifespan for the K6001 control group was 8.0 ± 0.43 generations; resveratrol at 10 μM , 9.7 ± 0.44 **; 24-methylenecholesterol at 0.3 μM , 9.6 ± 0.51 *; at 1 μM , 9.8 ± 0.43 **; at 3 μM , 9.8 ± 0.46 **; and at 10 μM , 7.8 ± 0.35 . * $p < 0.05$, and ** $p < 0.01$ indicate statistically significant difference.

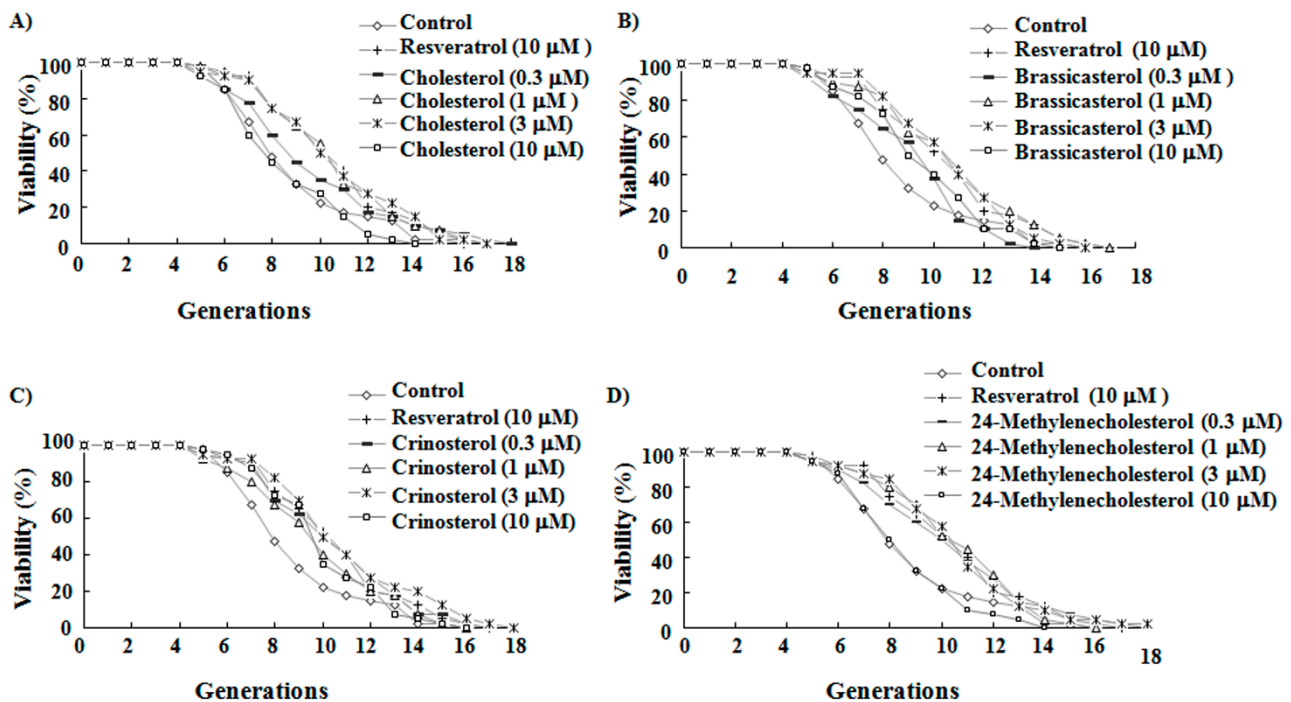


Figure S2. (A) ^1H NMR of cholesterol (500 MHz, CDCl_3) and (B) ^{13}C NMR of cholesterol (125 MHz, CDCl_3).

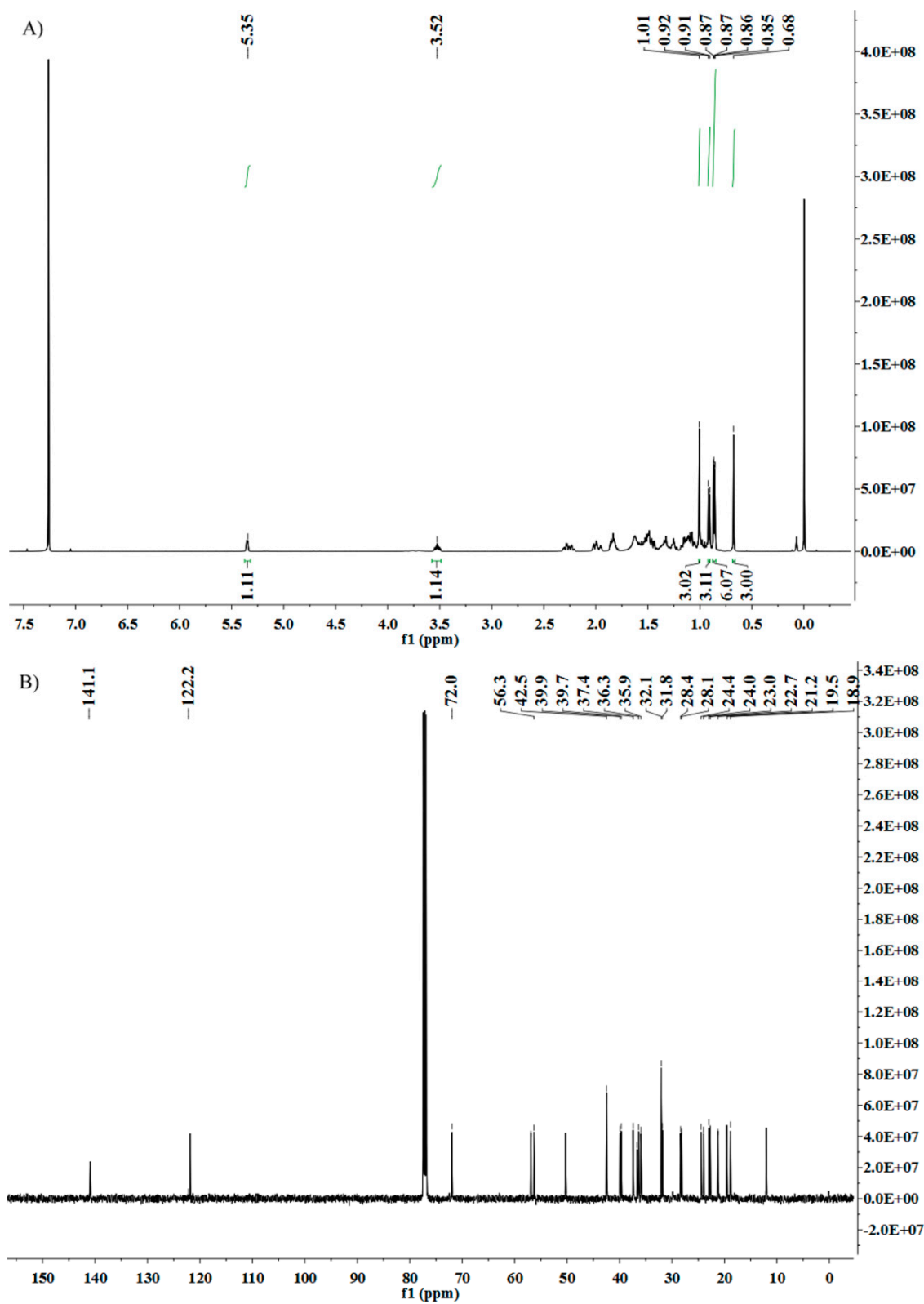


Figure S3. (A) ^1H NMR of brassicasterol (500 MHz, CDCl_3) and (B) ^{13}C NMR of brassicasterol (125 MHz, CDCl_3).

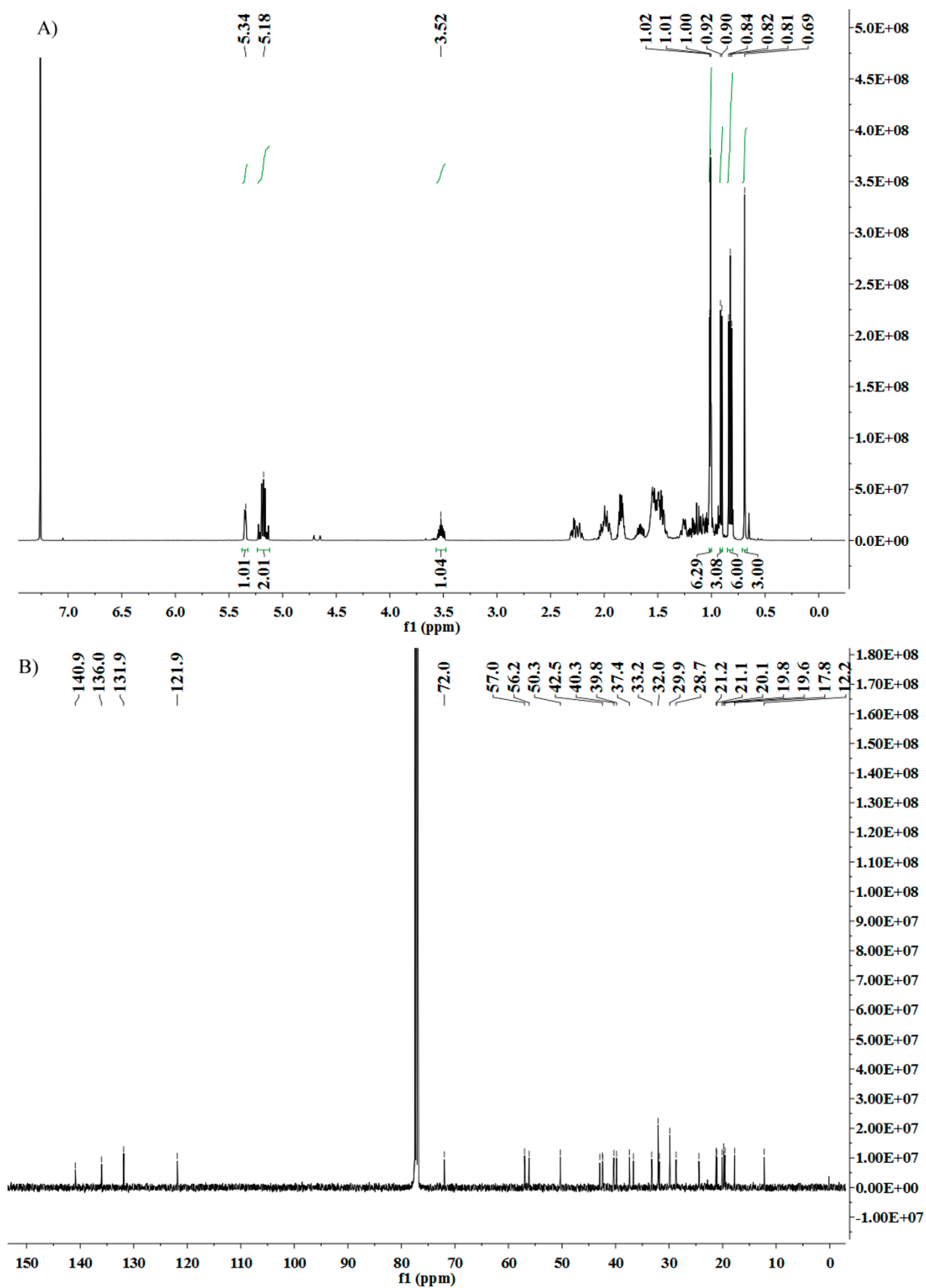


Figure S4. (A) ^1H NMR of crinosterol (500 MHz, CDCl_3) and (B) ^{13}C NMR of crinosterol (125 MHz, CDCl_3).

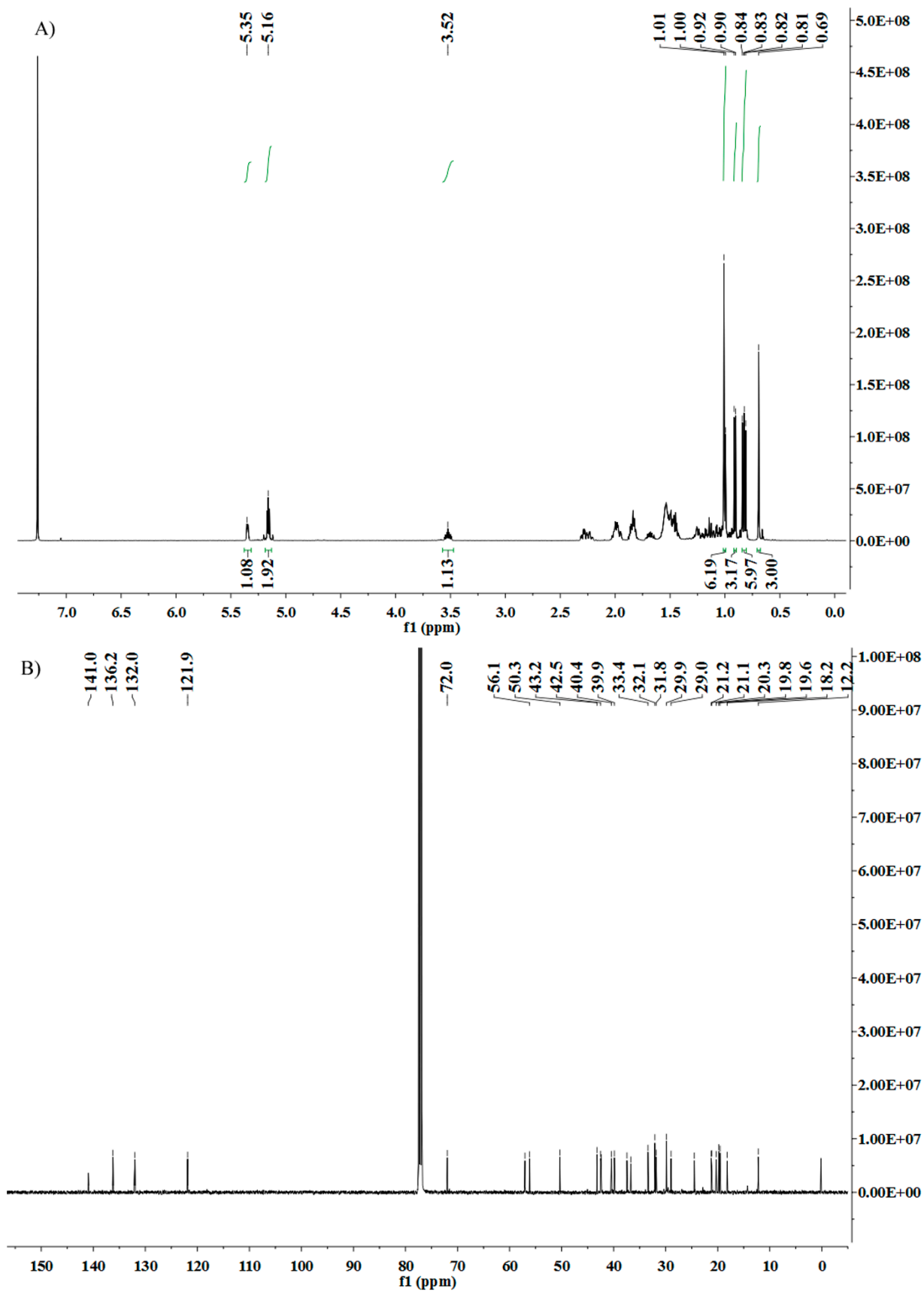


Figure S5. (A) ^1H NMR of 24-methylenecholesterol (500 MHz, CDCl_3) and (B) ^{13}C NMR of 24-methylenecholesterol (125 MHz, CDCl_3).

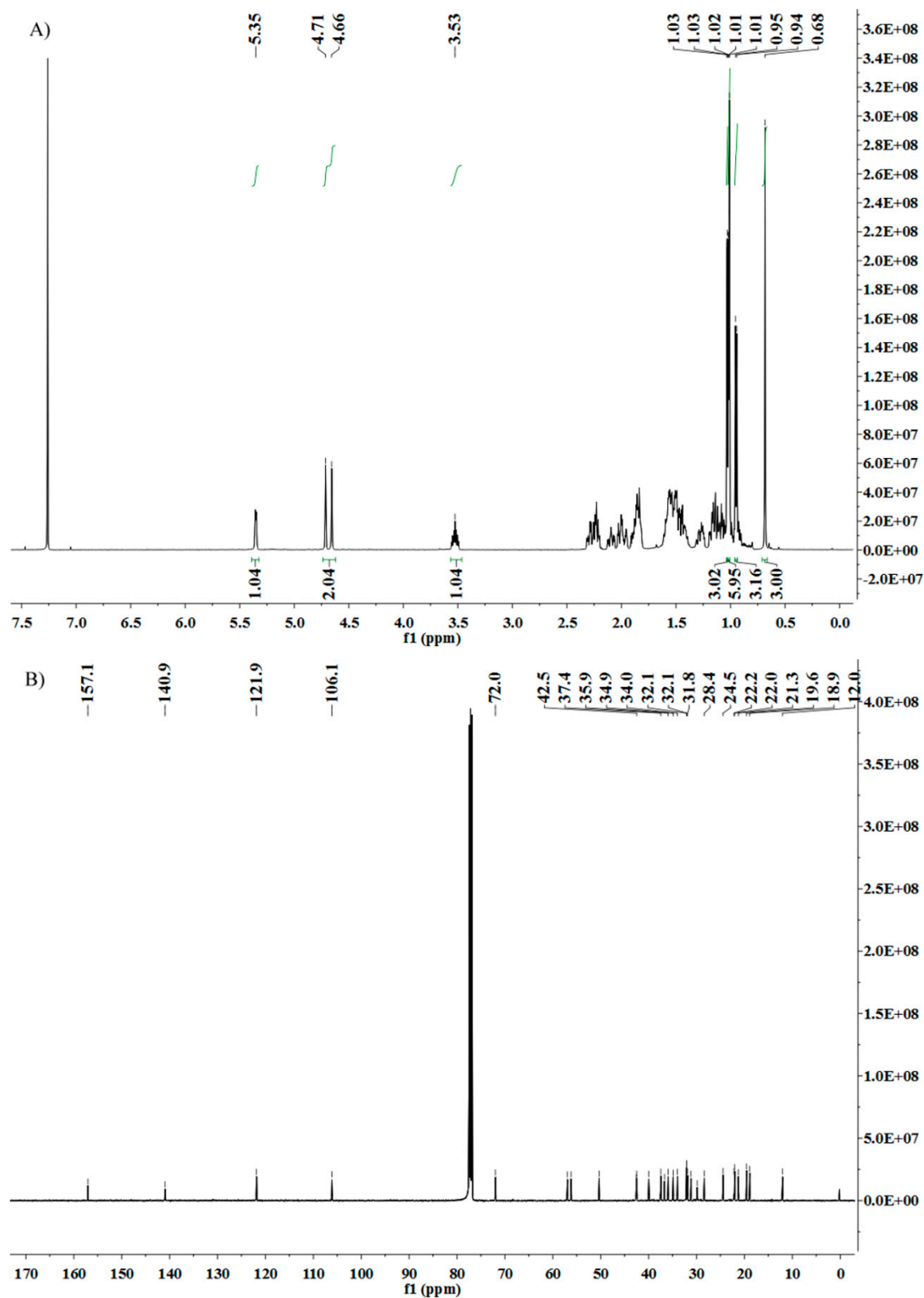


Figure S6. LC-MS basepeak chromatogram of SF (A) and HRMS spectra of the four compounds: cholesterol (B); brassicasterol (C); crinosterol (D); 24-methylenecholesterol (E).

