

Fig. S1. TICs of transformed products of CBD under pH 2.0 and 70 °C obtained by (a) LC/MS and (b) GC/MS. *Peak identities the same as Fig. 2*

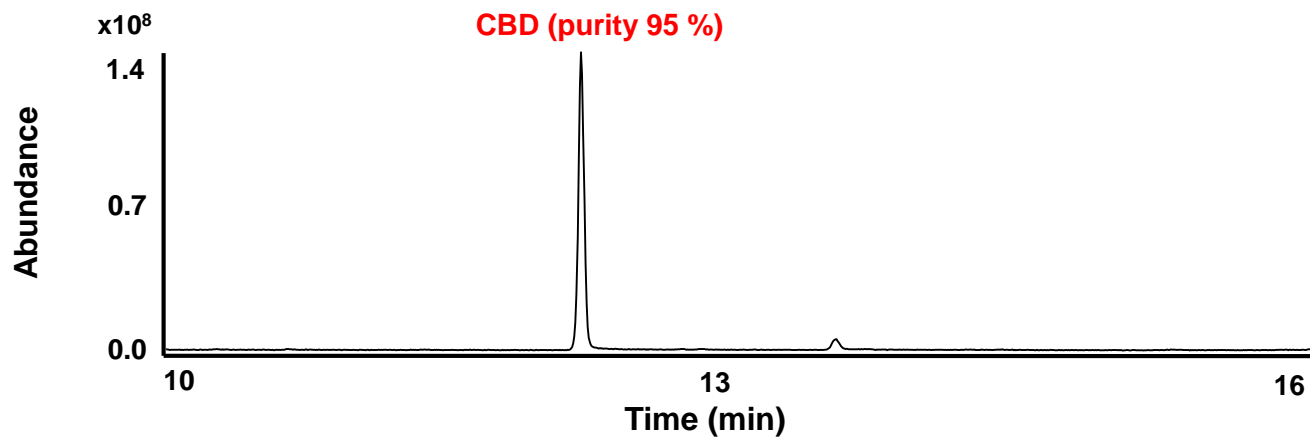
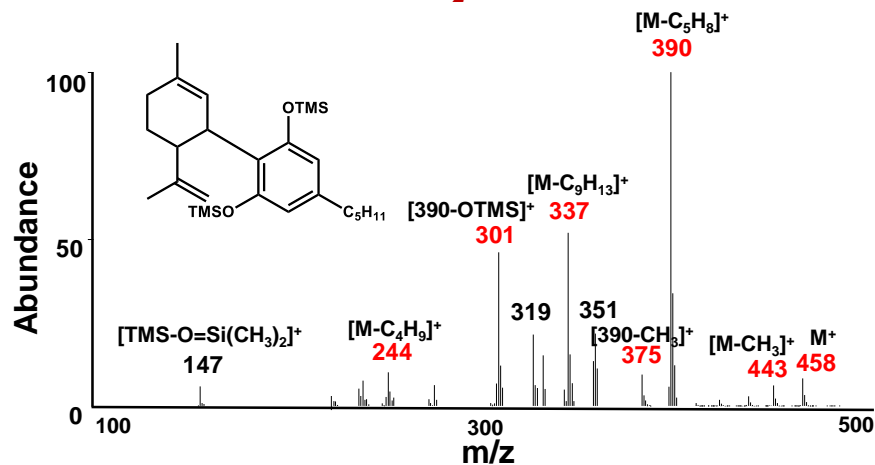
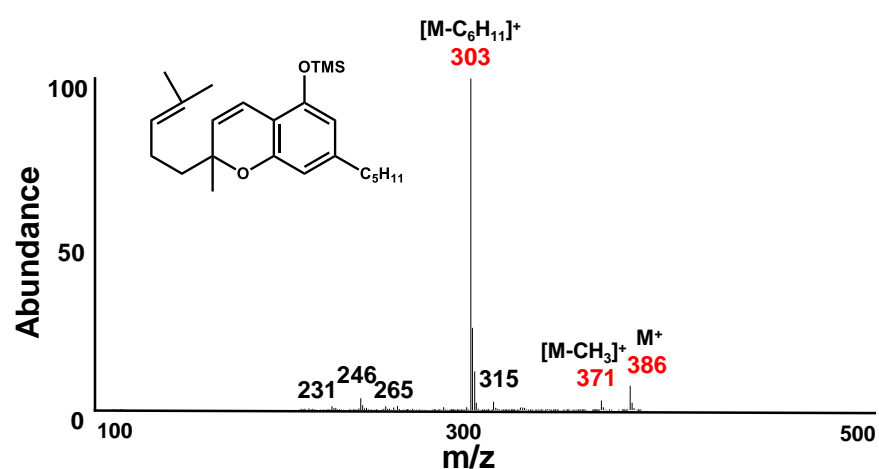


Fig. S2. TIC of isolated CBD obtained by GC/MS

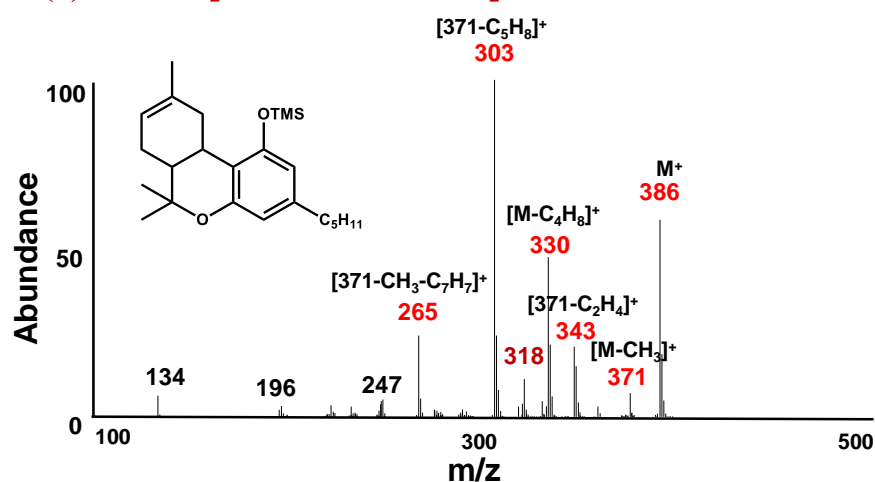
(a) Peak 1 [CBD-(OTMS)₂]



(b) Peak 2 [CBC-OTMS]



(c) Peak 3 [Δ⁸-THC-OTMS]



(d) Peak 4 [Δ¹⁰-THC-OTMS]

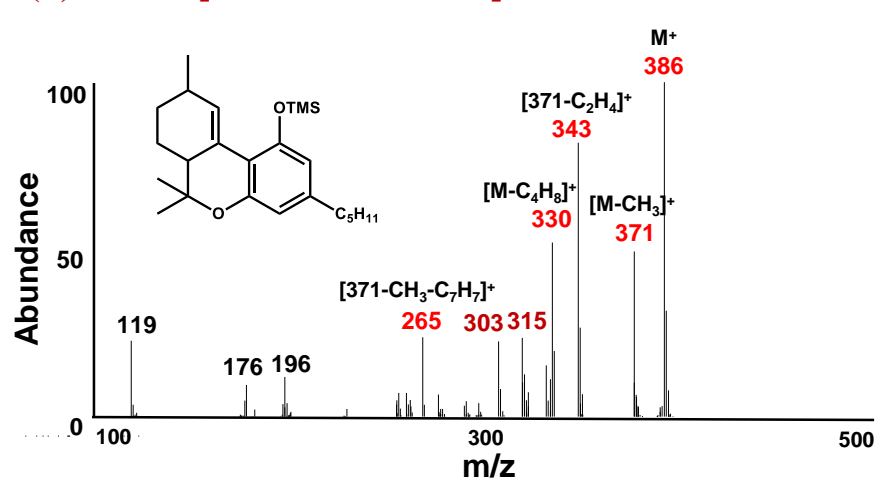
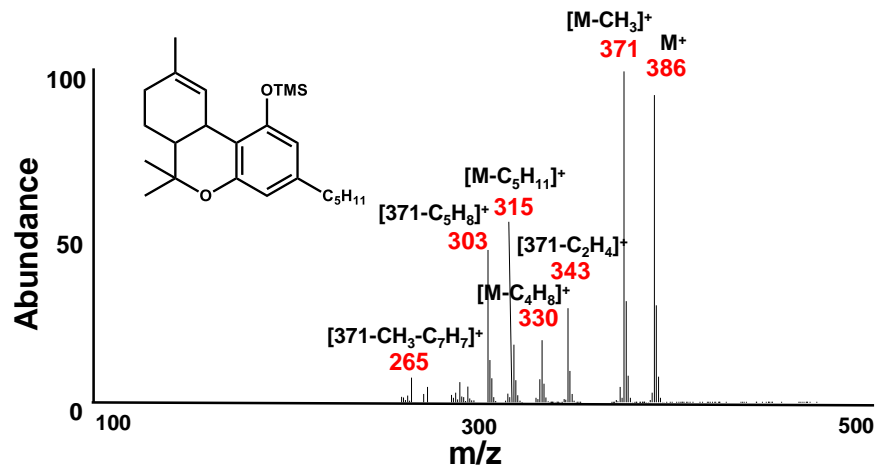
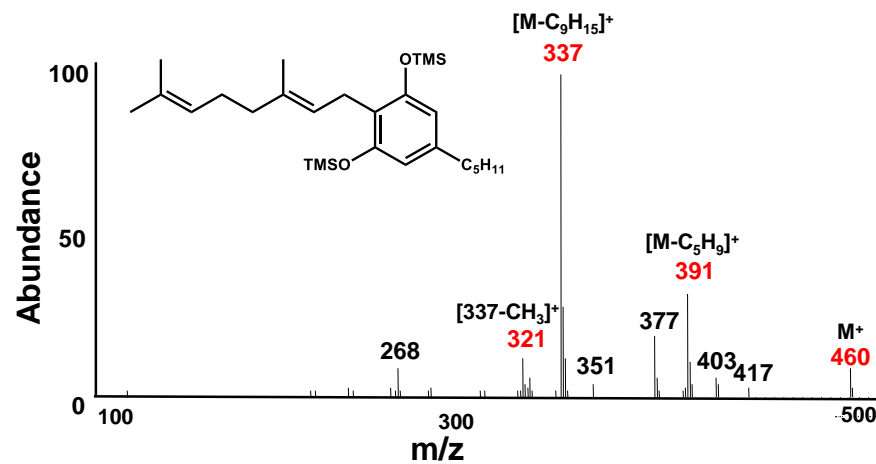


Fig. S3. EI Mass spectra of transformed products under acid reaction of CBD and *Cannabis* extract by GC-MS.

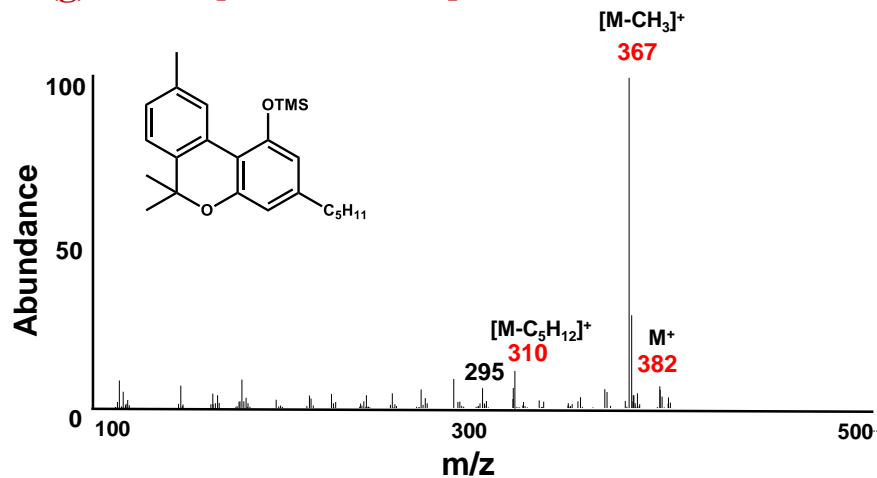
(e) Peak 5 [Δ^9 -THC-OTMS]



(f) Peak 6 [CBG-(OTMS)₂]



(g) Peak 7 [CBN-OTMS]



(h) Peak 8 [9-ethoxy-HHC-OTMS]

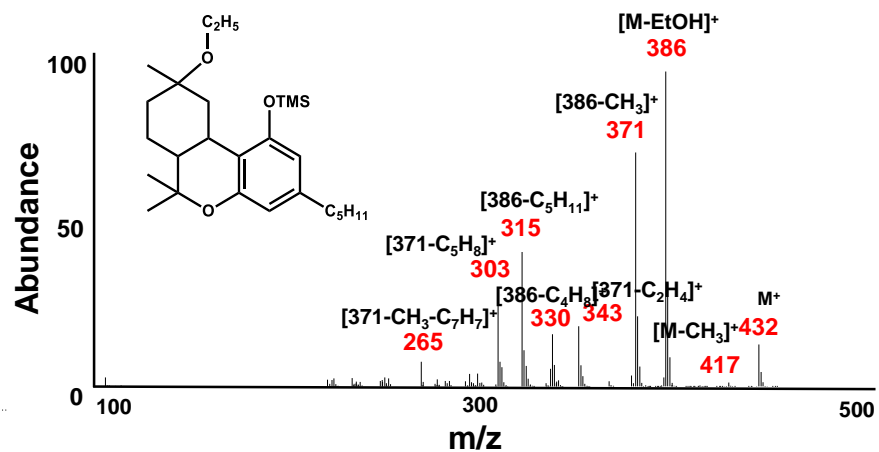
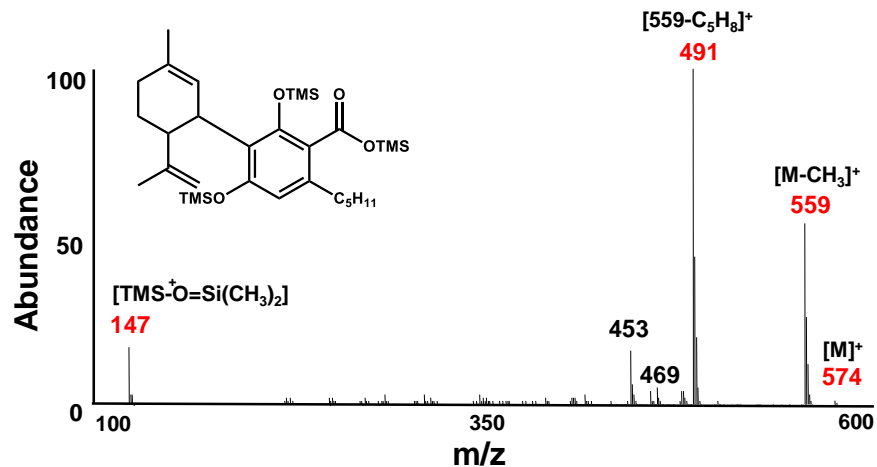
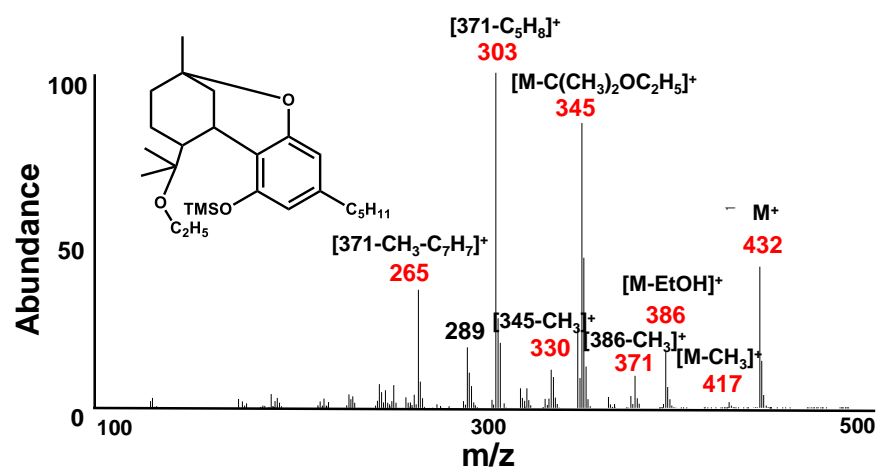


Fig. S3. Continued

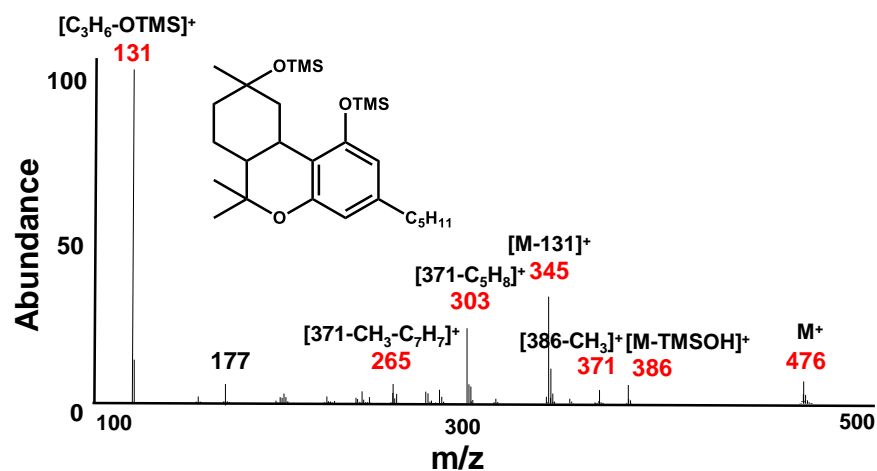
(i) Peak 9 [CBDA-(OTMS)₃]



(j) Peak 10 [iso-8-ethoxy-HHC-OTMS]



(k) Peak 11 [9-hydroxy-HHC-(OTMS)₂]



(l) Peak 12 [THCA-(OTMS)₂]

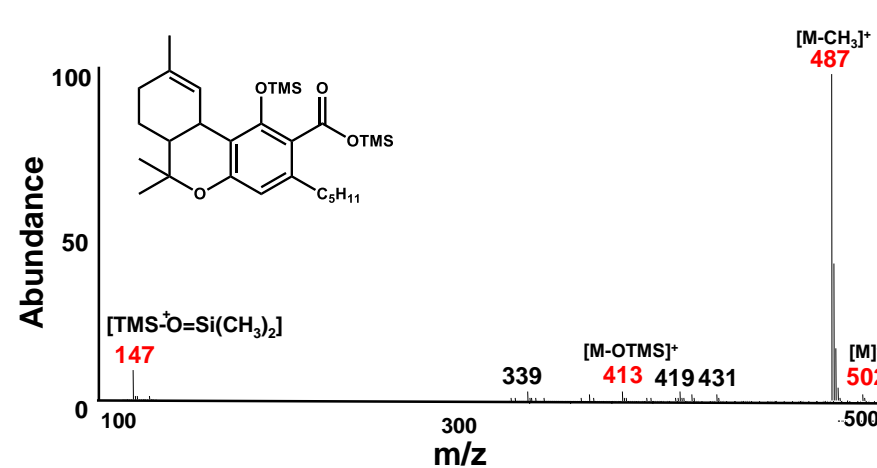
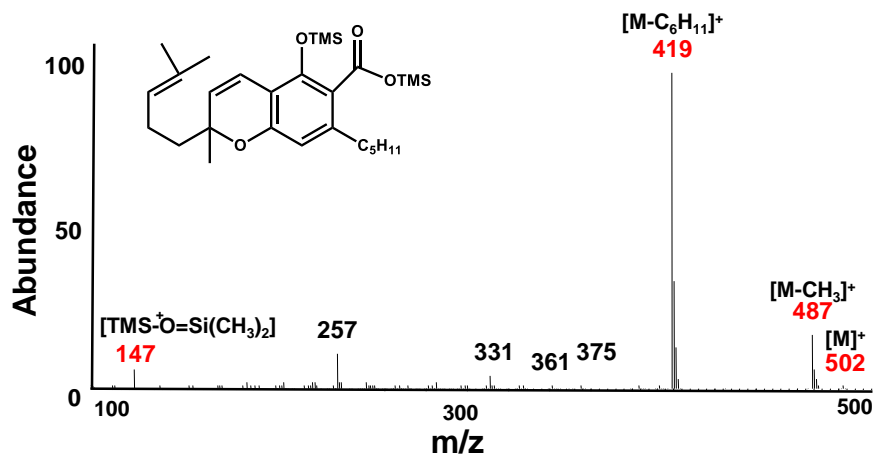
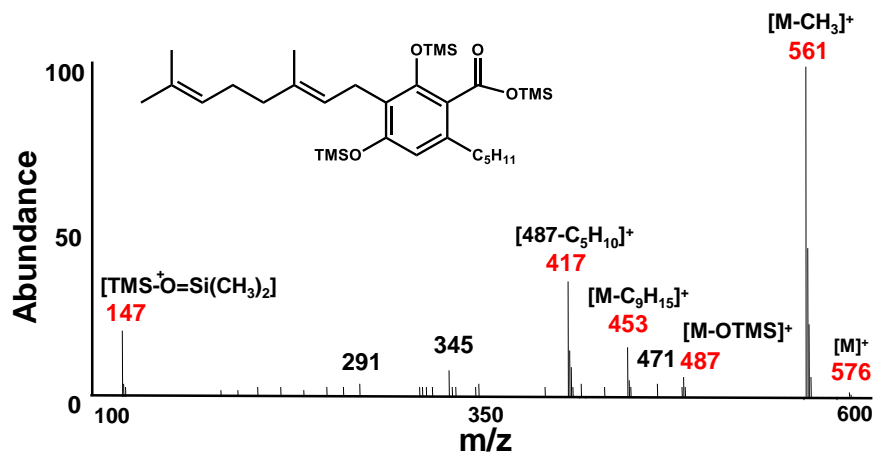


Fig. S3. Continued

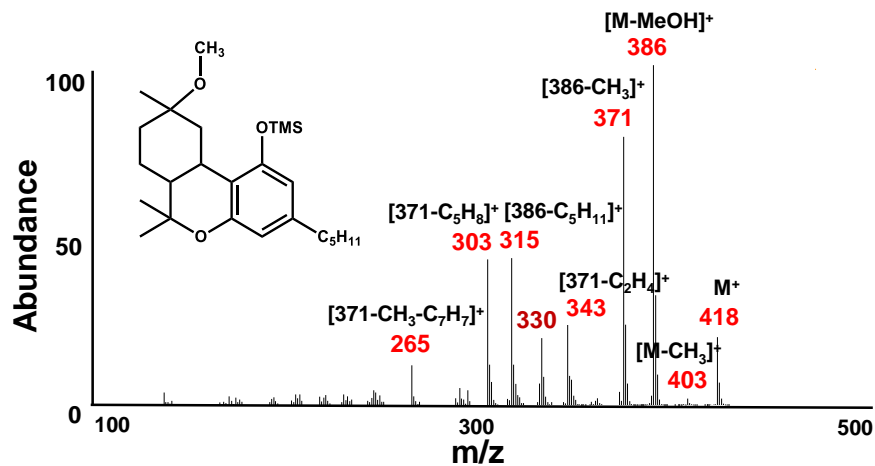
(m) Peak 13 [CBCA-(OTMS)₂]



(n) Peak 14 [CBGA-(OTMS)₃]



(o) Peak 15 [9-methoxy-HHC-OTMS]



(p) Peak 16 [8-methoxy-HHC-OTMS]

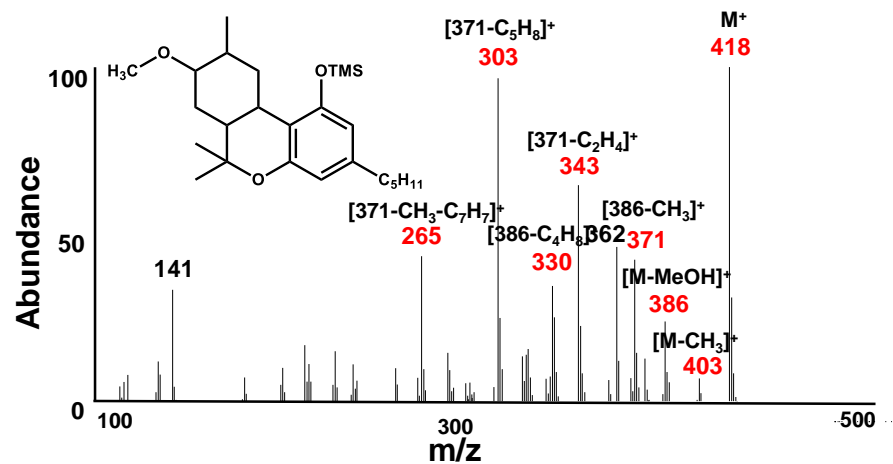


Fig. S3. Continued

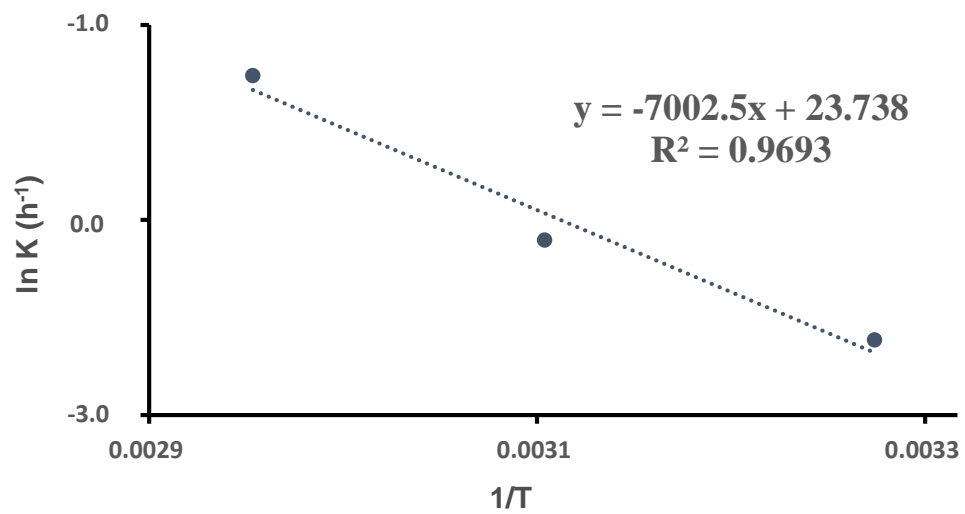
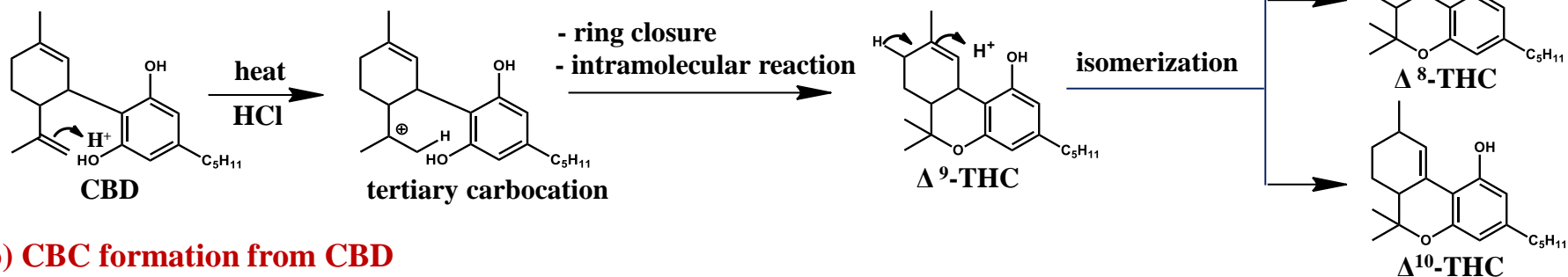
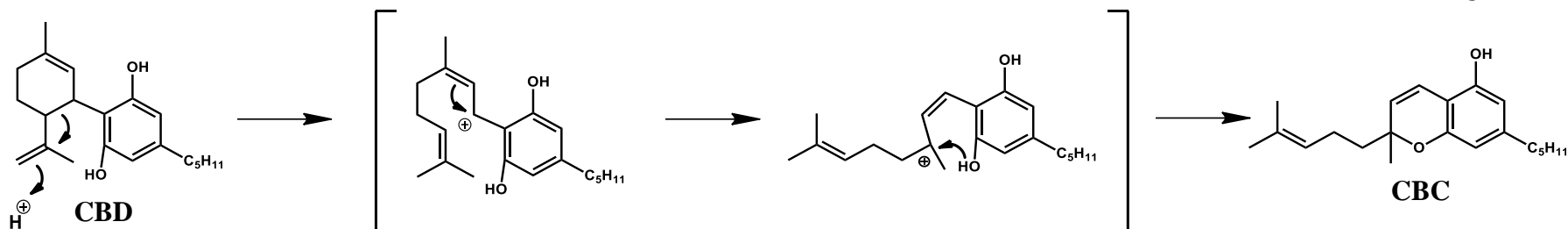


Fig. S4. Arrhenius plots for CBD degradation under acidic conditions

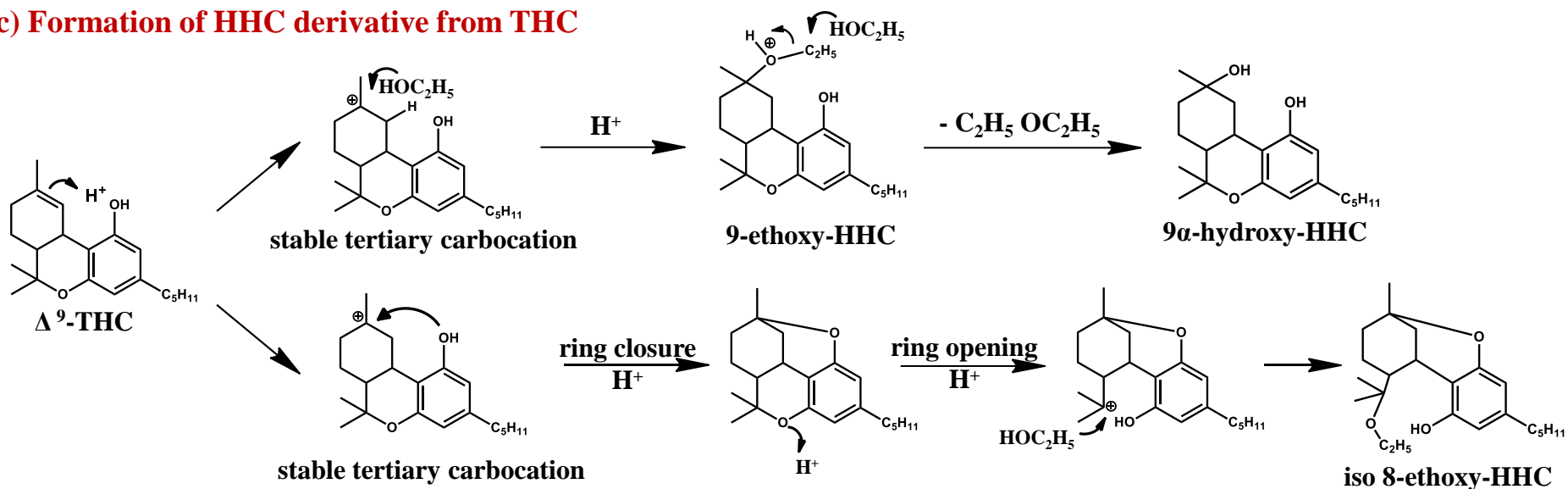
(a) THC formation from CBD



(b) CBC formation from CBD



(c) Formation of HHC derivative from THC



Scheme S1. Proposed formation mechanism of (a) THC isomer, (b) CBC and (c) HHC derivatives under acidic reaction conditions.

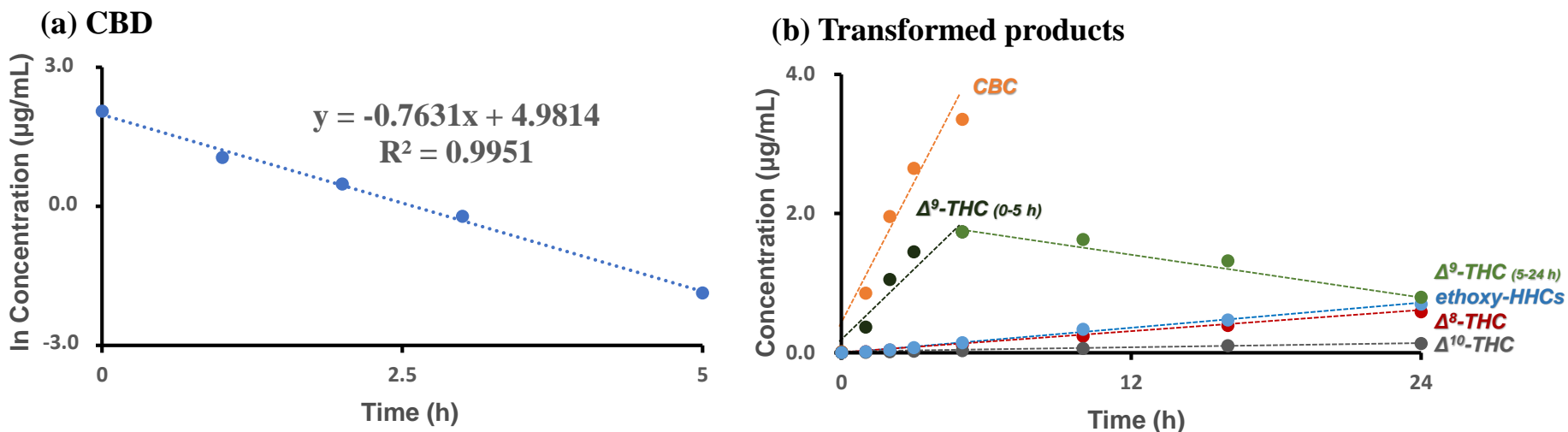


Fig. S5. Kinetic results of (a) CBD and (b) transformed products over a range of time and concentration.

Table S1. Kinetic results for formation of transformed products at pH 2.0 and 70 °C.

Analytes	Time	$y = ax + b$	r^2
ethoxy-HHCs	0 – 24 h	$y = 0.0301x - 0.0066$	0.9945
$\Delta^8\text{-THC}$	0 – 24 h	$y = 0.0249x - 0.0107$	0.9993
$\Delta^{10}\text{-THC}$	0 – 24 h	$y = 0.0056x + 0.0025$	0.9940
CBC	0 – 5 h	$y = 0.6795x + 0.2702$	0.9452
$\Delta^9\text{-THC}$	0 – 5h	$y = 0.3629x + 0.1232$	0.9211
	5 – 24 h	$y = -0.0507x + 2.0676$	0.9672