Supplementary Materials: Piperine Inhibits TGF-β Signaling Pathways and Disrupts EMT-related Events in Human Lung Adenocarcinoma Cells

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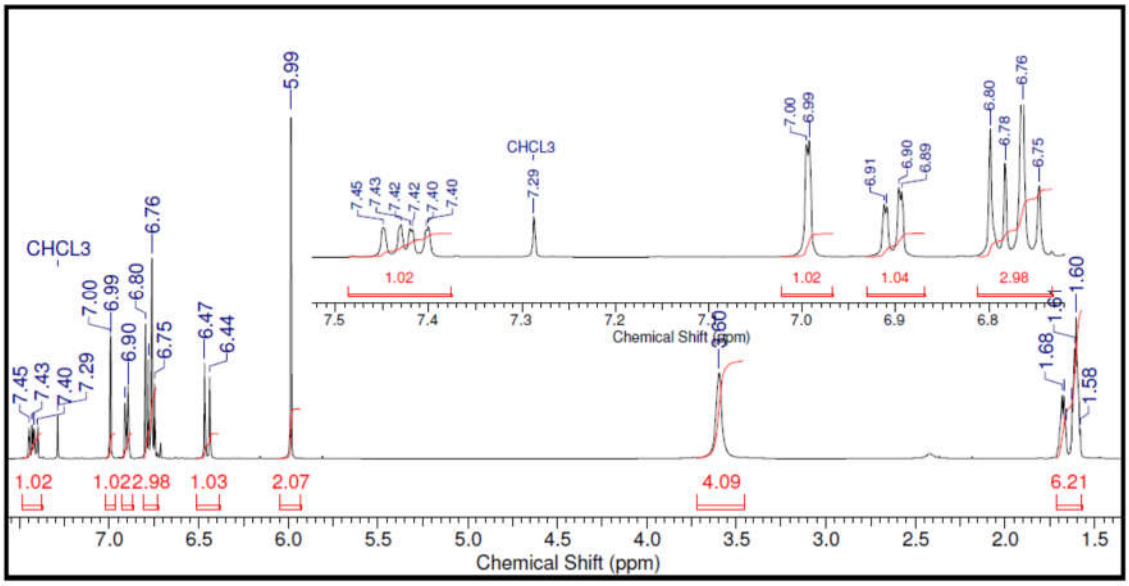


Figure S1. NMR ^{1}H spectrum (500 MHz, $CDCl_3$) of natural piperine.

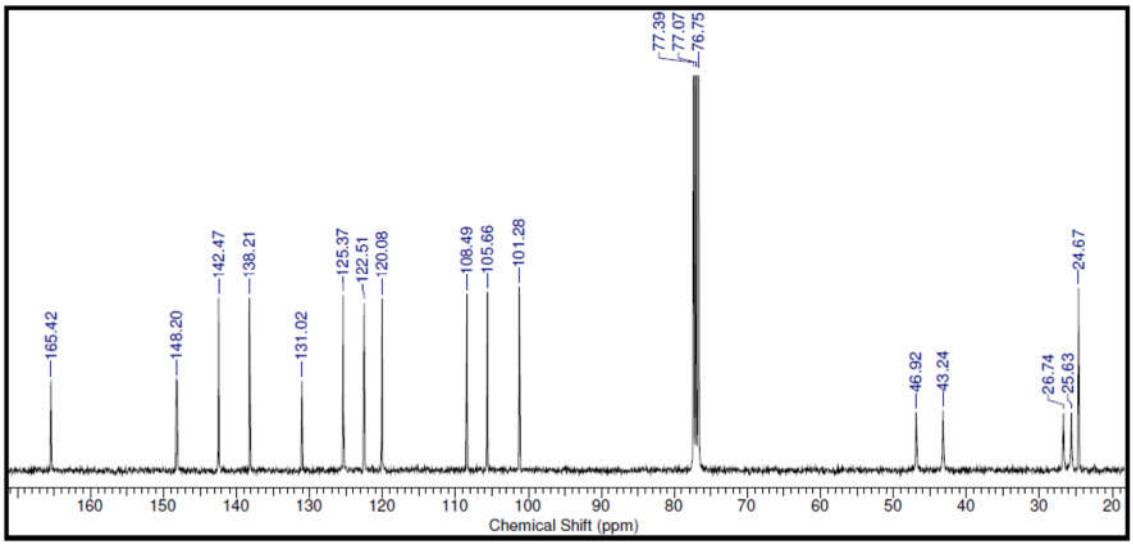
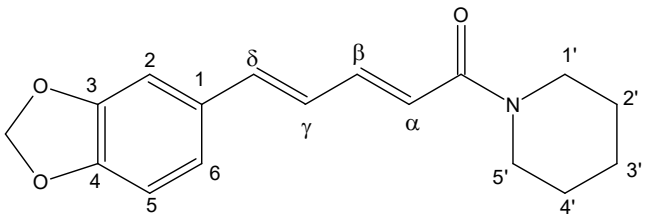


Figure 2. NMR ^{13}C spectrum (125 MHz, $CDCl_3$) of natural piperine.



Piperine structure*[1]

Chemical shifts of ^{1}H NMR and ^{13}C NMR for natural piperine*[2]

Position	δ ^{1}H (ppm); *J* (Hz)*[3]	δ^{13}C (ppm)*[3]
1′	*3.60 (m, 2H)*	43.24 (CH_2)
2′	*1.58 -1.68 (m, 2H)*	24.67 (CH_2)
3′	*1.58 – 1.68 (m, 2H)*	25.63 (CH_2)
4′	*1.58 – 1.68 (m, 2H)*	26.74 (CH_2)
5′	*3.60 (m, 2H)*	46.92 (CH_2)
C=O	----------	165.42 (C)
α	6.45 (d; 14.5 Hz; 1H)	120.08 (CH)
β	7.43 (dd; 14.5 and 9.7 Hz; 1H)	142.47 (CH)
γ	6.75 – 6.80 (m, 1H)	125.37 (CH)
δ	6.75 – 6.80 (m, 1H)	138.21 (CH)
1	----------	131.02 (C)
2	*6.99 (d; 1.5 Hz; 1H)*	105.66 (CH)
3 e 4	----------	148.20 (C)
5	6,75 - 6,80 (m, 1H)	108.49 (CH)
6	6.90 (dd; 8.0 and 1.5 Hz; 1H)	122.51 (CH)
OCH_2O	5.99 (s, 2H)	101.28 (CH_2)

*[1]The numbering used was oly for assignment of NMR data and does not follow any nomenclature rule. *[2]The ^{1}H and ^{13}C NMR spectra were obtained in $CDCl_3$ at 500 and 125 MHz, respectively. *[3]All the NMR data obtained are in accordance to that previously described in the literature for piperine.

Figure S3. NMR ^{1}H and ^{13}C data for natural piperine.

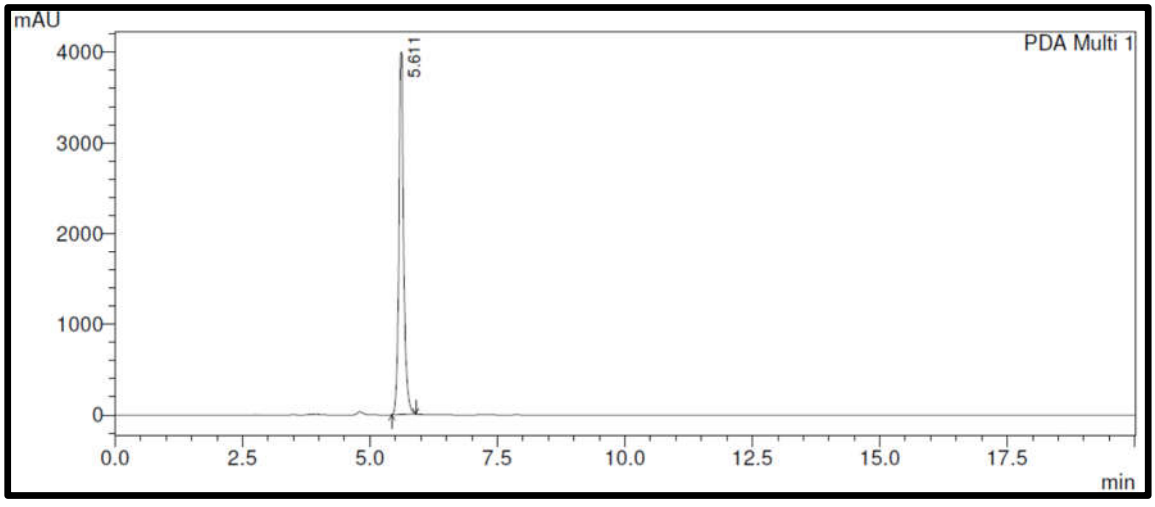


Figure S4. HPLC-RP for piperine (Retention time: 5.6 min.; Purity grade ≥ 98%).