Supplementary Information for

Total Synthesis of (±)-Tanshinol B, Tanshinone I, (±)-Tanshindiol B and C

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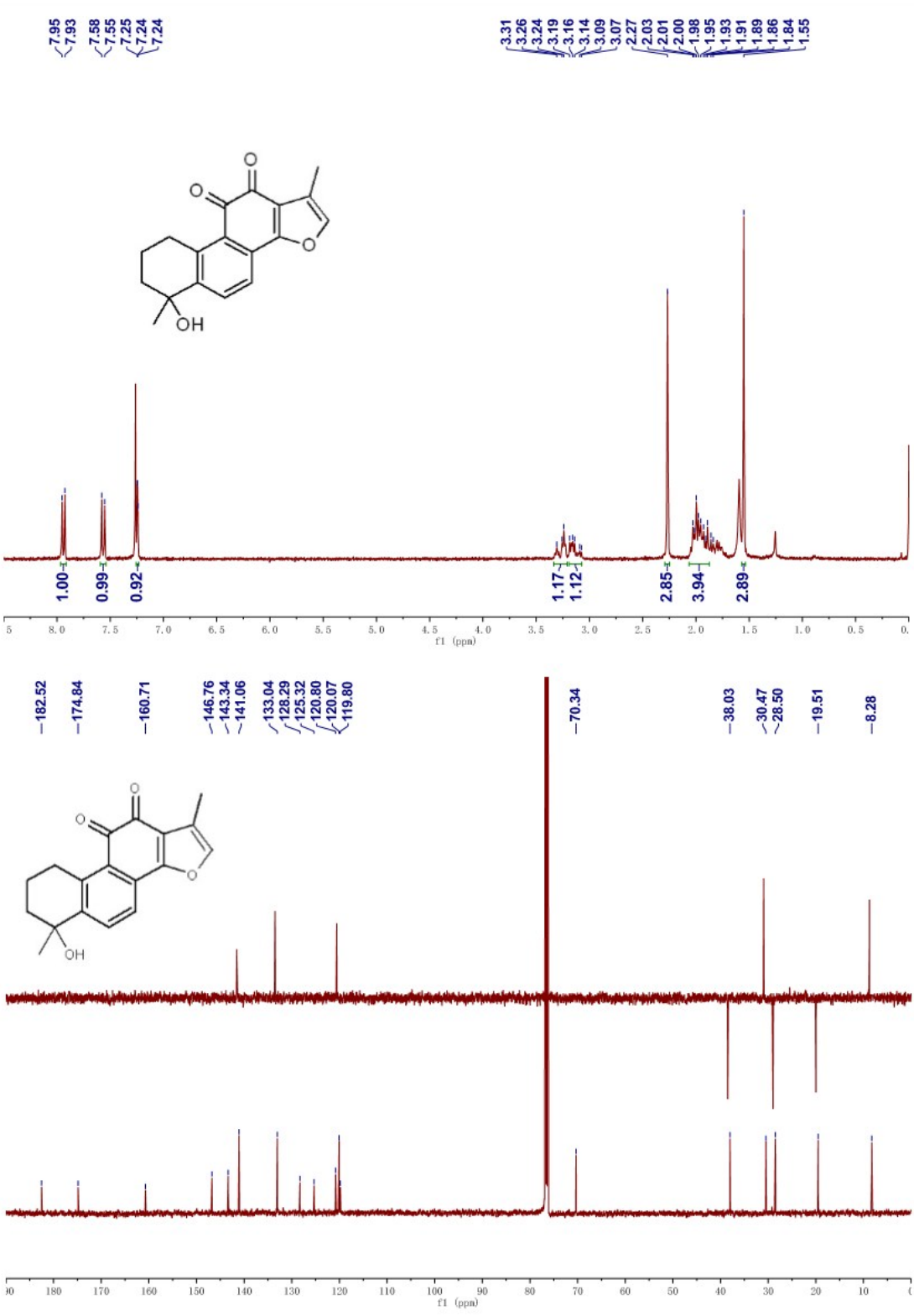
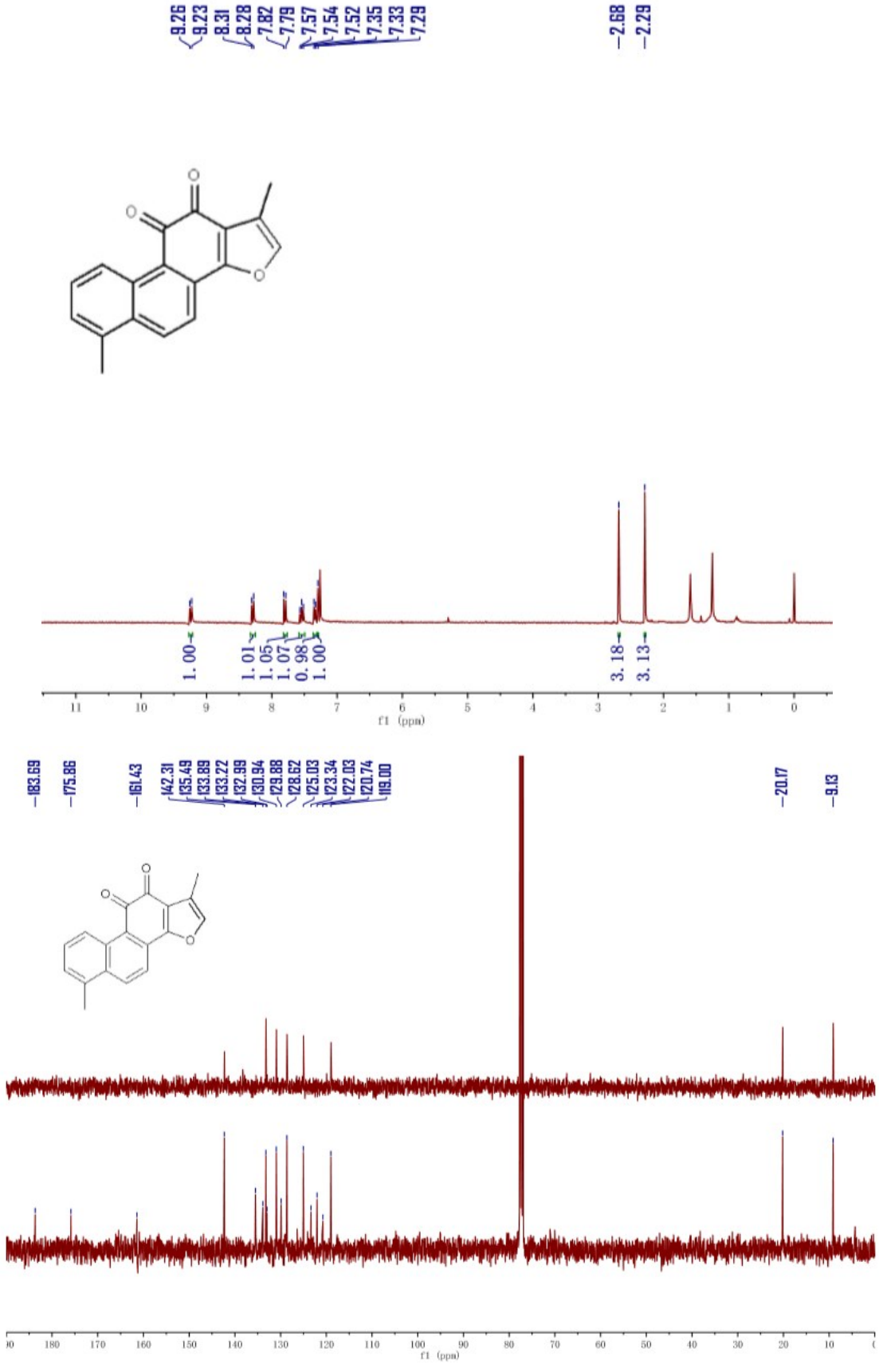
Table S1 EZH2 methyltransferase inhibitory activity of tanshindiols

Compound	IC_{50} (nM)
(-)-**3**	>1000
(+)-**3**	>1000
3	>1000
(-)-**4**	962 ± 4
(+)-**4**	834 ± 6
4	465 ± 29
GSK126	6 ± 1
EPZ6438	3 ± 1

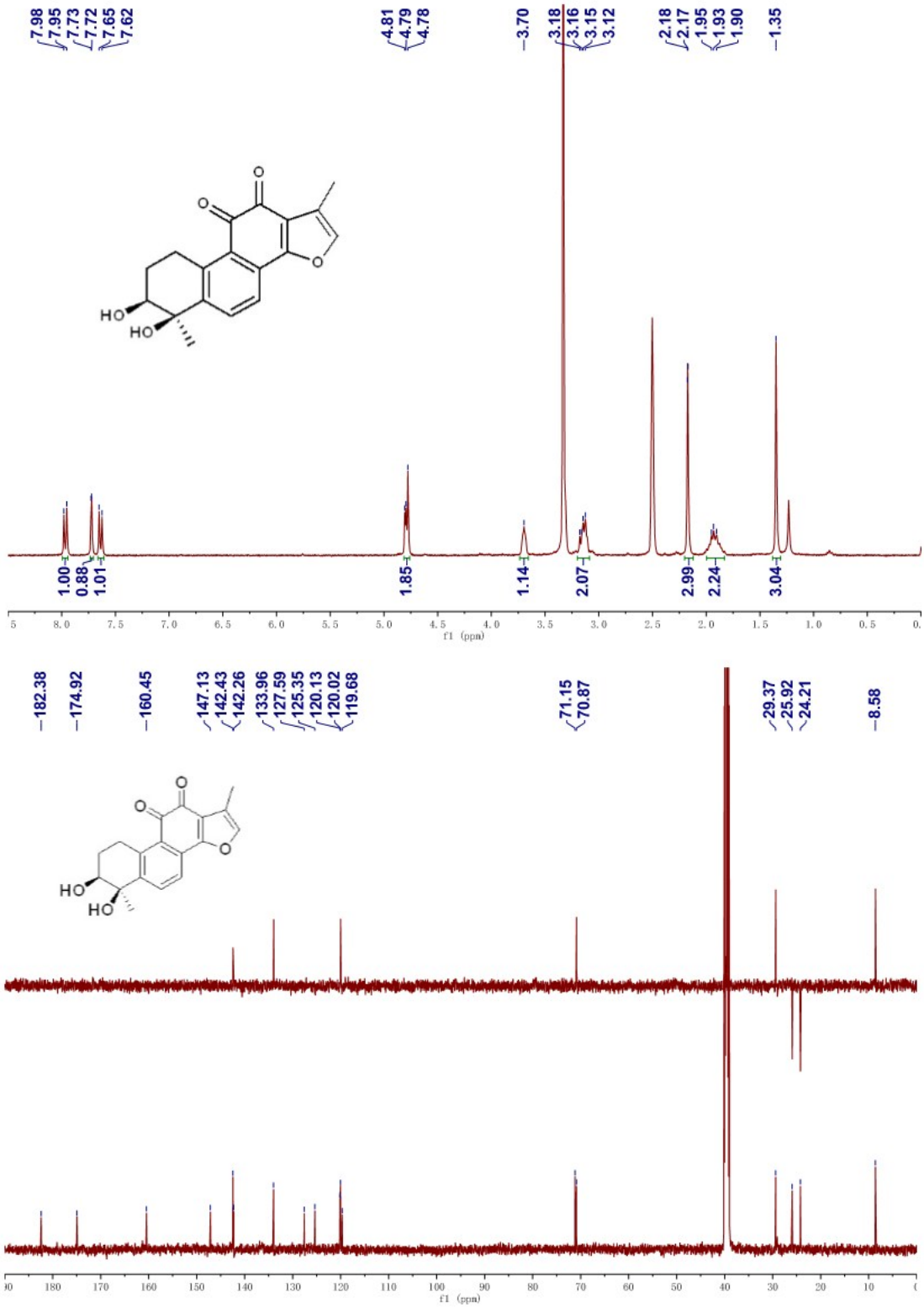
^{1}H and ^{13}C NMR spectra of compound **2**



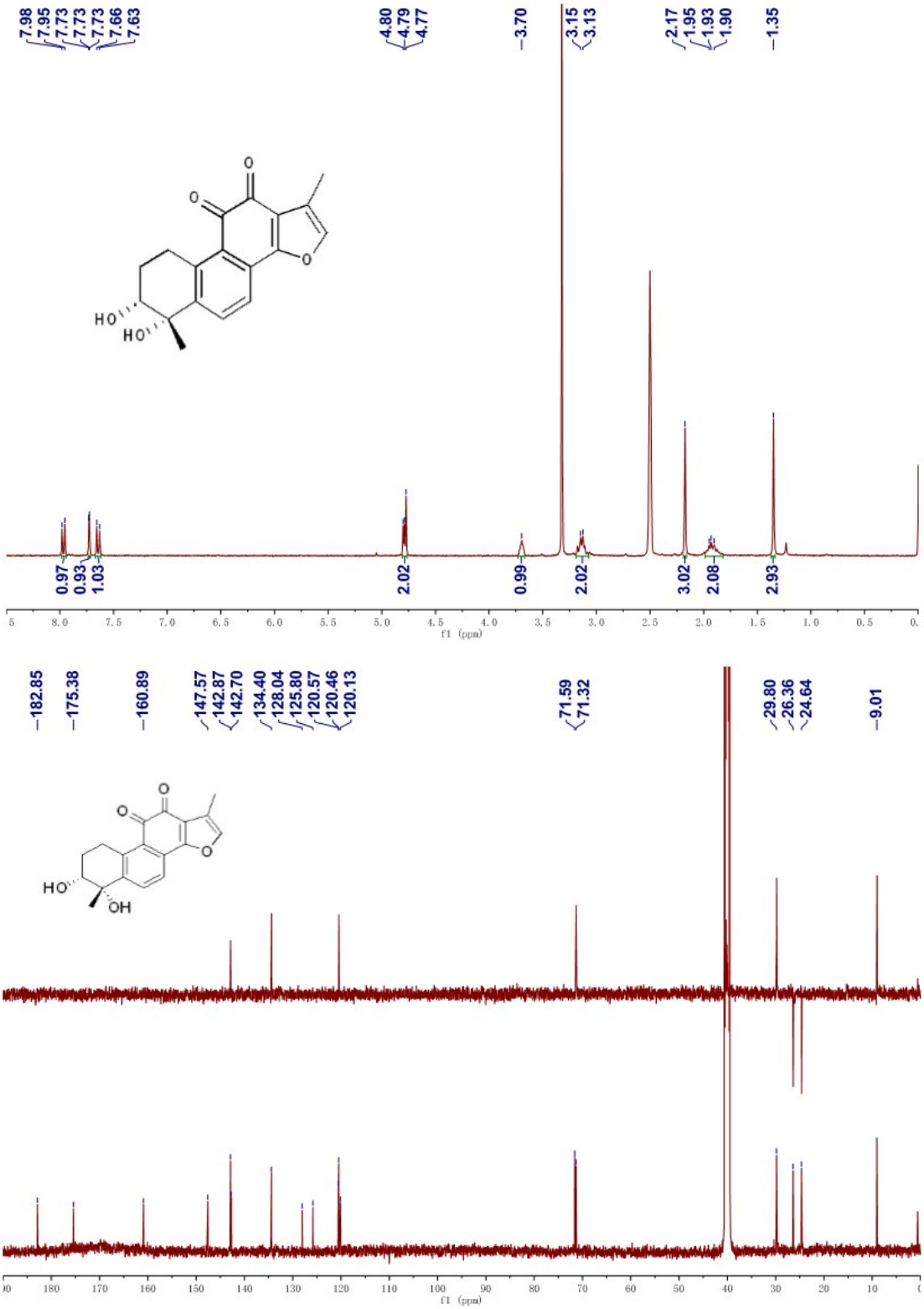
^{1}H NMR and ^{13}C NMR spectra of compound **1**



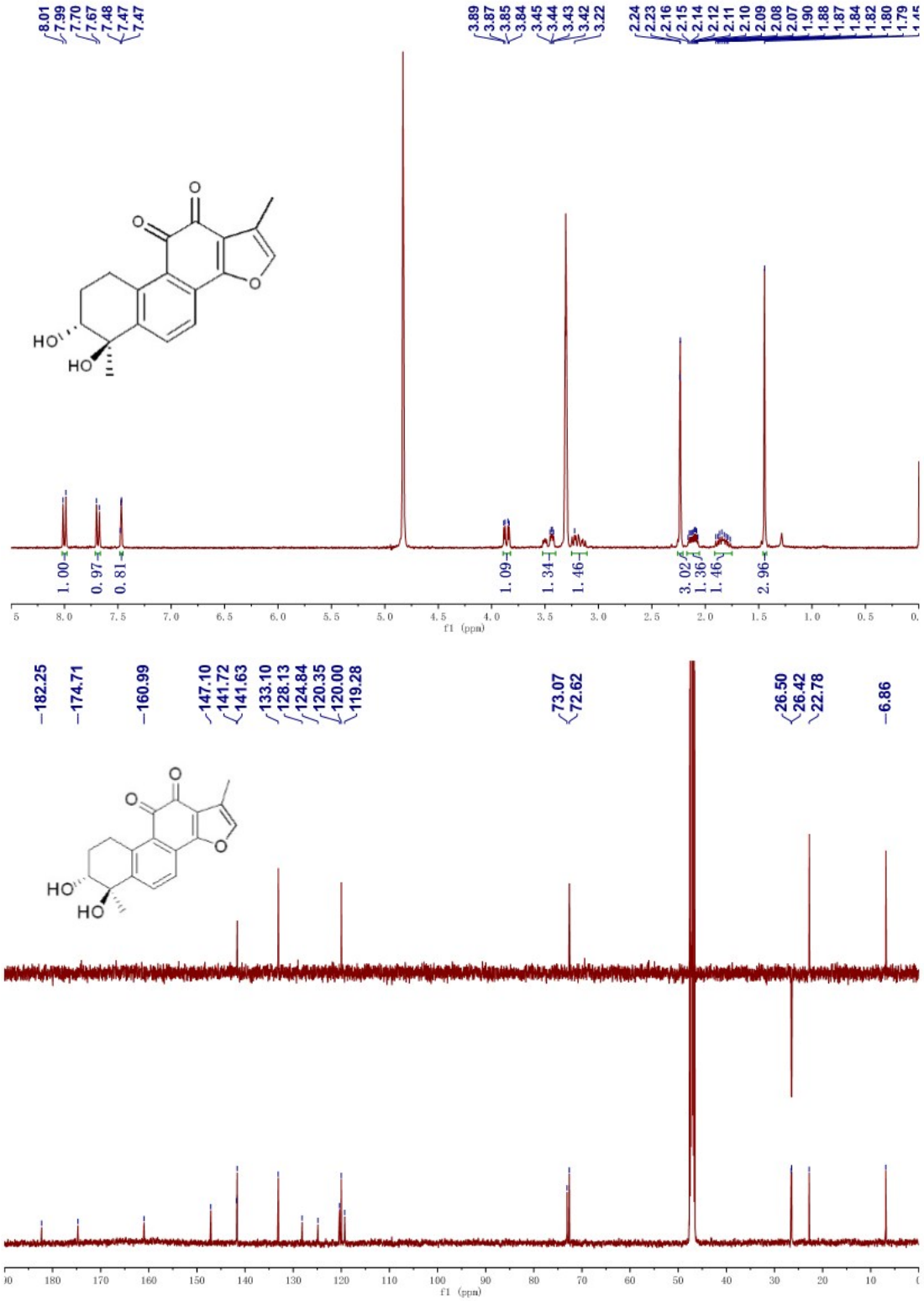
^{1}H and ^{13}C NMR spectra of compound (-)-**3**



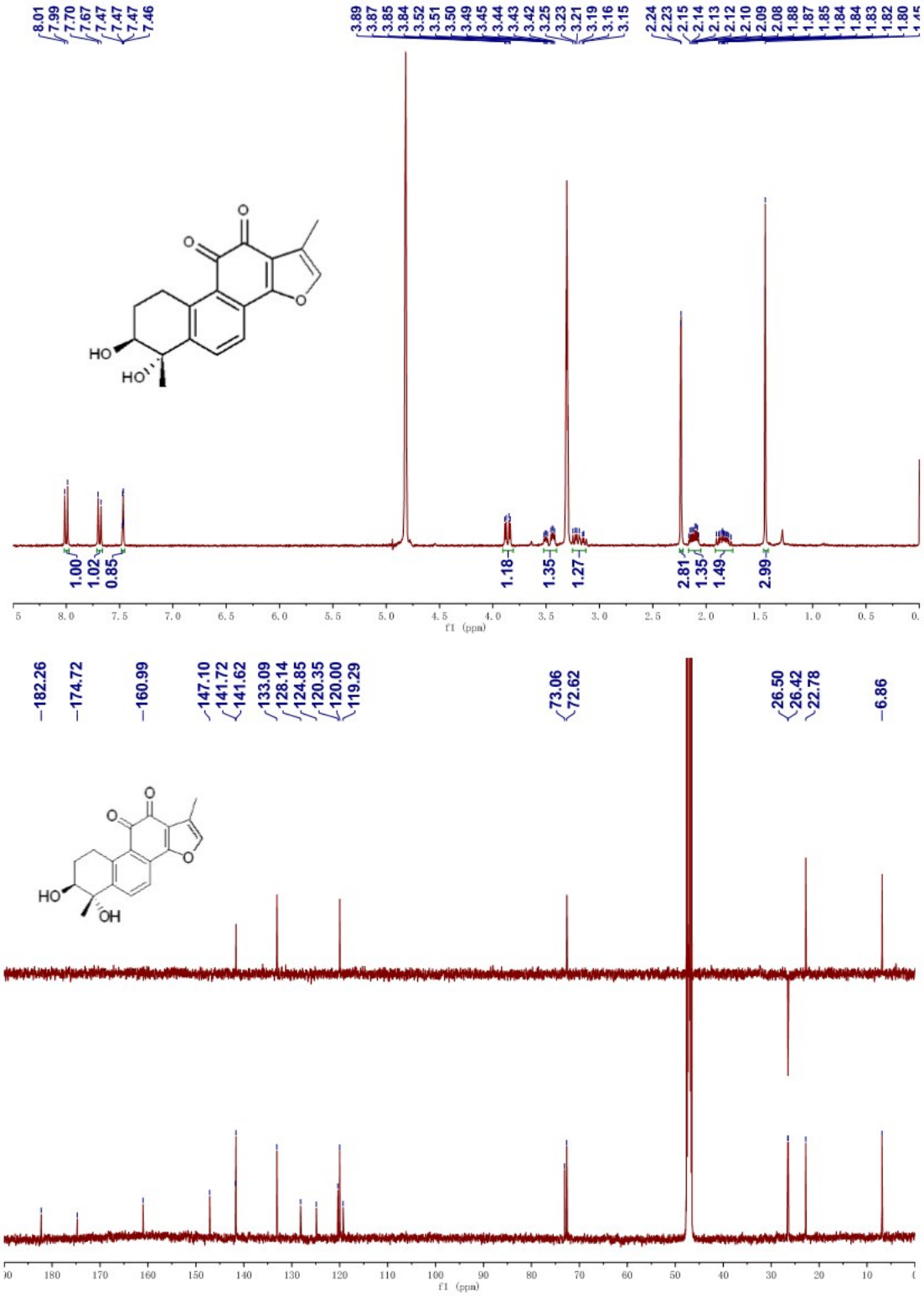
^{1}H and ^{13}C NMR spectra of compound **(+)-3**



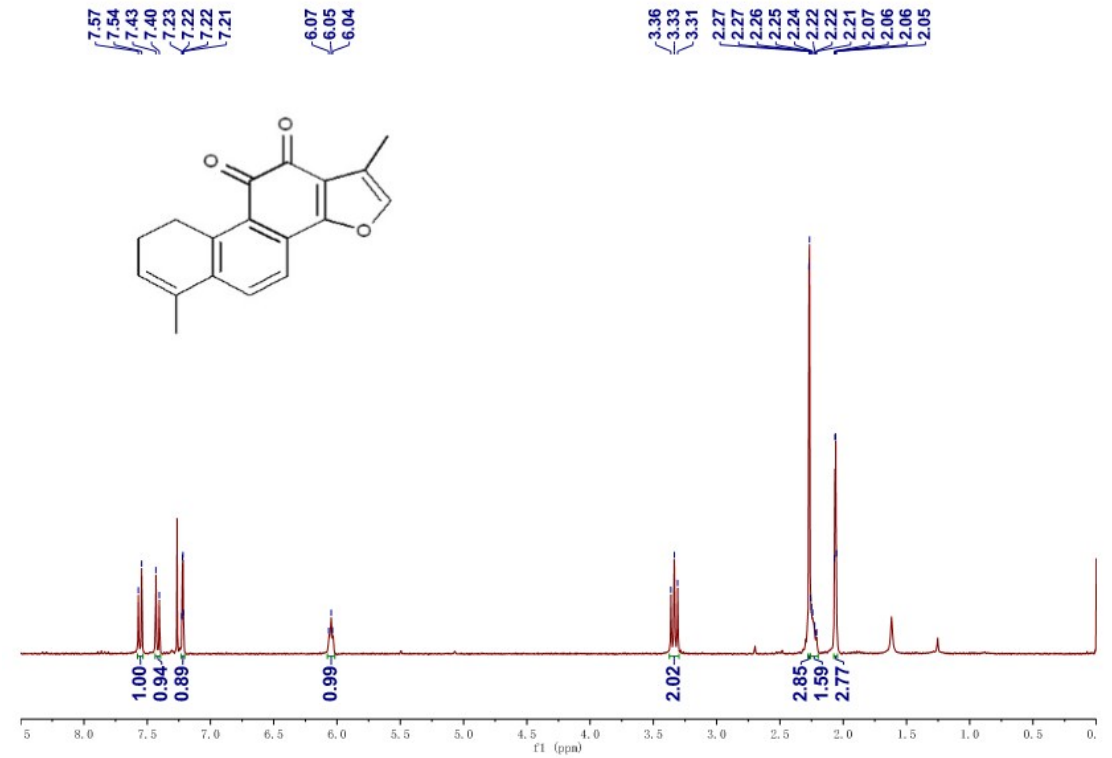
^{1}H and ^{13}C NMR spectra of compound (-)-**4**

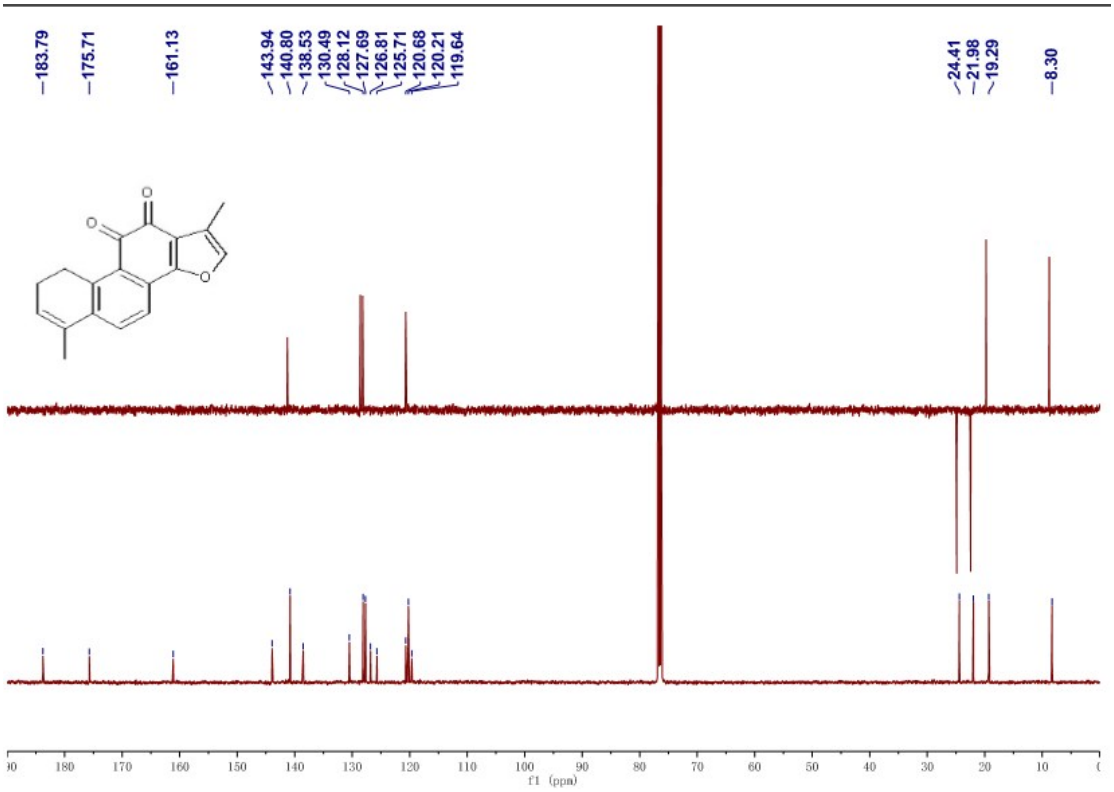


^{1}H and ^{13}C NMR spectra of compound (+)-**4**



^{1}H and ^{13}C NMR spectra of compound **10**

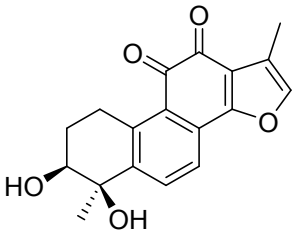




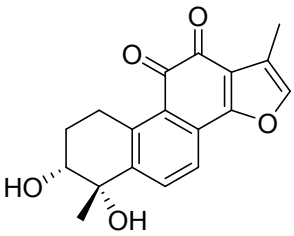
Chiral HPLC data for compounds 3-4

1) Sharpless dihydroxylation with AD-mix-β:

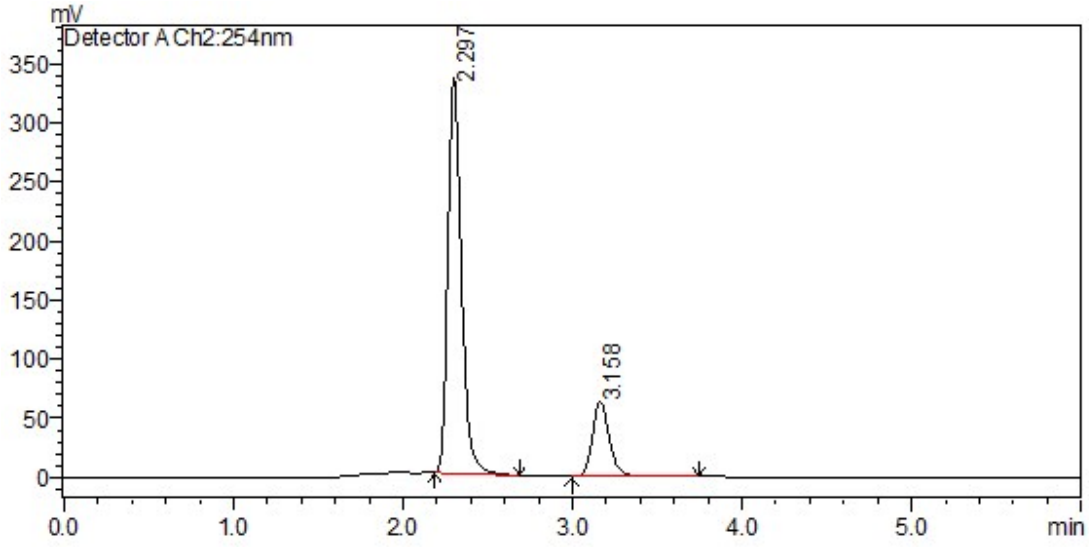
Chiral Stationary phase: Chiralpak® AD-H, DCM/MeOH=80:20, flow 1.0 mL/min, wavelength = 254 nm



(-)-(*3S,4R*)-Tanshindol B
(-)-3

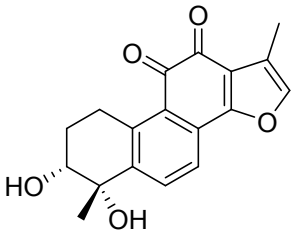


(+)-(*3R,4S*)-Tanshindol B
(+)-3



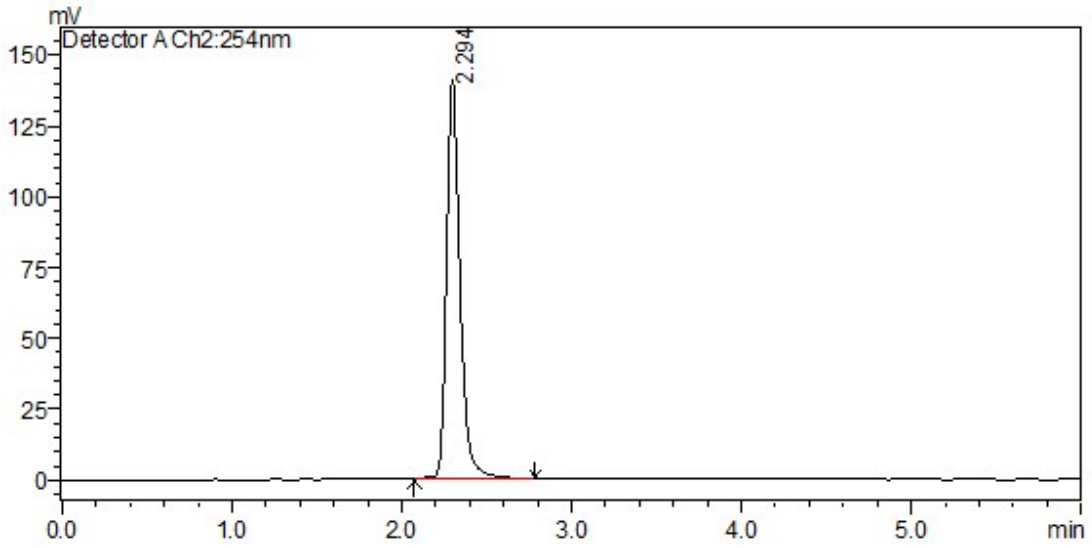
Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	2.297	1844161	80.5958	3481.922	1.340	--
2	3.158	444000	19.4042	4395.625	1.262	4.976

Chiral HPLC data for (+)-(3*R*, 4*S*)-tanshindol B



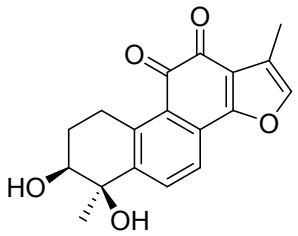
(+)-(*3R,4S*)-Tanshindol B

(+)-3

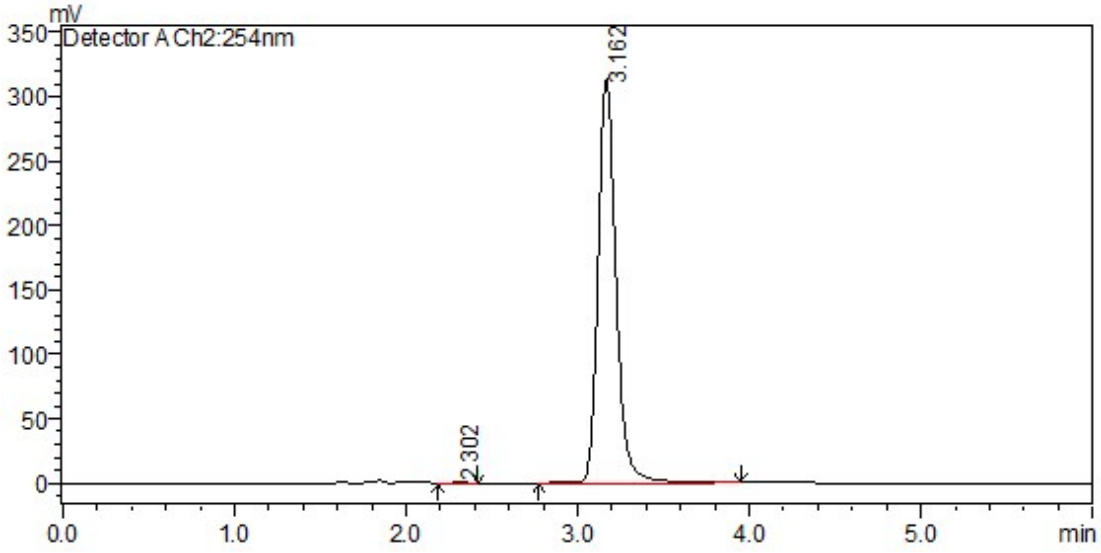


Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	2.294	777744	100.0000	3589.874	1.377	---

Chiral HPLC data for (-)-(3*S*, 4*R*)-tanshindol B



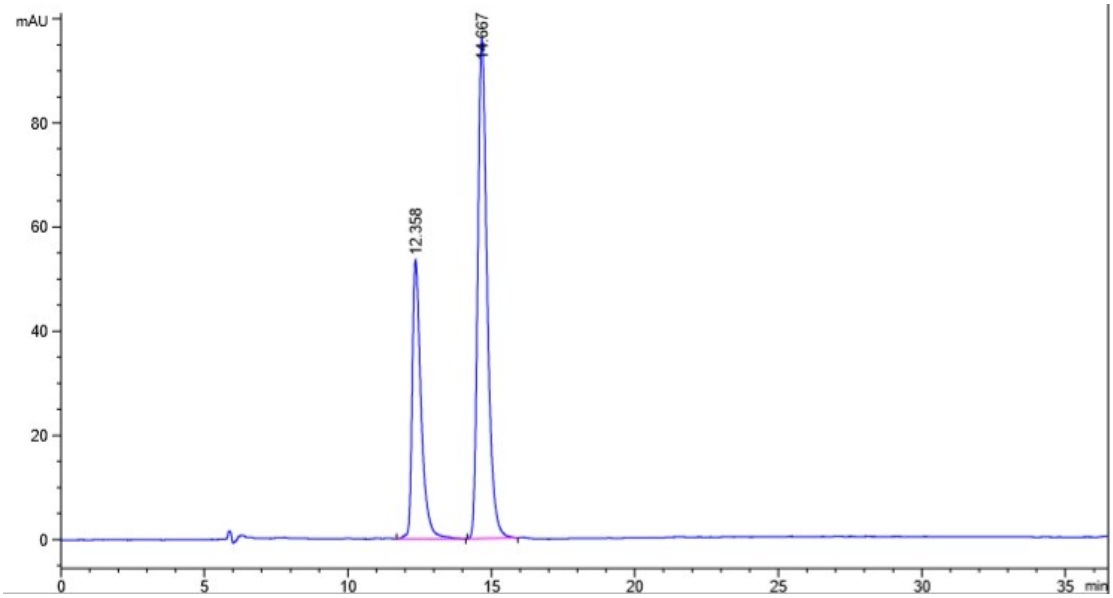
(-)-(*3S,4R*)-Tanshindol B
(-)-3



Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	2.302	1158	0.0507	3325.798	1.042	---
2	3.162	2283691	99.9493	4155.495	1.260	4.833

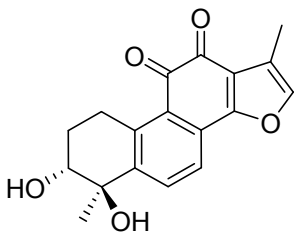
2) Sharpless dihydroxylation with AD-mix-α:

Chiral Stationary phase: Chiralpak® AD-H, iPr/nHex=50:50, flow 0.5 mL/min, wavelength = 254 nm



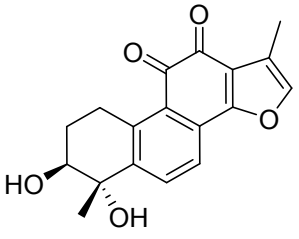
Peak	Ret. Time	Area	Area%
1	**12.358**	**1150**	**34.362**
2	**14.667**	**2198**	**65.638**

Chiral Stationary phase: Chiralpak® AD-H, DCM/MeOH=90:10, flow 1.0 mL/min, wavelength = 254 nm



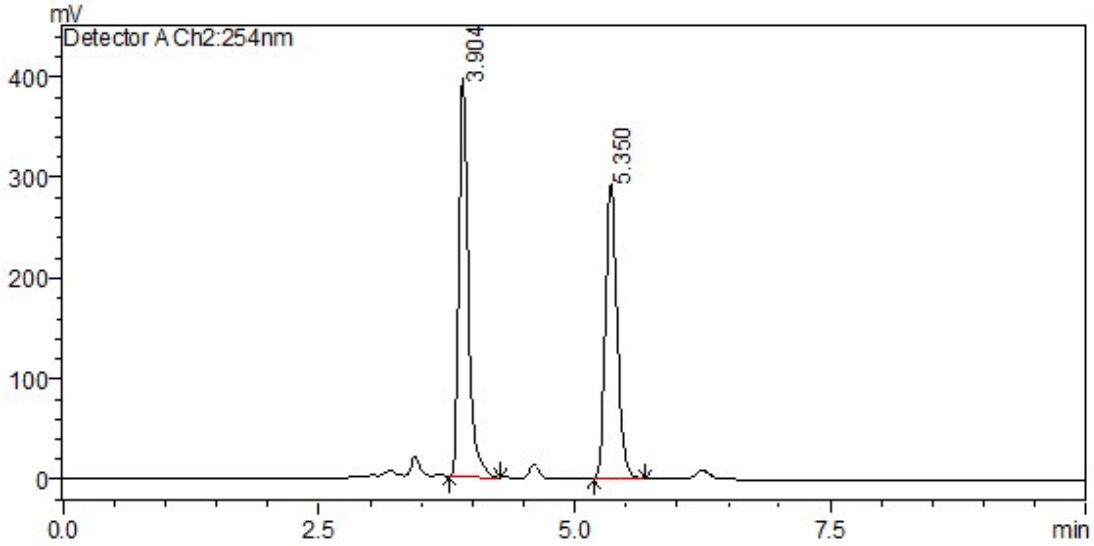
(-)-(*3R,4R*)-Tanshindol C

(-)-4



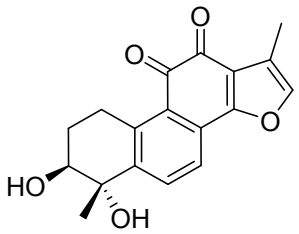
(+)-(*3S,4S*)-Tanshindol C

(+)-4



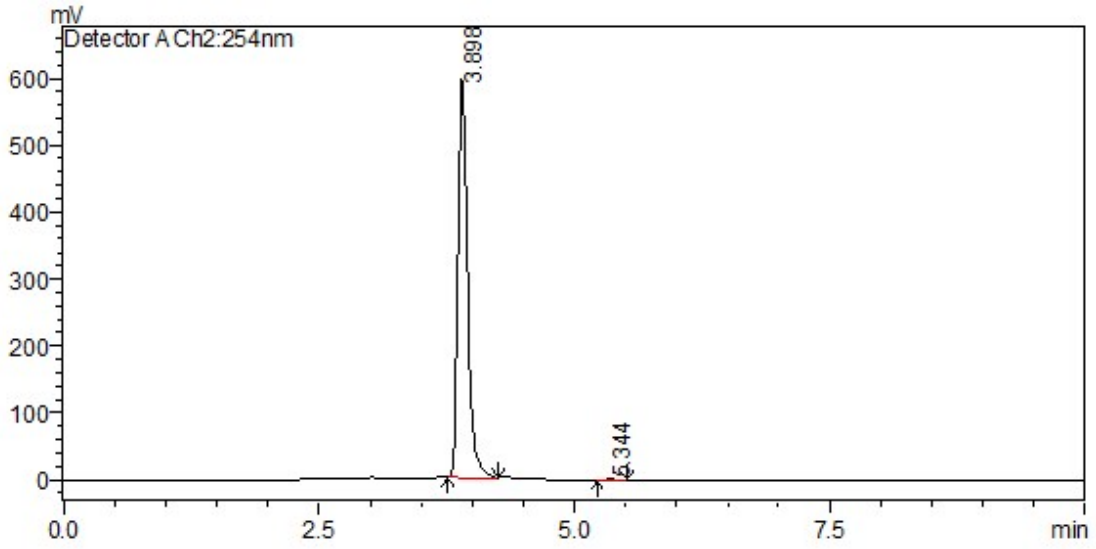
Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	3.904	2505036	51.6155	8324.901	1.501	---
2	5.350	2348229	48.3845	9558.092	1.232	7.413

Chiral HPLC data for (+)-(3*S*, 4*S*)-tanshindol C



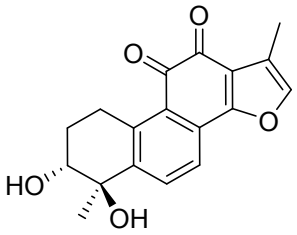
(+)-(*3S,4S*)-Tanshindol C

(+)-4



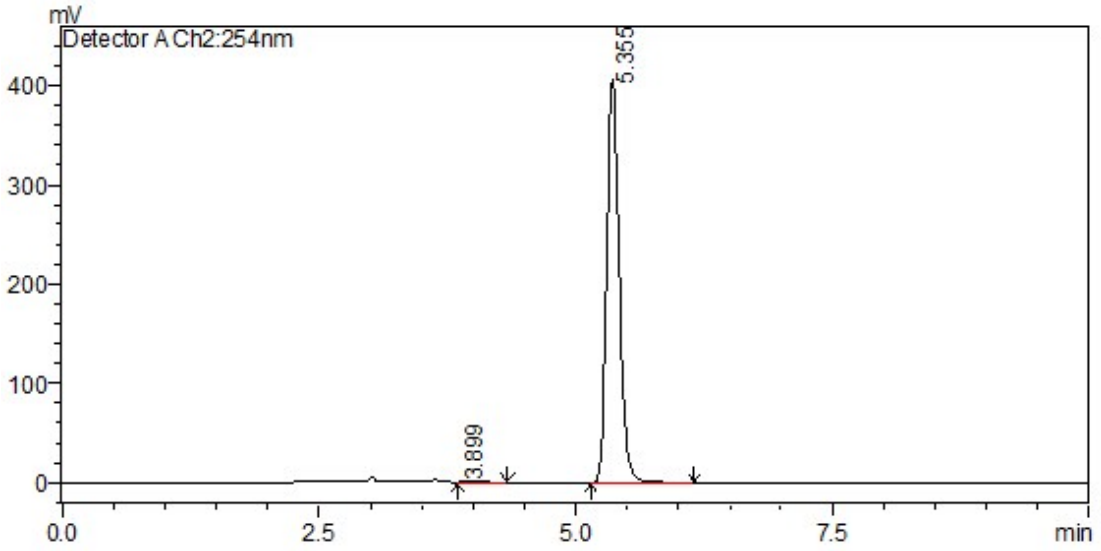
Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	3.898	3856119	99.9355	7846.259	1.418	---
2	5.344	2488	0.0645	8329.313	---	7.050

Chiral HPLC data for (-)-(3*R*, 4*R*)-tanshindol C



(-)-(*3R,4R*)-Tanshindol C

(-)-4



Peak#	Ret. Time	Area	Area%	T.Plate#	Tailing F.	Resolution
1	3.899	3975	0.1147	6281.455	4.915	--
2	5.355	3460828	99.8853	8622.464	1.238	6.813

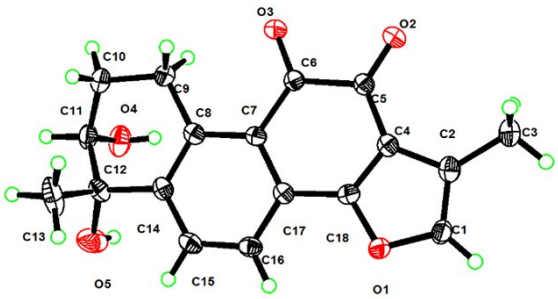


Figure. Ortep representation of **(+)-(3*R*, 4*S*)-tanshindol B ((+)-3)**

Table S1. Crystal data and structure refinement details for **(+)-3**

CCDC 1825713	
Identification code	20171118ZZY2-ZA_0m
Empirical formula	$C_{18}H_{16}O_5$
Formula weight	312.31
Temperature/K	173.0
Crystal system	monoclinic
Space group	C2
a/Å	24.2407(8)
b/Å	9.1871(3)
c/Å	6.5418(3)
α/°	90
β/°	105.441(2)
γ/°	90
Volume/Å^3	1404.28(9)
Z	4
ρ_{calc}g/cm^3	1.477
μ/mm^{-1}	0.897
F(000)	656.0
Crystal size/mm^3	0.15 × 0.11 × 0.06
Radiation	CuKα (λ = 1.54178)
2Θ range for data collection/°	7.566 to 127.986
Index ranges	-28 ≤ h ≤ 28, -10 ≤ k ≤ 10, -7 ≤ l ≤ 7
Reflections collected	7845
Independent reflections	2320 [R_{int} = 0.0438, R_{sigma} = 0.0410]
Data/restraints/parameters	2320/1/212
Goodness-of-fit on F^2	1.040
Final R indexes [I>=2σ (I)]	R_1 = 0.0331, wR_2 = 0.0847
Final R indexes [all data]	R_1 = 0.0367, wR_2 = 0.0865
Largest diff. peak/hole / e Å^{-3}	0.20/-0.25
Flack parameter	-0.03(11)

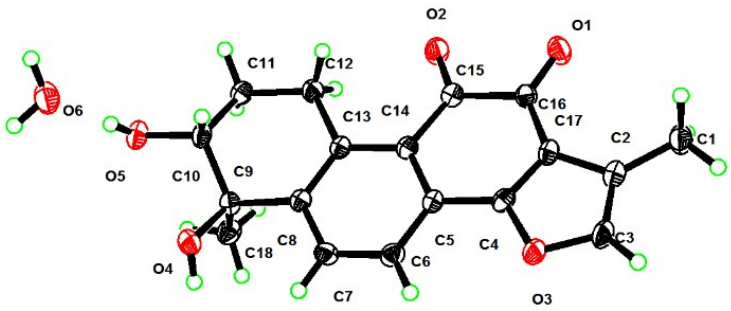


Figure S14. Ortep representation of **(-)-(3R, 4R)-Tanshindol C ((-)-4)**

Table S2. Crystal data and structure refinement details for **(-)-4**

CCDC 1825712	
Identification code	cu_2017935_0m
Empirical formula	$C_{18}H_{18}O_6$
Formula weight	330.32
Temperature/K	205
Crystal system	monoclinic
Space group	C2
a/Å	24.373(2)
b/Å	9.0977(8)
c/Å	6.6706(6)
α/°	90
β/°	99.828(4)
γ/°	90
Volume/Å^3	1457.4(2)
Z	4
ρ_{calc}g/cm^3	1.505
μ/mm^{-1}	0.948
F(000)	696.0
Crystal size/mm^3	0.29 × 0.16 × 0.12
Radiation	CuKα (λ = 1.54178)
2Θ range for data collection/°	7.362 to 136.244
Index ranges	-29 ≤ h ≤ 29, -9 ≤ k ≤ 10, -7 ≤ l ≤ 7
Reflections collected	11941
Independent reflections	2422 [R_{int} = 0.0565, R_{sigma} = 0.0406]
Data/restraints/parameters	2422/3/229
Goodness-of-fit on F^2	0.973
Final R indexes [I>=2σ (I)]	R_1 = 0.0302, wR_2 = 0.0716
Final R indexes [all data]	R_1 = 0.0355, wR_2 = 0.0735
Largest diff. peak/hole / e Å^{-3}	0.22/-0.15
Flack parameter	0.09(10)

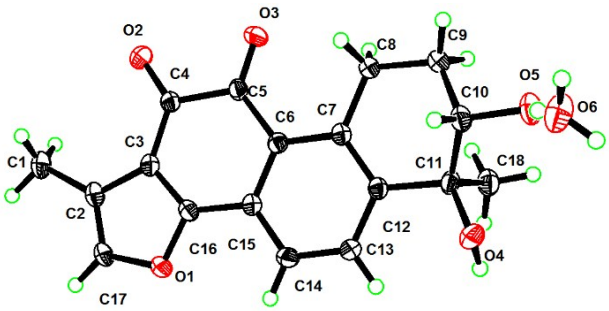


Figure S15. Ortep representation of **(+)-(3*S*, 4*S*)-Tanshindol C ((+)-4)**

Table S3. Crystal data and structure refinement details for **(+)-4**

CCDC 1825711	
Identification code	cu_2017941-143-1_0m
Empirical formula	$C_{18}H_{18}O_6$
Formula weight	330.32
Temperature/K	205
Crystal system	monoclinic
Space group	C2
a/Å	24.3697(19)
b/Å	9.1064(7)
c/Å	6.6779(6)
α/°	90
β/°	99.992(4)
γ/°	90
Volume/Å^3	1459.5(2)
Z	4
ρ_{calc}g/cm^3	1.503
μ/mm^{-1}	0.947
F(000)	696.0
Crystal size/mm^3	0.28 × 0.15 × 0.13
Radiation	CuKα (λ = 1.54178)
2Θ range for data collection/°	7.366 to 127.956
Index ranges	-27 ≤ h ≤ 28, -10 ≤ k ≤ 10, -7 ≤ l ≤ 7
Reflections collected	9163
Independent reflections	2262 [R_{int} = 0.0364, R_{sigma} = 0.0321]
Data/restraints/parameters	2262/1/229
Goodness-of-fit on F^2	1.024
Final R indexes [I>=2σ (I)]	R_1 = 0.0314, wR_2 = 0.0818
Final R indexes [all data]	R_1 = 0.0317, wR_2 = 0.0824
Largest diff. peak/hole / e Å^{-3}	0.28/-0.27
Flack parameter	0.00(9)