ELECTRONIC SUPPLEMENTARY MATERIAL

Schisandra henryi C. B. Clarke *in vitro* cultures – a promising tool for the production of lignans and phenolic compounds

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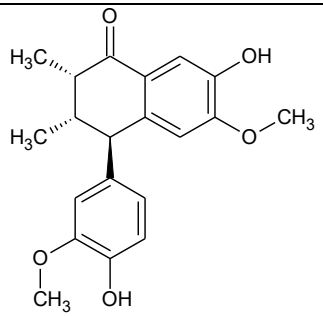
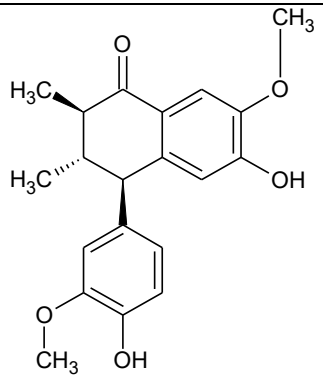
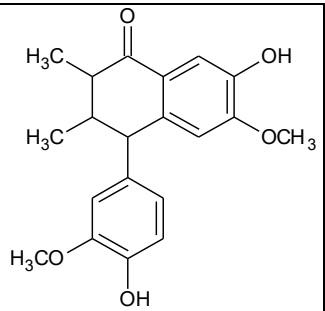
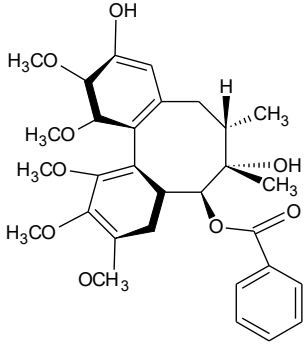
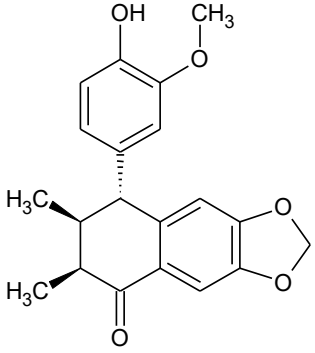
Table S1. The effect of studied MS media variants on *S. henryi* microshoot proliferation *via* axillary bud development after 30 days of culture

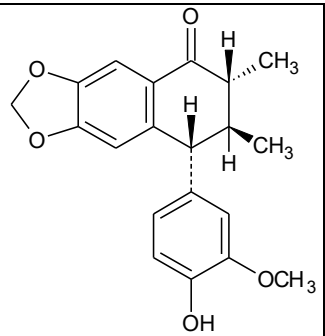
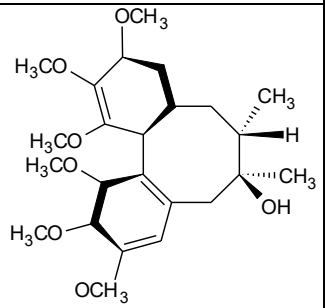
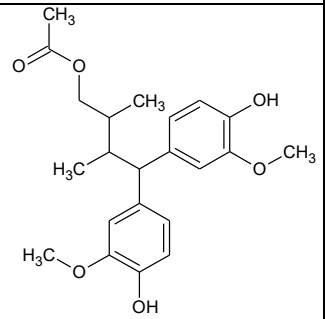
	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Explants that proliferated buds [%]	88±3.17	75±2.07	81±3.65	68±1.37	66±1.57	85±3.21
Microshoot no. / explant (±SD)	5.22 ± 0.21	3.79 ± 0.14	4.62 ± 0.26	5.73 ± 0.72	5.35 ± 0.22	6.16 ± 0.68
Microshoot length (cm ±SD)	2.25± 0.14	1.61 ± 0.15	1.16 ± 0.41	1.92 ± 0.14	1.11 ± 0.21	2.12 ± 0.19

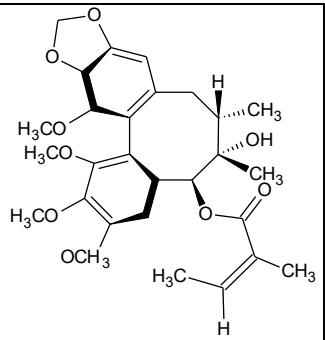
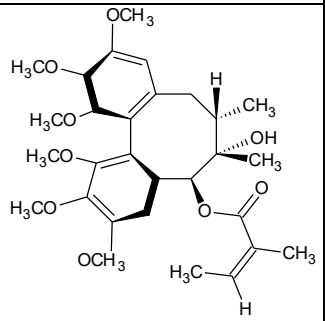
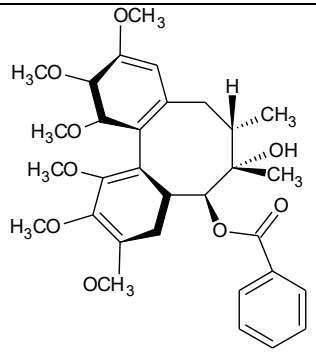
*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

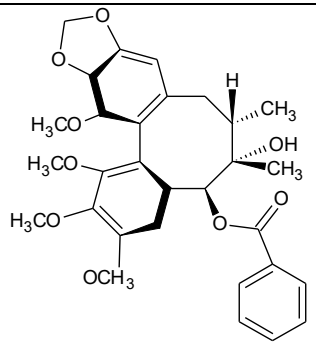
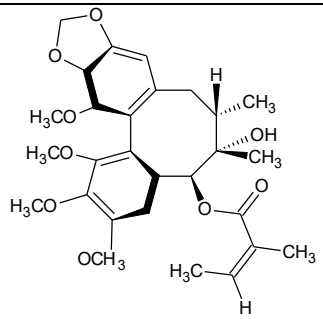
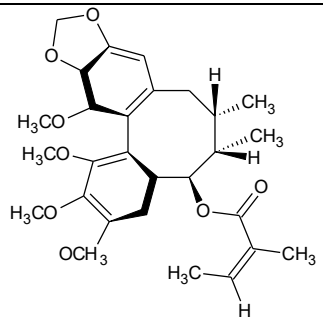
Table S2. Results of UHPLC-MS/MS analysis of *S. henryi* extracts

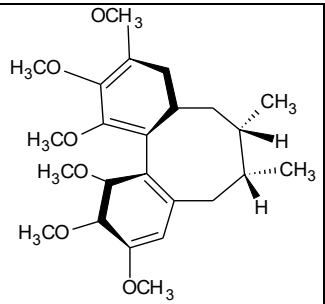
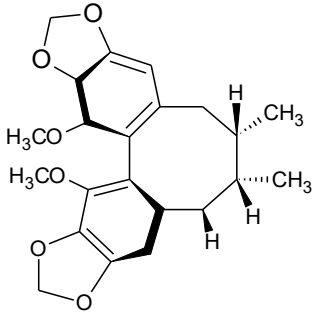
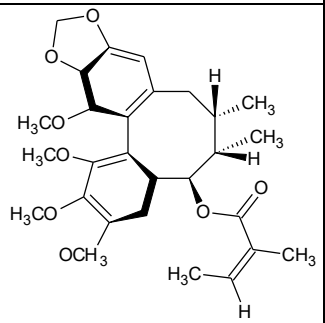
t_R (min)	Compounds [a,b]	Group of compounds	Molecular formula	Chemical structure	Molcecular weight	λ_{max} (nm)	LC-MS fragmentation of the molecule	References
Lignans								
3.91	Wulignan A1 (syn. (-)-Arisanttetralone; Arisantetralone)	Aryltetralin lignan	$C_{20}H_{22}O_5$		342	202,232, 278, 318	342 $[M]^+$, 343 $[M+H]^+$, 327 $[M-CH_3]^+$, 287 $[M-C_4H_7]^+$, 286 $[M-C_4H_8]^+$, 271 $[M-C_4H_8-CH_3]^+$, 218 $[M-C_6H_4(OCH_3)(OH)]^+$	(Liu et al. 1988)
4.58	Wulignan A2	Aryltetralin lignan	$C_{20}H_{22}O_5$		342	202, 234, 278, 312	432 $[M]^+$, 433 $[M+H]^+$, 327 $[M-CH_3]^+$, 287 $[M-C_4H_7]^+$, 286 $[M-C_4H_8]^+$, 255 $[M-C_4H_8-OCH_3]^+$, 243 $[M-C_4H_8-CH_3-CO]^+$, 218 $[M-C_6H_4(OCH_3)(OH)]^+$	(Liu et al. 1988)

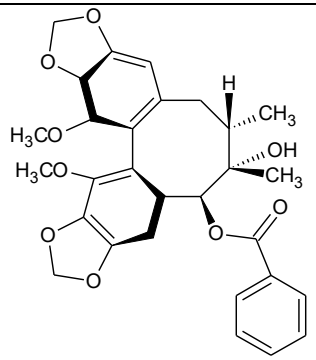
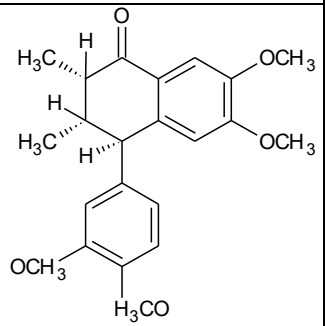
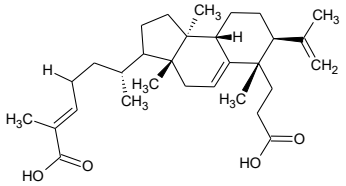
5.13	Epiwulignan A1 (syn. Epiwulignan)	Aryltetralin lignan	$C_{20}H_{22}O_5$		342	233, 275, 317	342 $[M]^+$, 327 $[M\text{-}CH_3]^+$, 218 $[M\text{-}C_6H_4(OCH_3)(OH)]^+$	(Liu et al. 1988)
5.57	Schisantherin E	Dibenzocyclooctadiene lignan	$C_{30}H_{34}O_9$		538	220, 257, 285	562 $[M+Na]^+$, 539 $[M+H]^+$, 417 $[M\text{-}H\text{-}C_7H_6O_2]^+$	(Ikeya et al. 1986)
6.1	Enshicine	Aryltetralin lignan	$C_{20}H_{20}O_5$		340	202, 234, 276, 318	341 $[M+H]^+$, 269 $[M\text{-}C_4H_8\text{-}CH_3]^+$, 241 $[M\text{-}C_4H_8\text{-}CH_3\text{-}CO]^+$, 216 $[M\text{-}C_6H_4(OCH_3)(OH)]^+$	(Jia-Sen et al. 1988)

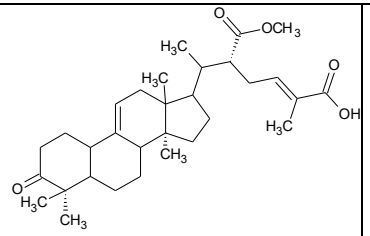
6.2	Epienshicine	Aryltetralin lignan	$C_{20}H_{20}O_5$		340	202, 234, 276, 318	341 $[M+H]^+$, 269 $[M-C_4H_8-CH_3]^+$, 241 $[M-C_4H_8-CH_3-CO]^+$, 216 $[M-C_6H_4(OCH_3)(OH)]^+$	(Jia-Sen et al. 1988)
6.68	Schisandrin (syn. Schisandrol A) [a]	Dibenzocyclooctadiene lignan	$C_{24}H_{32}O_7$		432	213, 252, 280	455 $[M+Na]^+$, 433 $[M+H]^+$, 415 $[M-H-H_2O]^+$, 373 $[M-H-H_2O-C_3H_6]^+$, 369 $[M-H-H_2O-OCH_3-CH_3]^+$, 353 $[M+H-H_2O-OCH_3-OCH_3]^+$	(Yang et al. 2011)(He et al. 1997)(Wang et al. 2011)(Ikeya et al. 1979a)
7.21	Henricine B	Dibenzylbutane lignan	$C_{22}H_{28}O_6$		388	208, 232, 279	389 $[M+H]^+$, 406 $[M+NH_4]^+$, 411 $[M+Na]^+$, 329 $[M-C_2H_3O_2]^+$	

7.90	Gomisin G [a]	Dibenzocyclooctadiene lignan	$C_{30}H_{32}O_9$		536	220, 255, 280	415 [M-H-$C_7H_6O_2$]$^+$, 397 [M-H-$C_7H_6O_2$-H_2O]$^+$, 384 [M+H-$C_7H_6O_2$-CH_3O]$^+$, 373 [M-H-$C_7H_6O_2$-C_3H_6]$^+$, 343 [M-H-$C_7H_6O_2$-C_2H_4O-CO]$^+$, 341 [M-H-$C_7H_6O_2$-C_2H_4O-CH_2O]$^+$	(He et al. 1997)(Yang et al. 2011)(Wang et al. 2011)(Taguchi and Ikeya 177AD)
8.04	Angeloylgomisin Q /Tigloylgomisin Q [b]	Dibenzocyclooctadiene lignan	$C_{29}H_{38}O_9$		530	220, 250, 285	431 [M-H-$C_5H_8O_2$]$^+$, 413 [M-H-$C_5H_8O_2$-H_2O]$^+$, 399	(Yang et al. 2011)(Ikeya et al. 1979b)
8.3	Benzoylogomisin Q	Dibenzocyclooctadiene lignan	$C_{31}H_{36}O_9$		552	222, 255, 280	553 [M+H]$^+$, 431 [M-H-$C_7H_6O_2$]$^+$, 415 [M-H-$C_7H_6O_3$]$^+$, 387 [M-H-$C_7H_6O_2$-C_2H_4O]$^+$	(Wang et al. 2011)(Ikeya et al. 1986)

8.97	Schisantherin A (syn. Gomisin C) [a]	Dibenzocyclooctadiene lignan	$C_{30}H_{34}O_9$		536	221, 254, 284	559 $[M+Na]^+$, 554 $[M+NH_4]^+$, 415 $[M-H-C_7H_6O_2]^+$	(He et al. 1997)(Yang et al. 2011)(Wang et al. 2011)(Taguchi and Ikeya 177AD)(Deng et al. 2008)
9.20	Schisantherin B (syn. Gomisin B) [a]	Dibenzocyclooctadiene lignan	$C_{28}H_{34}O_9$		514	220, 254, 284	537 $[M+Na]^+$, 532 $[M+NH_4]^+$, 514 $[M-H-C_5H_8O_2]^+$	(He et al. 1997)(Yang et al. 2011)(Wang et al. 2011)(Ikeya et al. 1986)(Taguchi and Ikeya 177AD)
9.61	Gomisin F	Dibenzocyclooctadiene lignan	$C_{28}H_{34}O_9$		514	220, 255, 288	537 $[M+Na]^+$, 532 $[M+NH_4]^+$, 415 $[M-H-C_5H_8O_2]^+$, 397 $[M-H-C_5H_8O_2-H_2O]^+$	(He et al. 1997)(Yang et al. 2011)(Wang et al. 2011)(Taguchi and Ikeya 177AD)

11.18	Deoxyschisandrin (syn. Schisandrin A) [a]	Dibenzocyclooctadiene lignan	$C_{24}H_{32}O_9$		416	217, 248, 285	439 $[M+Na]^+$, 417 $[M+H]^+$, 402 $[M-H-CH_3]^+$, 370 $[M-H-C_2H_7O]^+$, 347 $[M-H-C_5H_{10}]^+$	(He et al. 1997)(Deng et al. 2008)(Yang et al. 2011)(Wang et al. 2011)(Ikeya et al. 1980)(Ikeya et al. 1990)(Ikeya et al. 1988)
12.58	Schisandrin C (syn. Wuweizisu C) [a]	Dibenzocyclooctadiene lignan	$C_{22}H_{24}O_6$		384	215, 259, 281	385 $[M+H]^+$, 370 $[M-H-CH_3]^+$, 355 $[M-H-CH_2O]^+$, 315 $[M+H-C_5H_{10}]^+$	(He et al. 1997)(Deng et al. 2008)(Wang et al. 2011)(Ikeya et al. 1982b)
12.83	Angeloylogomisin O / Angeoylisogomisin O [b]	Dibenzocyclooctadiene lignan	$C_{28}H_{34}O_8$		498	219, 255, 285	537 $[M+K]^+$, 416 $[M-H-C_5H_70]^+$, 399 $[M-H-C_5H_8O_2]^+$	(Ikeya et al. 1982a)

13.51	Schisantherin D	Dibenzocyclooctadiene lignan	$C_{29}H_{28}O_9$		520	226, 258, 280	521 $[M+H]^+$, 399 $[M-H-C_7H_6O_2]^+$, 383 $[M-H-C_7H_6O_2-CH_3]^+$	(Ikeya et al. 1986)(Ikeya et al. 1982b)
14.24	Dimetylowulignan A1	Aryltetralin lignan	$C_{22}H_{26}O_5$		370	203, 234, 277, 313	370 $[M]^+$, 355 $[M-CH_3]^+$, 314 $[M-C_4H_8]^+$, 271 $[M-C_4H_8-CH_3-CO]^+$	(Liu et al. 1988)
Triterpenoids								
14.50	Kadsuric acid	Triterpenoid	$C_{30}H_{46}O_4$		470		471$[M+H]^+$ 453$[M-H-H_2O]^+$, 398$[M-H-CH_2CH_2COOH]^+$	(Zou et al. 2015)

15.14	Schisanhenric acid	Triterpenoid	$C_{32}H_{48}O_5$		456		456 $[M]^+$, 439	(Jia-Sen et al. 1980)

[a] compounds identified by co-chromatography with standards

[b] exact discrimination of isomers not possible under UHPLC-MS/MS analysis

Table S3. Accumulation (mg/100 g DW ± SD) of dibenzocyclooctadiene lignans in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 10 days growth periods (n =10).

Dibenzocyclooctadiene lignans	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Schisandrin	49.21±7.37	37.29±0.07	41.57±0.25	41.32±0.47	48.83±0.77	61.24±0.23
Gomisin G	3.61±0.37	8,10±0.02	10.15±0.16	7.62±0.06	6.86±0.18	16.52±0.12
Schisantherin A	69.71±0.29	50.89±0.12	42.90±0.37	52.82±0.22	42.70±0.15	143.74±0.43
Schisantherin B	384.02±1.47	243.41±0.37	214.72±0.64	275.09±2.30	193.97±1.20	622.59±0.57
Deoxyschisandrin	1.03±0.18	0.16±0.08	0.14±0.06	0.33±0.04	0.16±0.09	1.01±0.14
Schisandrin C	16.38±0.39	8.80±0.19	5.48±0.49	9.38±0.19	5.68±0.19	28.61±0.23
Totat content	**523.96±10.07**	**348.65±0.85**	**314.96±1.97**	**386.56±3.28**	**298.2±2.58**	**873.71±1.72**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S4. Accumulation (mg/100 g DW ± SD) of dibenzocyclooctadiene lignans in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 20 days growth periods (n =10).

Dibenzocykclooctadiene lignans	**MS medium variants***					
	A	**B**	**C**	**D**	**E**	**F**
Schisandrin	31.86±0.33	22.44±0.07	29.69±0.24	21.73±0.07	21.26±2.32	36.53±0.53
Gomisin G	10.99±0.12	9.57±0.19	5.86±0.49	6.37±0.05	9.33±0.08	8.07±0.10
Schisantherin A	77.88±0.34	50.75±0.16	55.14±0.14	39.68±0.32	61.26±0.16	83.30±0.40
Schisantherin B	349.37±0.70	202.30±0.38	26446±1.56	195.12±0.27	239.57±0.46	396.74±0.79
Deoxyschisandrin	0.35±0.01	0.32±0.19	0.96±0.06	0.34±0.25	0.20±0.02	0.52±0.09
Schisandrin C	16.57±0.14	11.06±0.17	10.22±0.36	6.15±0.04	9.63±0.31	20.99±0.31
Total content	**487.02±1.64**	**296.44±1.16**	**366.33±2.85**	**269.39±1**	**341.25±3.5**	**546.15±2.22**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S5. Accumulation (mg/100 g DW ± SD) of dibenzocyclooctadiene lignans in agar microshoot *Schisandra henryi* cultures maintained on different MS medium variants for 30 days growth periods (n =10).

Dibenzocyclooctadiene lignans	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Schisandrin	35.78±0.10	6.53±0.06	43.40±0.27	30.74±0.72	18.88±0.44	32.99±0.48
Gomisin G	5.83±0.14	4.79±0.05	18.20±0.18	7.61±0.06	8.37±0.10	6.30±0.12
Schisantherin A	56.33±0.53	54.68±0.10	41.05±0.30	31.50±0.25	52.11±0.15	54.68±0.07
Schisantherin B	257.94±0.82	218.31±0.44	174.43±0.74	140.21±0.36	193.20±0.52	287.27±1.13
Deoxyschisandrin	0.58±0.11	0.14±0.02	0.70±0.06	0.45±0.12	0.32±0.02	0.41±0.02
Schisandrin C	12.32±0.03	11.61±0.04	5.81±0.15	3.27±0.07	7.23±0.07	13.00±0.01
Total content	**368.78±1.73**	**296.06±0.71**	**283.59±1.7**	**213.78±1.58**	**280.11±1.3**	**394.65±1.83**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S6. Accumulation (mg/100 g DW ± SD) of dibenzocyclooctadiene lignans in callus *S. henryi* cultures maintained on MS medium with 1 mg/l BA and 1mg/l IBA for 10, 20 and 30 days growth periods (n =10).

Dibenzocyclooctadiene lignans	MS medium with 1 mg/l BA and 1 mg/l IBA		
	Growth periods (days)		
	10	20	30
Schisandrin	1.24±0.02	10.25±2.06	6.35±0.17
Gomisin G	2.58±0.05	3.81±1.19	5.11±0.14
Schisantherin A	0.48±0.04	0.29±0.36	7.29±0.47
Schisantherin B	0.46±0.26	17.49±7.78	3.78±0.42
Deoxyschisandrin	1.75±1.07	3.63±0.27	0.20±0.16
Schisandrin C	2.68±0.74	7.71±2.36	3.76±2.08
Total content	**9.19±2.18**	**43.18±14.02**	**26.49±3.44**

Table S7. Accumulation (mg/100 g DW ± SD) of phenolic acids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 10 days growth periods (n =10).

Phenolic acids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Gallic acid	51.59±2.03	49.36±2.08	47.73±3.64	43.11±0.27	43.71±0.35	46.98±2.87
Neochlorogenic acid	256.69±3.61	253.84±6.26	231.54±3.39	218.42±6.58	106.81±6.77	257.36±5.60
Caftaric acid	232.62±4.79	275.27±8.79	142.14±8.62	119.52±1.00	211.07±5.46	316.63±4.65
Chlorogenic acnid	33.71±0.03	29.16±0.13	6.86±0.61	1.28±0.05	1.50±0.04	2.00±0.06
Caffeic acid	30.02±0.28	6.09±0.21	7.18±0.09	6.41±0.38	8.47±0.43	5.96±0.25
Vanillic acid	6.04±1.16	10.35±0.27	4.26±0.07	0.47±0.03	0.23±0.02	0.45±0.05
Syrngic acid	8.93±0.33	7.54±0.20	21.33±0.46	7.26±0.22	6.06±0.24	8.45±0.42
Total content	**619.60±12.16**	**631.60±17.91**	**461.04±16.88**	**396.47±8.53**	**377.85±13.31**	**637.83±13.9**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S8. Accumulation (mg/100 g DW ± SD) of phenolic acids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 20 days growth periods (n =10).

Phenolic acids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Gallic acid	39.01±2.08	47.15±0.21	32.56±1.40	41.63±1.99	37.48±3,15	37.14±1.79
Neochlorogenic acid	196.97±5.49	368.03±5.61	147.08±6.85	102.85±3.91	206.55±4.3	290.79±5.95
Caftaric acid	185.88±9.79	149.79±3.79	68.59±2.98	202.15±5.39	125.41±38.95	254.00±4.02
Chlorogenic acid	15.14±0.50	15.14±0.09	5.69±0.36	1.28±0.06	0.44±0.04	0.89±0.04
Caffeic acid	8.44±1.32	18.54±0.32	6.33±0.13	5.19±0.16	5.62±0.22	4.61±0.23
Vanillic acid	0.17±0.01	6.08±0.14	2.40±0.13	0.33±0.02	0.19±0.01	0.34±0.01
Syringic acid	3.94±0.13	7.25±0.23	5.64±0.24	5.72±0.31	6.41±0.66	7.55±0.27
Total content	**449.55±19.32**	**611.98±10.39**	**268.29±12.09**	**359.15±11.84**	**382.1±47.33**	**595.32±12.31**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S9. Accumulation (mg/100 g DW ± SD) of phenolic acids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 30 days growth periods (n =10).

Phenolic acids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Gallic acid	31.50±2.03	59.86±2.42	39.64±2.02	40.40±1.31	37.91±1.43	44.81±2.38
Neochlorogenic acid	142.35±6.2	472.82±6.47	131.92±3.95	161.51±8.01	145.11±5.99	341.94±12.02
Caftaric acid	76.60±5.40	209.92±4.56	104.00±3.64	172.50±6.29	127.44±4.64	370.81±6.04
Chlorogenic acid	10,.22±0.59	28.52±0.45	6.77±0.17	1.10±0.25	0.49±0.08	2.56±0.05
Caffeic acid	3.93±0.37	25.81±0.42	8.29±0.13	5.02±0.03	6.49±0.21	5.16±0.18
Vanillic acid	2.83±0.09	9.46±0.11	2.04±0.12	0.35±0.01	0.46±0.01	0.39±0.01
Syryngic acid	3.73±0.27	34.50±2.48	6.30±0.11	7.59±0.27	5.69±0.03	27.25±0.32
Total content	**271.16±14.95**	**840.89±16.91**	**298.96±10.14**	**388.47±16.17**	**323.92±12.39**	**792.92±21.00**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S10. Accumulation (mg/100 g DW ± SD) of phenolic acids in callus *S. henryi* cultures maintained on MS medium with 1 mg/l BA and 1 mg/l IBA for 10, 20 and 30 days growth periods (n =10).

Phenolic acids	MS medium with 1mg/l BA and 1mg/l IBA		
	Growth periods (days)		
	10	**20**	**30**
Gallic acid	30.58±3.06	18.44±1.43	20.97±1.04
Neochlorogenic acid	49.52±1.14	33.14±0.34	39.04±0.61
Caftaric acid	187.91±7.94	125.27±7.19	136.91±1.25
Chlorogenic acid	3.33±2.88	1.17±0.06	1.96±0.01
Caffeic acid	23.64±0.14	12.50±0.21	26.34±5.99
Vanillic acid	1.61±0.01	1.65±0.13	1.68±0.08
Syringic acid	0.07±0.01	0.08±0.01	0.10±0.02
Total content	**296.66±15.18**	**192.25±9.37**	**227.00±9.00**

Table S11. Accumulation (mg/100 g DW ± SD) of flavonoids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 10 days growth periods (n=10).

Flavonoids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Hyperoside	24.77±0.73	47.56±2.08	45.90±3.25	18.44±0.18	17.47±0.39	27.89±0.31
Rutoside	46.71±2.15	88.83±3.28	84.63±0.34	37.69±0.25	29.68±0.42	60.07±3.10
Trifolin	41.26±4.17	138.56±1.92	116.79±3.39	33.18±0.71	27.27±0.18	81.41±2.28
Quercitrin	62.12±2.25	122.54±2.58	89.32±0.54	46.90±1.25	53.93±0.31	73.39±1.77
Quercetin	6.99±0.37	4.78±0.10	7.90±0.05	3,.63±0.11	5.12±0.41	3.58±0.02
Kaempferol	10.96±0.84	19.70±0.55	23.90±0.41	12.06±0.80	26.06±0.44	8.44±0.32
Total content	**192.81±10.52**	**421.98±10.51**	**368.43±7.99**	**151.89±3.29**	**159.53±2,14**	**254.78±7,80**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S12. Accumulation (mg/100 g DW ± SD) of flavonoids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 20 days growth periods (n=10).

Flavonoids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Hyperoside	26.03±2.55	12.79±0.21	15.86±0.26	11.38±0.35	12.75±0.24	17.26±0.25
Rutoside	44.78±1.05	25.20±0.13	25.99±0.30	21.96±0.96	50.55±2.46	37.60±0.90
Trifolin	72.57±1.26	25.66±2.08	24.72±2.63	15.77±0.30	80.99±2.36	51.85±0.51
Quercitirn	75.18±3.43	59.97±1.74	34.91±3.84	33.78±0.48	60.05±1.62	51.29±.70
Quercetin	4.97±0.14	5.26±0.03	41.40±1.01	5.61±0.26	4.00±0.26	2.35±0.02
Kaempferol	7.21±0.43	8.82±0.20	19.75±0.19	11.61±0.28	8.29±0.79	8.52±0.39
Total content	**230.75±8.97**	**137.70±4.38**	**162.62±8.22**	**100.10±2.62**	**216.63±7.73**	**168.87±4.77**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Table S13. Accumulation (mg/100 g DW ± SD) of flavonoids in agar microshoot *S. henryi* cultures maintained on different MS medium variants for 30 days growth periods (n=10).

Flavonoids	MS medium variants*					
	A	**B**	**C**	**D**	**E**	**F**
Hyperoside	12.70±0.72	19.75±0.17	17.23±0.14	12.41±0.22	17.64±0.21	17.53±0.17
Rutoside	19.88±0.27	40.43±2.67	33.33±4.38	22.66±0.39	32.32±2.50	47.87±1.78
Trifolin	16.26±0.27	39.73±0.99	31.13±1.48	17.58±0.50	30.40±0.90	77.20±2.74
Quercitrin	39.31±3.04	67.33±3.30	50.69±3.20	38.45±2.53	59.78±2.72	53.61±3.67
Quercetin	33.42±2.19	9.54±0.29	13.99±0.12	7.86±4.31	15.92±0.24	46.20±3.11
Kaempferol	8.99±0.25	6.25±0.19	18.88±0.41	19.94±0.16	19.62±0.24	8.36±0.28
Total content	**130.56±6.74**	**183.03±7.61**	**165.25±9.72**	**118.89±8.11**	**175.69±6.81**	**250.78±7.61**

*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA i 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

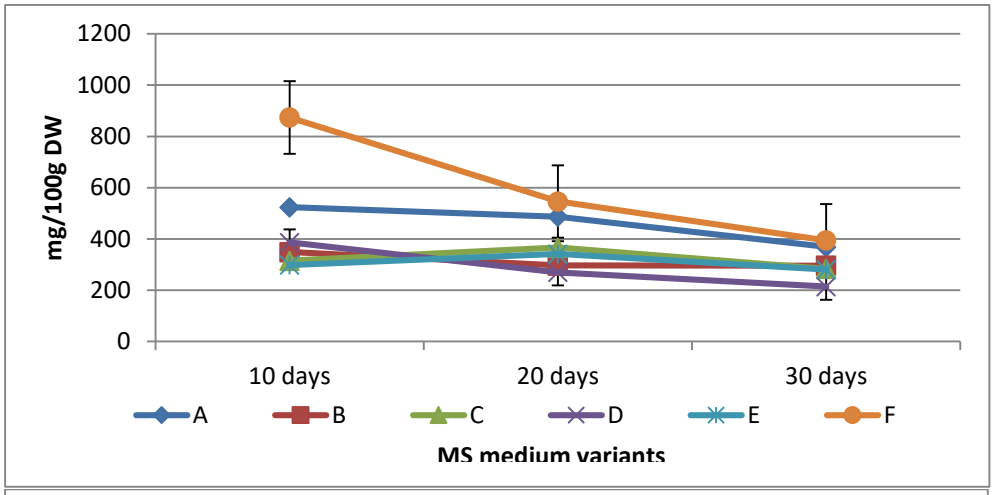
Table S14. Accumulation (mg/100 g DW ± SD) of flavonoids in callus *S. henryi* cultures maintained on MS medium with 1 mg/l BA and 1 mg/l IBA for 10, 20 and 30 days growth periods (n =10).

Flavonoids	MS medium with 1 mg/l BA and 1 mg/l IBA		
	Growth periods (days)		
	10	20	30
Hyperoside	5.23±0.24	2.93±0.04	3.53±0.18
Rutoside	2.39±0.22	2.15±0.24	5.20±0.16
Trifolin	4.07±0.11	1.72±0.12	2.95±0.16
Quercitrin	18.87±1.19	9.17±0.32	1.85±2.18
Quercetin	9.55±0.17	1.64±0.28	8.34±0.18
Kaempferol	13.45±0.28	5.97±0.34	21.16±3.22
Total content	**53.56±2.20**	**23.57±1.33**	**59.03±6.09**

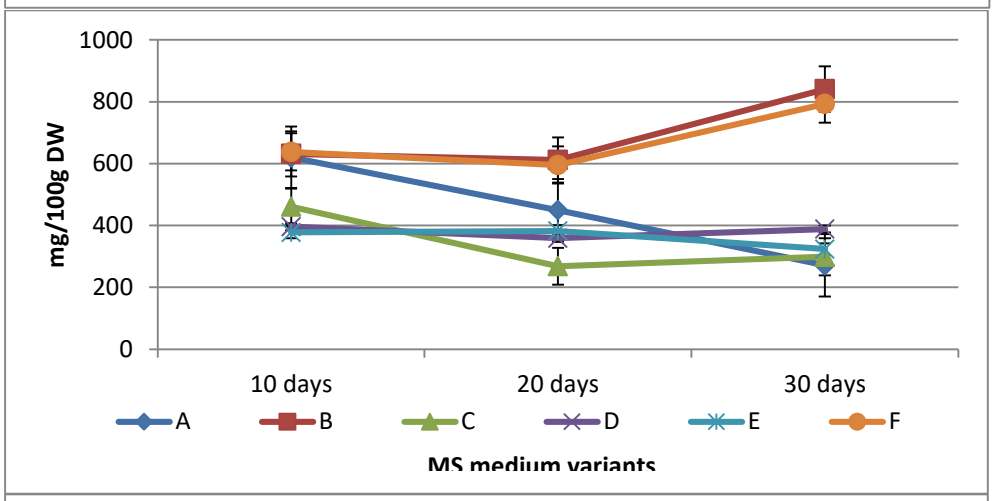
(a)  **(b)** 

Figure S1. Initiation of *S. henryi in vitro* cultures, **(a)** the production of the first microshoots, **(b)** the production of callus tissue

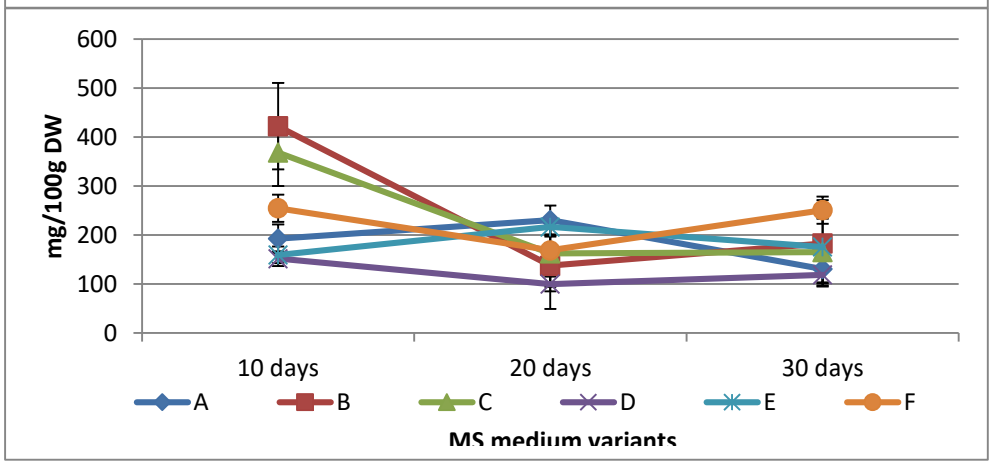
(a)



(b)



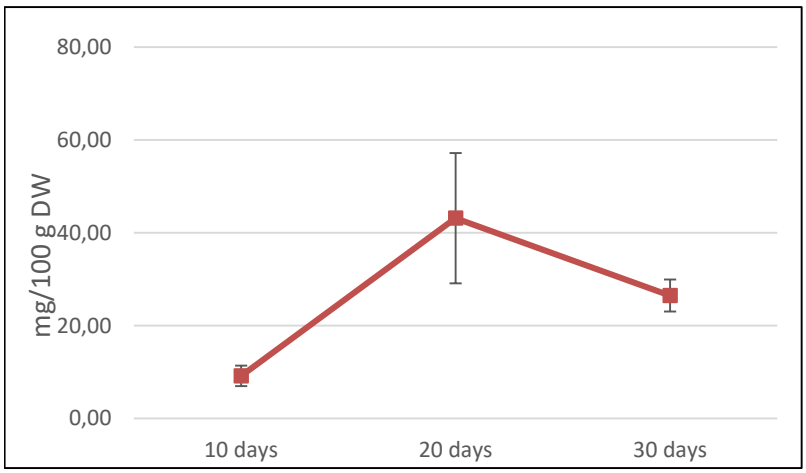
(c)



*A – 1 mg/l BA and 1 mg/l IBA, B – 1 mg/l BA and 1 mg/l IBA and 0.25 mg/l GA_3, C – 0.25 mg/l BA and 2 mg/l IBA, D – 0.25 mg/l BA and 3 mg/l IBA, E – 2 mg/l BA and 1 mg/l IBA, F – 0.5 mg/l BA and 2 mg/l IBA

Figure S2. The dynamics of **(a)** dibenzocyclooctadiene lignans, **(b)** phenolic acids, and **(c)** flavonoids, accumulation in *S. henryi* agar microshoot cultures maintained on different MS medium variants* based on their total contents during the growth periods.

(a)



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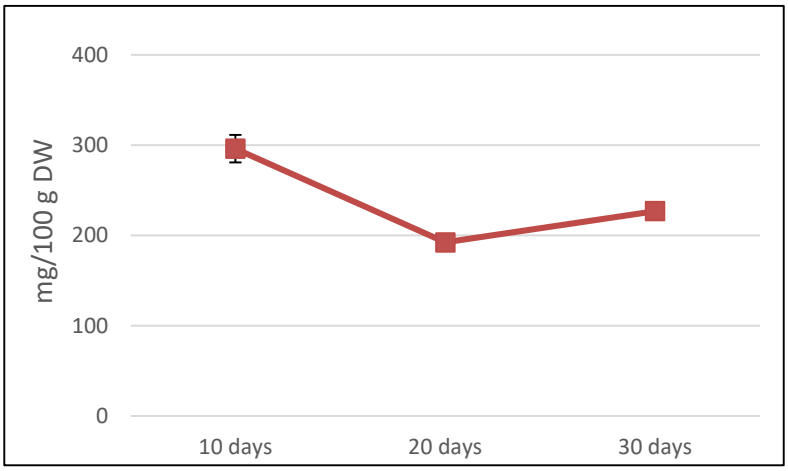

(c)

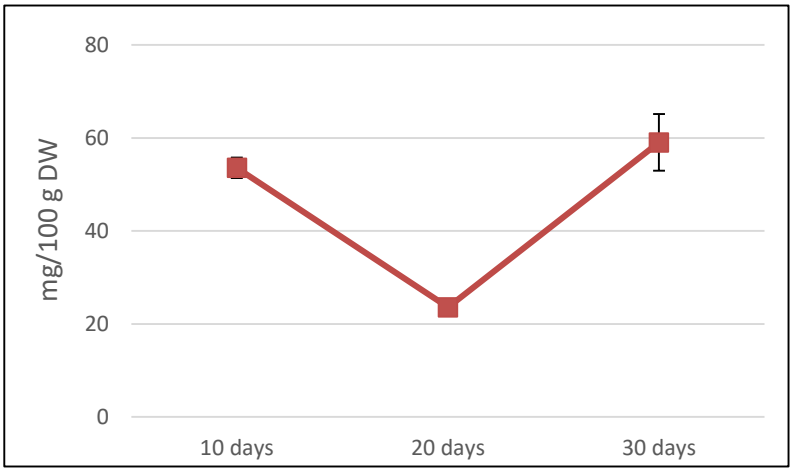

Figure S3. The dynamics of **(a)** dibenzocyclooctadiene lignans, **(b)** phenolic acids, and **(c)** flavonoids accumulation in *S. henryi* callus cultures maintained on MS medium with 1 mg/l BA and 1 mg/l IBA based on their total contents during the growth periods.