Supplementary Material

Lignans from *Bursera fagaroides* Affect the *In vivo* Cell Behavior by Disturbing the Tubulin Cytoskeleton in Zebrafish Embryos.

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List of Supplementary material

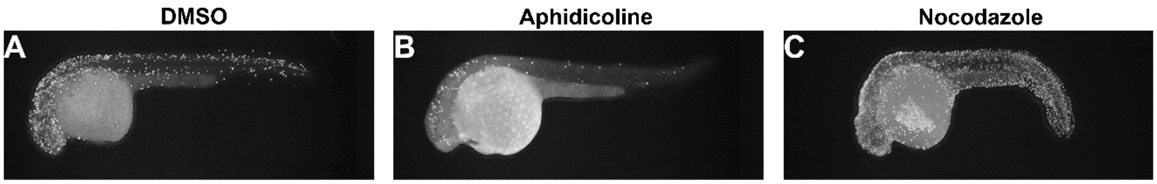

Figure S1. Whole mount immunolocalization of phospho-histone-H3 (H3S10ph) in zebrafish embryos. Wild-type 24-hour post-fertilization zebrafish embryos were immunostained after a 6-hour treatment with different compounds.

Table S1. Quantification of the effect of *B. fagaroides* HA extract, extract fractions and pure compounds on the cell cycle in zebrafish embryos

	ID	Cell cycle activity	H3S10ph fold change	*p* <0.001	n	N	t-student test
	DMSO		1.00 ± 0.32		23	3	
Drug	Aphidicoline	-	0.16 ± 0.09	*	27	3	1.54E-16
	Nocodazole	+	3.35 ± 1.18	*	30	3	1.73E-12
	Etoposide	=	0.59 ± 0.15		8	1	3.75E-02
Fraction	HA extract	=	1.10 ± 0.36		10	1	5.53E-01
	F-1	+	4.08 ± 0.97	*	9	1	2.40E-07
	F-2	+	4.48 ± 0.26	*	8	1	1.03E-14
	F-1-1	+	4.37 ± 0.72	*	9	1	1.38E-09
	F-1-2	+	4.28 ± 0.52	*	9	1	2.83E-11
	F-2-1	+	2.82 ± 0.99	*	10	1	1.03E-04
	F-2-2	+	4.21 ± 0.46	*	10	1	6.35E-11
	F-2-3	+	3.94 ± 0.74	*	9	1	1.07E-07
	1	+	2.95 ± 1.18	*	10	1	4.50E-04
	2	+	3.89 ± 0.97	*	9	1	2.00E-05
	3	=	0.79 ± 0.51		8	1	4.10E-01
	4	+	4.44 ± 0.99	*	8	1	5.43E-05
	5	=	0.76 ± 0.20		9	1	1.95E-01
	6	=	0.63 ± 0.29		10	1	5.85E-02
	7	+	2.88 ± 0.84	*	10	1	3.75E-05

ID, extract, fractions and compounds. H3S10ph, fold change compared with control DMSO-treated embryos. Cell cycle activity; -, denotes decrease, +, increase, =, without change. n, total number of embryos analyzed. N, number of experiments. Student’s t-test, was used to determine the p-value.

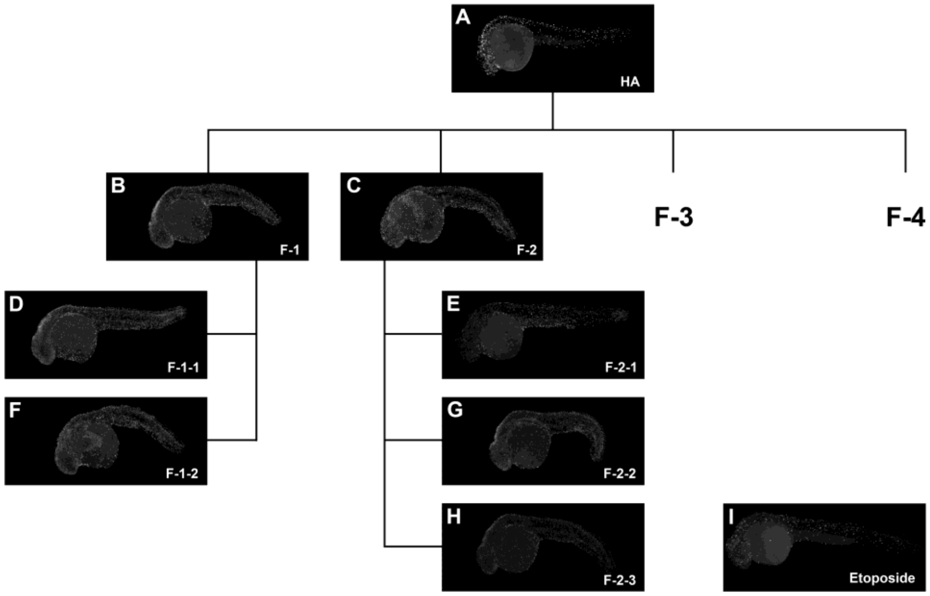

Figure S2. Whole mount immunolocalization of phospho-histone-H3 (H3S10ph) in zebrafish embryos. Fractionation tree diagram of fractions that were screened for their effect on the cell cycle and embryonic morphology in the zebrafish embryos. (A) Hydroalcoholic (HA) extract. (B) F-1. (C) F-2. (D) F-1-1. (E) F-2-1. (F) F-1-2. (G) F-2-2. (H) F-2-3. Etoposide. (I). Notice that in the present studies only fractions F-1, F-2 and their corresponding sub-fractions and pure compounds were included in the analysis. The other two fractions F-3 and F-4 are not included in the analysis of the present study.

Table S2. NMR ^{1}H of compounds **1-7**

	1	**2**	**3**	**4**	**5**	**6**	**7**
Proton	**δ 1H (ppm)**	**δ 1H (ppm)**	**δ 1H (ppm)**	**δ 1H (ppm)**	**δ 1H (ppm)**	**δ 1H (ppm)**	**δ 1H (ppm)**
2				6.44(d, 1H. *J*= 8)			
3	6.33(s, 1H)	6.20 (*s*, 1H)	6.255 (s, 1H)	6.45(d, 1H. *J*= 7.6)	6.50(s, 1H)	6.33(s, 1H)	6.48 (s, 1H)
6				6.43(s, 1H)	7.11(s, 1H)		6.72 (*s*, 1H)
7β	2.68 (*dd*, 1H)	3.11 (*dd*, 1H, *J*= 4.88)	2.36 (*dd*, 1H, *J*= 10.4, 16.8)	2.58 (*dd*, 1H)	2.86 (*m*, 1H)	2.68 (*dd*, 1H)	5.82 (d, 1H, *J* = 8.4)
7α		2.38 (*dd*, 1H, *J*= 10.8)	3.1 (*dd*, 1H, *J*= 4.8, 18)	2.50 (*dd*, 1H)	2.86 (*m*, 1H)		
8	2.96 (m, 2H, H-7, *J=3.2)	2.58 (m, 1H)	2.44 (m, 2H, H-7)	2.48 (m, 2H, H-7)	2.86 (*m*, 1H)	2.96 (m, 2H, H-7, J=3.2)	2.82(*m*, 1H)
9α	3.95 (*dd* 2H, *J*= 6.2)	3.86 (t, 2H, *J*= 10.4)	3.85 (*t*, 2H, *J*= 10)	4.12 (*dd* 2H, *J*= 7.2, 8.8)	4.076 (t 2H, *J*=10.8)	3.95 (*dd* 2H, *J*= 6.2)	4.16(*t*, 1H, *J*= 9.4)
9β	4.41 (*dd* 2H, *J*= 9.2)	4.40 (dd, 2H, *J*= 8.8)	4.37 (*t*, 2H, *J*= 6.8)	3.8 (m, 1H)	4.61(*dd*, 1H)	4.41 (*dd* 2H, *J*= 9.2)	4.34 (*dd*, 1H, *J*= 9.0, 6.2)
2'	6.59 (s, 1H)	6.80 (*s*, 1H)	6.96 (*d*, 1H, *J*=2.4)	6.66 (s, 1H)	6.37 (s, 1H)	6.59 (s, 1H)	6.33 (*s*, 2H)
5'	6.72 (d, 1H, *J*=8.4)		6.78 (*d*, 1H, *J*= 8.4)	6.67 (d, 1H, *J*=8)		6.72 (d, 1H, *J*=8.4)	
6'	6.60 (d, 1H, *J*=8)	6.80 (*s*, 1H)	6.36 (*dd*, 1H, *J*= 8)	6.68(d, 1H. *J*=7.6)	6.37 (s, 1H)	6.60 (d, 1H, *J*=8)	6.33 (*s*, 2H)
7'	4.33(d, 1H, J=2.8)	4.51 (*d*, 1H, *J*= 4.4)	4.51 (*d*, 1H, *J*= 4.4)	2.935(dd, 2H, 8´)	4.61(*dd*, 1H)	4.33(d, 1H, J=2.8)	4.54 (*d*, 1H, *J*= 4.0)
8'	3.25(dd, 2H, *J*=9.4)	2.618 (dd, 1H *J*= 13.6)	2.59 (m, 2H)	2.55(m, 3H, H-7´, H-8´)	2.86 (*m*, 1H)	3.25(dd, 2H, *J*=9.4)	2.82(*m*, 1H)
O-CH₂-O (A)	5.88(dd, 2H,)	5.84 (*s*, 2H)	5.89(*d*, 2H, *J*= 4.8)	5.93(d, 2H, *J*= 4)	5.97(d, 2H, *J*=1.2)	5.88(dd, 2H,)	5.93 (*d*, 2H, *J*= 1)
O-CH₂-O (F)	5.92(s, 2H,)					5.92(s, 2H)	
CH₃CO							2.13 (s, 3H)
CH₃O-6	3.92 (s, 1H)	3.99 (*s*, 3H)	3.99 (s, 1H)			3.92 (s, 1H)	
CH₃O-3’		3.68 (*s*,3H)	3.77 (*s*, 3H)	3.86 (*s*, 3H)	3.75 (*s*, 3H)		3.70 (*s*, 3H)

CH_3O-5’		3.68 (*s*,3H)			3.75 (*s*, 3H)		3.70 (*s*, 3H)
CH_3O-4’		3.73 (*s*, 3H)	3.74 (*s*, 3H)	3.84 (*s*, 3H)	3.80 (*s*, 3H)		3.75 (*s*, 3H)

**J = Hz*

**NMR spectra were acquired on a Varian Unity NMR spectrometer operating at 400 MHz. ^{1}H spectra were performed in $CDCl_3$ and referenced to Me_4Si (0 ppm)