

Article

Colchicine Mutagenesis from Long-term Cultured Adventitious Roots Increases Biomass and Ginsenoside Production in Wild Ginseng (*Panax ginseng* Mayer)

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Supplementary data

Table S1. List of primers related to ginsenoside synthetic genes of *Panax ginseng*.

Primer name	Sequence	Size (bp)	Genbank
<i>PgActin</i>	F: AGCCATCGTCTTCGGAAGTT	388	KF699319.1
	R: TCCTCAGGAGCAACACGAAG		
<i>PgSS2</i>	F: GGGGCAGAAGATTTGGCTAC	195	GQ468527.2
	R: TGCCTTCCCTGAGTTTTCT		
<i>PgSE2</i>	F: ATGTGCCGTCGTGTTTTGTT	294	FJ393274.2
	R: GCATGCTTCTGTTTGGCATT		
<i>PPDS</i>	F: GAACCGATGGCAATCTTGTG	263	JN604537.1
	R: ATCTGTTGTTGGCGATTCCA		
<i>PPTS</i>	F: CCTTTAAATTTCCGGGCAC	153	JX036031.1
	R: CTCGCCATTGGAAAGCATAA		

Table S2. The retention time values of the ginsenoside standard of *Panax ginseng* by HPLC analysis.

No.	Ginsenosides standards	Retention time (min)	r ²
1	Rg ₁	41.901	0,988365
2	Re	42.228	0,99282
3	Rf	60.662	0,999566
4	Rb ₁	64.998	0,999535
5	Rg ₂	66.523	0,99914
6	Rc	67.343	0,999297
7	Rb ₂	69.517	0,99956
8	Rb ₃	69.992	0,999509
9	Rd	74.382	0,999376
10	Rg ₃	91.115	0,999424
11	Rh ₂	104.074	0,999482

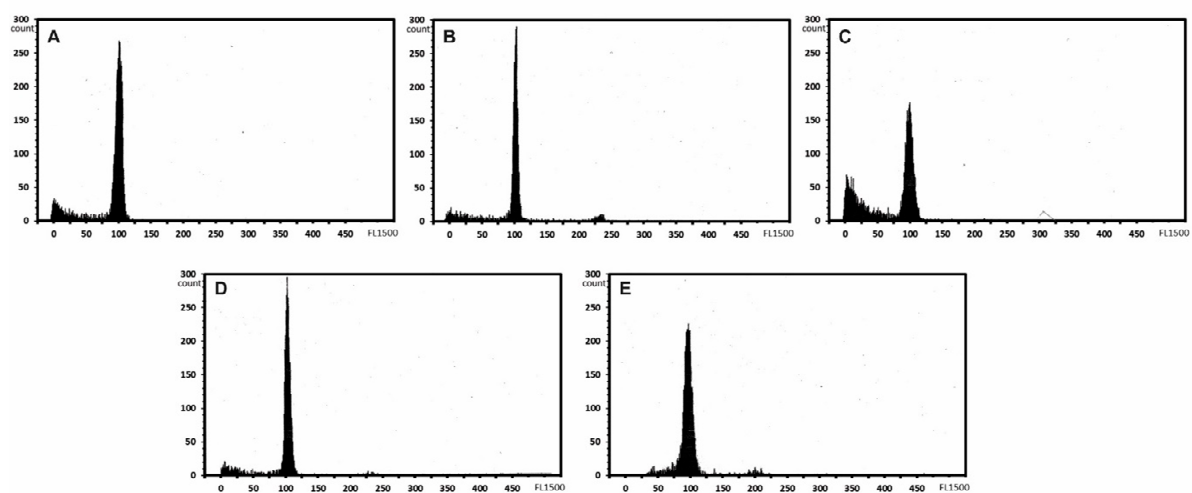


Figure S1. Flow cytometric histogram of nuclei of *Panax ginseng* (A) control tetraploid, and mutant lines (B) 100-1-2, (C) 100-1-18, (D) 300-1-16, (E) 300-2-8 after 6 weeks of culture.

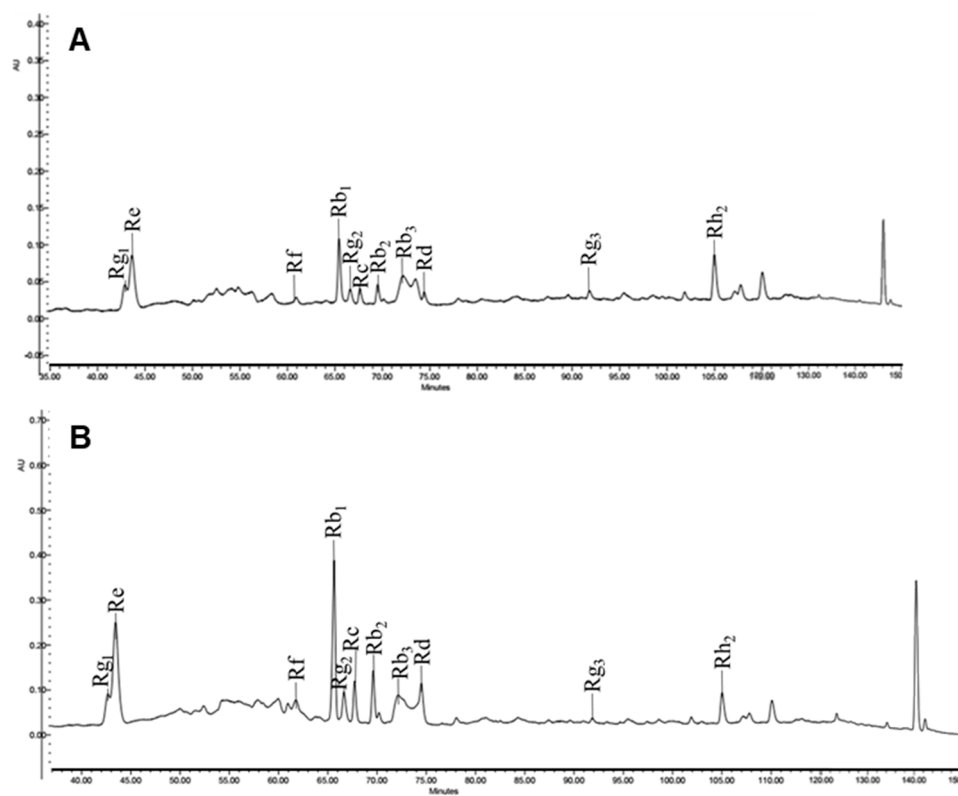


Figure S2. The HPLC chromatograms of ginseng extraction of the control (A) and 100-1-18 mutant line (B).