

Supplementary materials

Table S1. Statistical analysis for the survival (%) showed in explants of *Pinus ponderosa* per 6-benzyladenine (BA) (4.4, 22 and 44 μ M) and cultured media (LP or half LP macronutrients) (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]).

Source	df	Survival (%)	
		X ² Test	p-Value
BA concentration (B)	2	600.83	$\leq 0.05^*$
Culture medium (C)	1	608.99.	$> 0.05^{n.s}$
B x C	1	597.87	$> 0.05^{n.s}$

*Significantly different at $p < 0.05$, ^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.

Table S2. Statistical analysis for the survival (%) showed in explants of *Pinus ponderosa* per explant type (cotyledons or whole zygotic embryos) and sterilization protocol [5% commercial bleach and 10% H₂O₂ (v/v)].

Source	df	Survival (%)	
		X ² Test	p-Value
Explant type (E)	1	596.21	$\leq 0.05^*$
Sterilization protocol (S)	1	593.11	$> 0.05^{n.s}$
E x S	1	592.96	$> 0.05^{n.s}$

*Significantly different at $p < 0.05$, ^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.

Table S3. Statistical analysis for the explants forming shoots (EFS) (%) showed in explants of *Pinus ponderosa* per 6-benzyladenine (BA) (4.4, 22 and 44 μ M), culture media (LP or half LP macronutrients) (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]), explant type (cotyledons or whole zygotic embryos) and sterilization protocol [5% commercial bleach and 10% H₂O₂ (v/v)].

Source	df	EFS (%)	
		X ² Test	p-Value
BA concentration (B)	2	496.36	>0.05 ^{n.s}
Cultured media (C)	1	498.04	≤0.05*
Explant type (E)	1	534.93	≤0.05*
Sterilization protocol (S)	1	534.93	>0.05 ^{n.s}
E x S	1	496.36	>0.05 ^{n.s}
E x C	1	454.59	≤0.05*
C x S	1	453.84	>0.05 ^{n.s}
B x E	2	453.54	>0.05 ^{n.s}
B x S	2	452.56	>0.05 ^{n.s}
B x C	2	452.18	>0.05 ^{n.s}
E x C x S	1	448.81	>0.05 ^{n.s}
B x E x S	2	448.19	>0.05 ^{n.s}
B x C x E	2	443.74	>0.05 ^{n.s}
B x C x S	2	441.34	>0.05 ^{n.s}
B x C x E x S	2	436.19	>0.05 ^{n.s}

*Significantly different at $p < 0.05$, ^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.

Table S4. Statistical analysis for the survival (%) showed in explants of *Pinus ponderosa* per cytokinin type and light treatment cultured in half LP macronutrients (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]).

Source	df	Survival (%)	
		X ² Test	p-Value
Cytokinin type (C)	1	29.206	≤0.05*
Light treatment (C)	3	21.311	≤0.05*
C x L	3	21.311	>0.05 ^{n.s}

*Significantly different at $p < 0.05$, ^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.

Table S5. Statistical analysis for the explants forming shoots (EFS) (%) showed in explants of *Pinus ponderosa* cultured in half LP macronutrients (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]) supplemented with 6-benzyladenine (BA) and *meta*-Topolin (*m*-T) according to light treatment.

Source	df	EFS (%)	
		X ² Test	p-Value
Cytokinin type (C)	1	393.51	>0.05 ^{n.s}
Light treatment (C)	3	392.40	>0.05 ^{n.s}
C x L	3	391.23	>0.05 ^{n.s}

^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.

Table S6. ANOVA for total number of shoots produced per initial explant (NS/E) showed in explants of *Pinus ponderosa* cultured in half LP macronutrients (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]) supplemented with 6-benzyladenine (BA) and *meta*-Topolin (*m*-T) (13.1 μ M) according to light treatment.

NS/E			
Source	df	<i>F</i> Test	<i>p</i> -Value
Cytokinin type (C)	1	0.31	>0.05 ^{n.s}
Light treatment (C)	3	1.00	>0.05 ^{n.s}
C x L	3	1.07	>0.05 ^{n.s}

*Significantly different at $p<0.05$, ^{n.s} Non-significant at $p<0.05$, df Degrees of freedom.

Table S7. ANOVA for percentage of shoots elongated enough to be rooted (PSR) (%) showed in explants of *Pinus ponderosa* cultured in half LP macronutrients (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]) supplemented with 6-benzyladenine (BA) and *meta*-Topolin (*m*-T) (13.1 μ M) according to light treatment.

PSR (%)			
Source	df	<i>F</i> Test	<i>p</i> -Value
Cytokinin type (C)	1	0.02	>0.05 ^{n.s}
Light treatment (C)	3	3.94	$\leq 0.05^*$
C x L	3	0.21	>0.05 ^{n.s}

*Significantly different at $p<0.05$, ^{n.s} Non-significant at $p<0.05$, df Degrees of freedom.

Table S8. Statistical analysis for root induction (%), number root per explant and length of longest root showed in explants of *Pinus ponderosa* cultured in half LP macronutrients (Quoirin and Lepoivre [24], modified by Aitken-Christie et al. [25]) according to light treatment.

Source	df	Root induction		N° root /explant		Length of longest root	
		X² Test	p-Value	F Test	p-Value	F Test	p-Value
Light treatment (L)	3	132.79	>0.05 ^{n.s}	0.66	>0.05 ^{n.s}	0.42	>0.05 ^{n.s}

^{n.s} Non-significant at $p < 0.05$, df Degrees of freedom.