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1 1 2 1

(1. 318000 2. 310018)

1/2 MS+6-BA 2.0 mg Ł$^{-1}$+NAA 0.2 mg Ł$^{-1}$+PVP 0.2% 1/2MS+6-BA 0.5 mg Ł$^{-1}$+NAA 0.05 mg Ł$^{-1}$ 1/4 MS+IBA 1.0 mg Ł$^{-1}$+NAA 0.1 mg Ł$^{-1}$

PVP

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Tissue culture and rapid propagation of *Carpinus tientaiensis*

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Abstract: To establish a system of tissue culture and plantlet regeneration from *Carpinus tientaiensis*, stem segments, buds, or buds under germination and leaves were used as explants. The results showed that the optimum medium for induction and multiplication of adventitious shoots was 1/2 MS+6-BA 2.0 mg Ł$^{-1}$+NAA 0.2 mg Ł$^{-1}$+PVP 0.2% when buds was used as explants. The medium for cultivating strong seedling was 1/2 MS+6-BA 0.5 mg Ł$^{-1}$+NAA 0.05 mg Ł$^{-1}$, and the optimum medium for root regeneration was 1/4 MS+IBA 1.0 mg Ł$^{-1}$+NAA 0.1 mg Ł$^{-1}$.

Key words: *Carpinus tientaiensis*; tissue culture; multiplication of adventitious shoots; PVP

Carpinus tientaiensis

Betulaceae 800~1 000 m [1-2]

21 0.3 hm^2

ITS [2]

[3-4]

[5]

1

1.1

2010 *Carpinus tientaiensis*

1.2

1.2.1

: 2013-01-
: 071KY07
: E-mail chenzh@tzc.edu.cn

70 60 s 0.1
$HgCl_2$ 10 min 6 8

1.0~2.0 cm
90 s 15 min
0.5 1.0 cm

30 s 8 min

0.5 cm
0.5 cm

1.2.2

2 3% 0.7% S8
1/2MS+6-BA0.5 mg Ł$^{-1}$+NAA 0.05 mg Ł$^{-1}$
1 2%
0.7%

1
Table 1 Culture media for adventitious roots induction

Number of medium	Basic medium	NAA /mg Ł$^{-1}$	IBA /mg Ł$^{-1}$
R1	1/4 MS	0.1	1.0
R2	1/4 MS	0.5	0.5
R3	1/4MS	1.0	0.1
R4	1/2MS	0.1	0.5
R5	1/2MS	0.5	0.1
R6	1/2MS	1.0	1.0
R7	MS	0.1	0.1
R8	MS	0.5	1.0
R9	MS	1.0	0.5

1.2.3

25±1 100 μmol·m^{-2} s^{-1}
12 h d^{-1}

1.2.4

3 d

1.2.5 ±
DPS *LSD*
P<0.05

2

2.1

100%

2.2

1

1/2 MS 1:1
6-BA NAA 0.5 mg Ł$^{-1}$
100% 6-BA
6-BA 2.0 mg Ł$^{-1}$ NAA 0.2 mg Ł$^{-1}$
2

MS
80% 2

2
Table 2 Effect of different culture media on callus induction from leaves of *C. tientaiensis*

Number of medium	Basic medium	6-BA /mg Ł$^{-1}$	NAA /mg Ł$^{-1}$	/% Activate carbon	PVP /%	/ Induction rate of callus
S1	1/2 MS	0.05	0.1	0	0	30
S2	1/2 MS	0.5	0.5	0	0	100
S3	1/2 MS	1.0	0.1	0	0	50
S4	1/2 MS	2.0	0.2	0	0	0
S5	MS	2.0	0.2	0	0	77.78
S6	N6 MS B5	2.0	0.2	0.2	0	80

S7	1/2 MS	2.0	0.2	0.2	0	0
S8	1/2 MS	2.0	0.2	0	0.2	0

2.3

15~30 d

0

3 6-BA

6-BA

0.5~2.0 mg Ł$^{-1}$

6-BA

6-BA 2.0 mg Ł$^{-1}$

4~7

MS N6

MS B5

3

Table 3 Effect of different culture media on axillary bud multiplication of *C. tientaiensis*

Number of medium	Number of explants	Bud formation and proliferation coefficient
S1	20	1.00±0.00 d
S2	20	2.80±0.83 c
S3	20	5.20±0.45 b
S4	20	5.80±1.30 b
S5	20	1.00±0.00 d
S6	20	1.00±0.00 d
S7	20	1.00±0.00 d
S8	20	15.83±2.26 a

0.05

Notes: The different letters in the same column indicate significant difference at the 0.05 level.

1

Figure 1 The callus induction from leaves of *C. tientaiensis*

AC

PVP

PVP

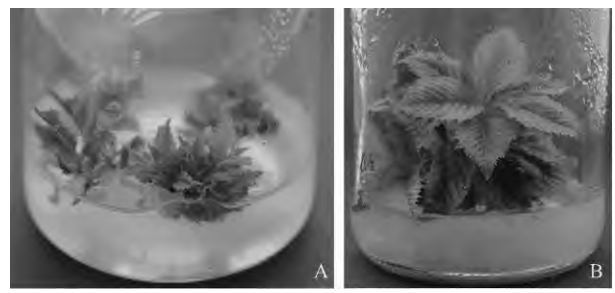
15.83

2A

1/2 MS+6-BA 2.0 mg Ł$^{-1}$+NAA 0.2 mg Ł$^{-1}$+PVP 0.2%

PVP

PVP



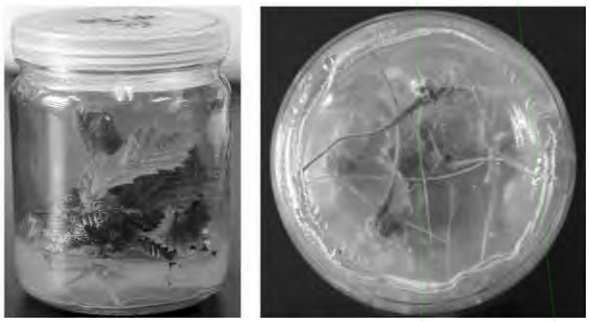
A B

A: Multiplication of adventitious shoots; B: strong seedling culture

2

Figure 2 The multiplication and growth of adventitious shoots of *C. tientaiensis*

2.4



3

Figure 3 The induction of adventitious roots of *C. tientaiensis*

2.5

3 d

: : =3:1:1

70%

3

3~4

[6]

[7-8]

1/2 MS+6-BA0.5 mg Ł$^{-1}$+NAA 0.5 mg Ł$^{-1}$

1/2 MS+6-BA 2.0 mg Ł$^{-1}$+NAA 0.2 mg Ł$^{-1}$+PVP 0.2% 15.83

1/2MS+6-BA 0.5 mg Ł$^{-1}$+NAA 0.05 mg Ł$^{-1}$

1/4 MS+IBA 1.0 mg Ł$^{-1}$+NAA 0.1 mg Ł$^{-1}$

1/2MS WPM[9-10]

1/2 MS

1990 Chalupa[11]

BAP 0.6~1.0 mg Ł$^{-1}$

BAP 0.1~0.2 mg Ł$^{-1}$

[11]

6-BA

6-BA

6-BA

6-BA

2B

Vc PVP

[12-13]

PVP

[14] PVP

PVP

PVP

[15-16]

[17] MS 1/2 MS

1/4 MS

IBA NAA

IBA

1/4 MS+IBA 1.0 mg Ł$^{-1}$+NAA 0.1 mg Ł$^{-1}$

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