

( )

*Taxus baccata* L.

11

Taxus

)

(MS B5)

(

BAP Kin

## Kin 2,4-D NAA

(                  mm)                  (%) / )

/ ) Kin ( / ) 2,4-D ( ) NAA

B5

(

C

PVP

C

(HPLC )

/ C

(C )

(C )

Taxus

.( )

(*Taxus* spp.)

baccata

.( )

*T. baccata*

( )

( )

(

*T. baccata*

*T.* B5

( ) *Taxus* *cuspidata*

WPM ( ) *T. brevifolia* SH

( ) *T. media*

% %

( ) MS B5

BAP

NAA

*T. baccata*

(

*T. baccata*

B5 MS

B5

( )

NAA

)

(MS B5)

( )

B5

*T. baccata*

( )

BAP, 2,4-D

( )

( )

MS

*T. baccata*

Kin NAA

( )

/

BAP

/

Kin

B5

*Taxus*

( )

/

BAP Kin 2,4-D

NAA

BAP

)

HPLC

(

) / : / : / : / :

Kin 2,4-D

(

( )

B5 MS

MSTATC

$\log(x+1)$

Excel

PVP

C

%

+ )

C

(

(

/

C

) C

B5

) MS

/

( /

.( )

SPE

, C18-25cm ) HPLC

1ml/Min

.( )

( U.V = 227nm

(

/

( / )

$\arcsin\sqrt{x+0.5}$

2,4-D

/ Kin

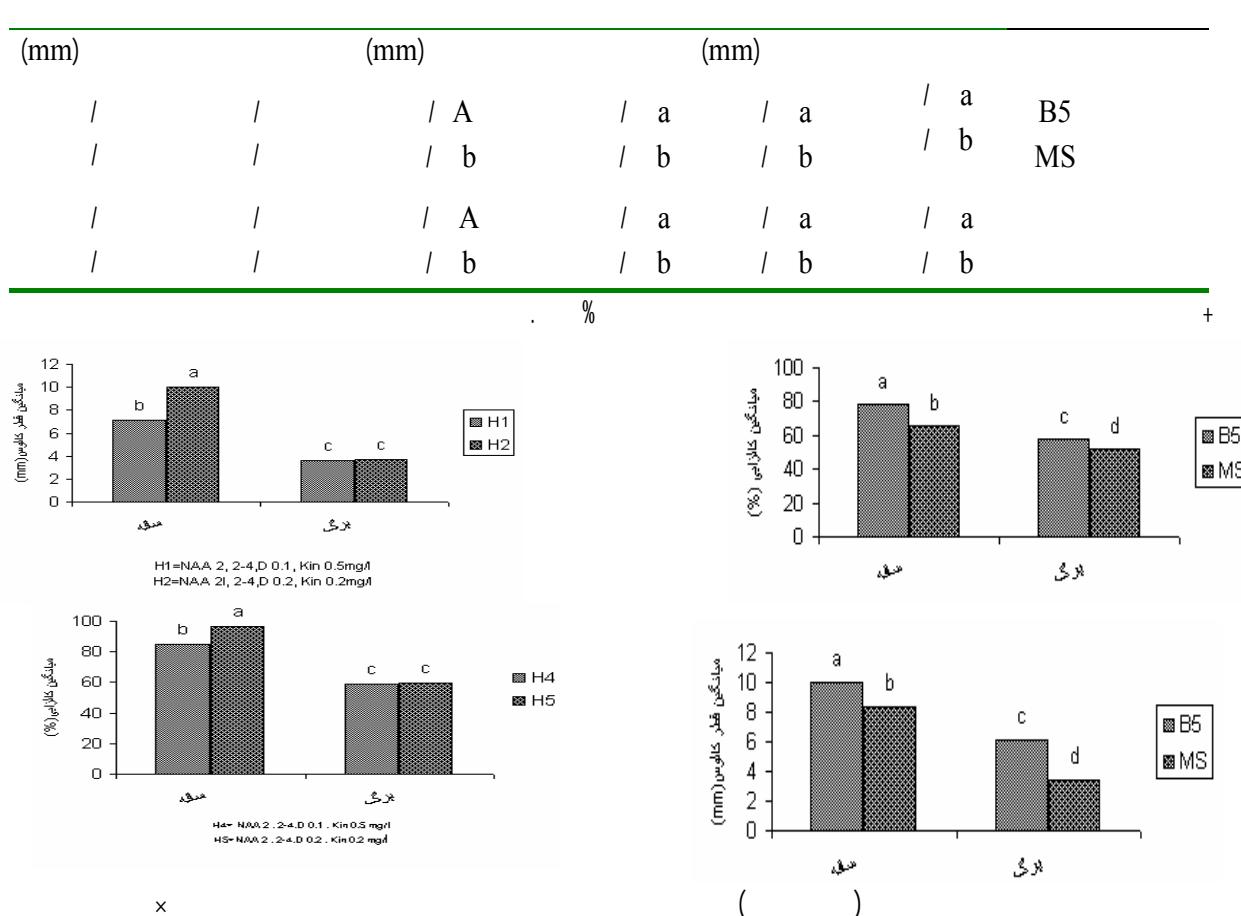
*Taxus baccata*

( )

(mm)	(mm)	(mm)	(mm)	(%)
/ **	/ **	/ **	/ **	( )
/	/ **	/	/ **	x
/	/ **	/ *	/ **	
/ **	/ **	/ *	/ **	x
/ **	/ **	/	/ **	x
/	/	/	/ **	x x
/	/	/	/	x
/	/ *	/	/	x
/	/ *	/	/	x x
/	/	/	/	x
/	/	/	/	x x
/	/	/	/	x x
/	/	/	/	x x
/	/	/	/	

% %

\*\* \*



( / )

PVP

( / )

x

C

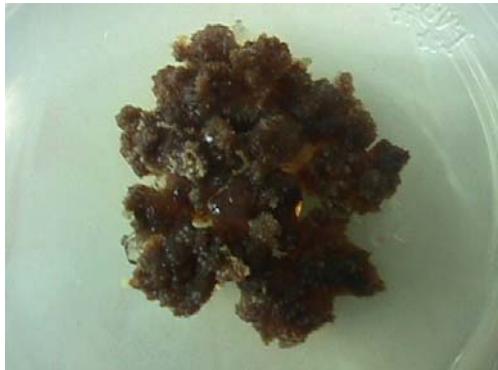
/ mg/l NAA mg/l

% /

Kin / mg/l 2,4-D

mm

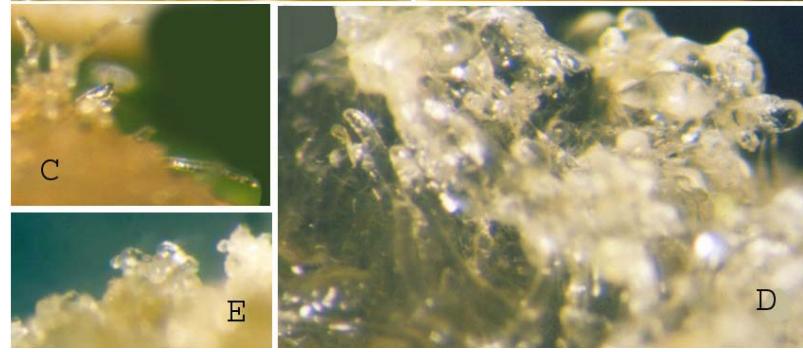
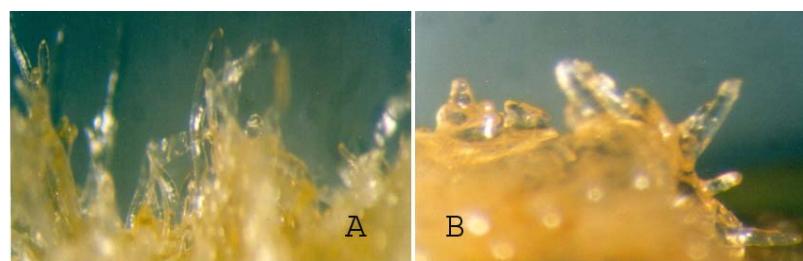
HPLC



HPLC

(C )  
/



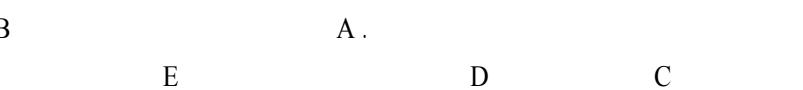
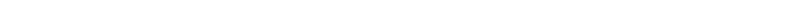


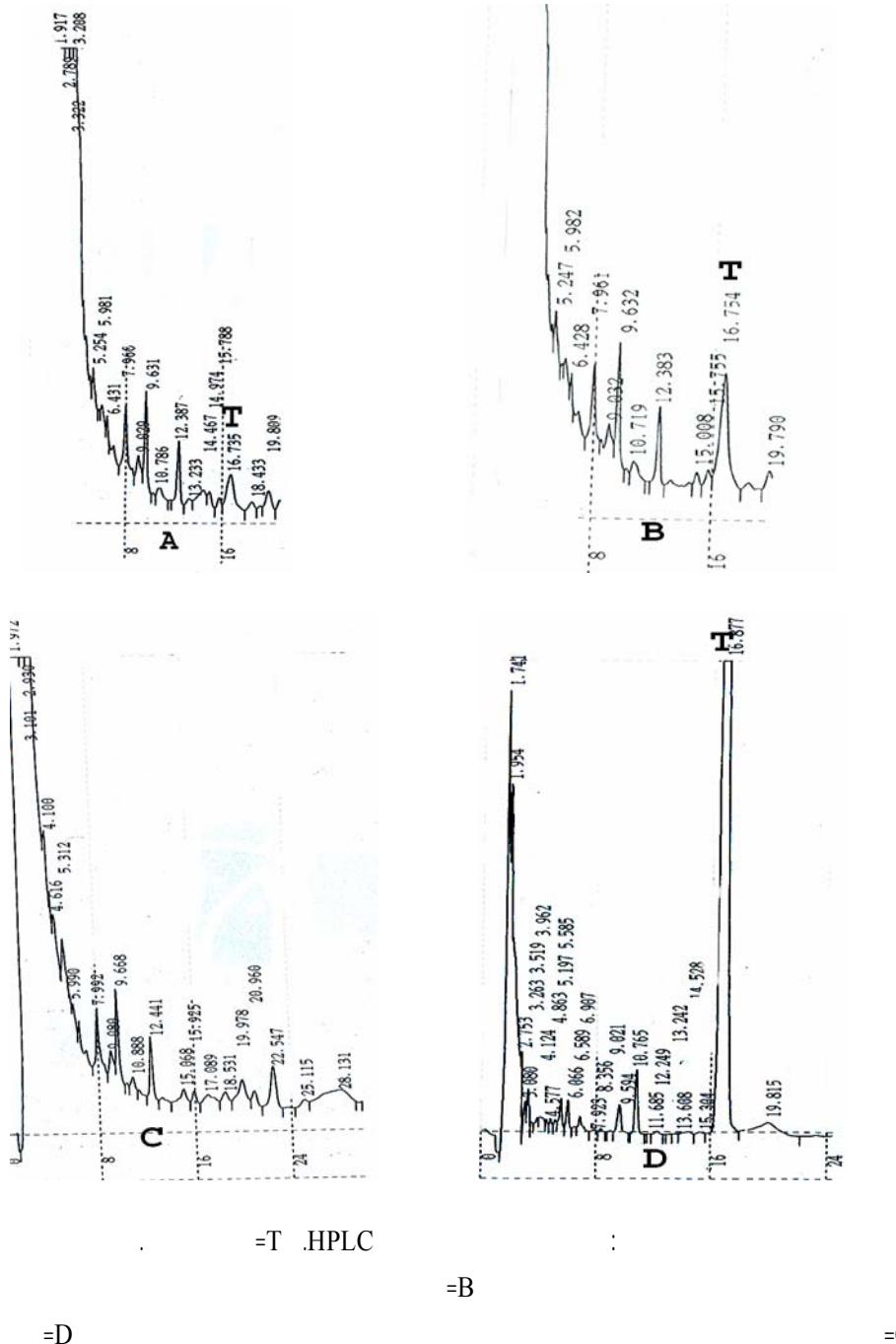
B  
C

E A.

D C

C PVP





Kin 2,4-D NAA MS  
MS B5 MS  
*Taxus*  
( )  
*T. baccata*

MS B5

( ) ( )  
Kin 2,4-D MS

Kin NAA  
2,4-D NAA ( )  
Kin Taxus

( )  
B5 WPM *T. media* *T. baccata* ( )  
WPM B5 B5  
*Taxus*  
B5 ( ) C ( )

( )

## REFERENCES

3. Cusido, R. M., J. Palazon, M. Bonfill, A. Nania- Osorio, C. Morales, & Pinol, M.T., 2002. Improved paclitaxel and baccatin III production in suspension cultures of *Taxus madia*. Biotechnol. Pro. 18: 418-423.
4. Cusido, R. M., J. Palazon, A. Navia- Osorio, M. Bonfill, C. Morales, & M. T. Pinol. 1999. Production of taxol and baccatin III by a selected *Taxus baccata* callus line and its derived cell suspension culture. Plant Science, 146: 101-107.
5. Fornal, S., D. D. Eposti, A. Navia- Osorio, R. M. Cusido, J. Palazon, M. T. Pinol, & N. Bagni. 2002. Taxol transport in *Taxus baccata* cell suspension cultures. Plant physiol. Biochem., 40: 81-88.
6. Gamborg, O. L. & G. C. Phillips. 1997. Plant cell, tissue and organ culture. Springer Verlag, Germany.

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7. Ketchum, R. E. B., C. D. Rithner, D. Qiu, Y. S. Kim, R. M. Williams, & R. B. Croteau. 2003. *Taxus* metabolomics: methyl jasmonate preferentially induced production of taxoids oxygenated at c-13 in *Taxus x media* cell cultures. *Phytochemistry*, 62: 901-909.
  8. Ketchum, R.E.B. & R. Croteau. 1998. Recent progress toward an understanding of taxol biosynthesis in plant cell cultures. Elsevier Science, Amesterdam, pp. 339-348.
  9. Kim, S., H. K. Choi, J. H. Kim, H. S. Lee, & S. S. Hong. 2001. Effect of osmotic pressure of paclitaxel production in suspension cell cultures of *Taxus chinensis*. *Enz.Mic.Tech.*, 28: 202-209.
  10. Kim,J.H., I. S. Kang, H. K. Choi, S. S. Hong, & H. S. Lee. 2002. A novel prepurification for paclitaxel from plant cell cultures. *Pro. Biochmeistry*, 37: 679-682.
  11. Kwon, I.C., Y. J. Yoo, J. H. Lee, & J. O. Hyun. 1998. Enhancement of taxol production by *in situ* recovery of product. *Proc. Biochmeistry* , Vol., 33, No. 701-707.
  12. Menhard, B., W. Eisenreich, P. J. Hylands, A. Bacher, & M. H. Zenk. 1998. Taxoid from cell culture of *Taxus*. *Phytochemistry*, 49: 113-125.
  13. Mihaljevic, S., I. Bjedov, M. Kovac, D. L. Levanic, & S. Jelaska. 2002. Effect of explant source and growth regulators on *in vitro* callus growth of *Taxus baccata* L. *Washingtonii*. *Food Technol. Biotechnol.* 40 (4): 299-303.
  14. Navia- Osario, A., H. Garden, M. R. Cusido, J. Palazon, A. W. Alfermann, & M. T. Pinol. 2002. Taxol and baccatinIII production in suspension culture of *Taxus baccata* and *T. wallichiana* in an airlift bioreactor. *J. Plant Physiol.* 159. 97-102.
  15. Nicolaou, K. C., R. K. Guy, & P. Potier. 1996. Taxoids: new weapons against cancer. *Sci. Amer:* Jun 841-86.
  16. Parc, G., A. Canaguier, P. Landre, R. Hocquemiller, D. Chriqui, & M. Meyer. 2002. Production of taxoids with biological activity by plants and callus culture from selected *Taxus* genotypes. *Phytochemistry* 59: 725-730.
  17. Pestchanker, L. J., S. C. Roberts, & M. L. Shuler. 1996. Kinetics of taxol production and nutrient use in suspension culture of *Taxus cuspidata* in shake flasky and a Wilson- type bioreactor. *Enzyme and Microcial Technology*, 19: 256-260.
  18. Srinivasan, V., L. Postchanker, S. Moser, T. G. Hirsuna, R. A. Taticek, & M. R. Shuler. 1995. Taxol production in bioreactor: kinetic of biomass accumulation, nutritent and taxol production by cell suspension culture of *Taxus baccata*. *Biotechnology and Bioengineering*. 47: 666-676.
  19. Theodoridis, G., C. F. De Jong, G. Laskaris, & R. Verpoorte. 1998. Application of SPE for the HPLC analysis of taxanes from *Taxus* cell cultures. *Chromatographia*. Vol. 47, No. 1/2.
  20. Vanisree, M., C. Y. Lee, S. F. Lo, S. M. Nalawade, C. Y. Lin, & H. S. Tsay. 2004. Studies on the production of some important secondary metabolite from medicinal plants by plant tissue cultures. *Bull, Aead. Sin.* 45: 1-22.
  21. Yuan, Y. J., C. Li, Z. D. Hu, & J. C. Wu. 2002. A double oxidative burst for taxol production in suspension cultures of *Taxus chinensis* var. *mairei* induced by oligosaccharide from *fusarium oxysprum*. *Enz. and Mic.Tech.*30: 774-778.
  22. Yuan, Y. J., C. Li, Z. D. Hu, J. C. Wu, & A. P. Zeny. 2002. Fungal elicitor- induced cell apoptosis in suspension cultures of *Taxus chinensis*\_var. *mairei* for taxol production. *Proc. Biochem.*, 38: 193-198.
  23. Zang, C. H., J. Y. Wu, & G. Y. He. 2002. Effect of inoculum size and age on biomass growth and paclitaxel production of elicitor- treated *taxus yunnanensis* cell cultures. *Appl. Microbiol. Biotechnol.*, 60: 396-402.
  24. Zhong, J. J. 2002. Plant cell culture for production of paclitaxel and other taxanes. *J. Biosci. Bioeng.* Vol. 94, No.6: 591-599.