

***Catharanthus roseus* L.**

HPLC

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/ / / /

(2018/ 1 / 10 2014/ 3 /20)

Catharanthus roseus L.

0.5 0.3 0.2 0.1 0.0 BA / 6 / 30 MS
 2,4-D / 0.75 /
 High Performance Vincristine Vinblastine
 .(HPLC) Liquid Chromatography.
 / 0.75 BA / 0.3 MS %14.47 1.907
 2,4-D / 0.75 .2,4-D
 % 9.15 0.496
 %11.90 0.717 2,4-D / 0.75 BA / 0.2
 / 0.75 BA / 0.3 MS
 (13.536) Vinblastine 2,4-D
 (18.886) (975021) Vincristine (255647)
 MS 2,4-D / 0.75
 Vinblastine 2,4-D / 0.75 BA / 0.2
 BA / 0.3 (12.809) (318395)
 (18.139) (577979) Vincristine 2,4-D / 0.75
 2,4-D / 0.75 BA / 0.2
 (18.309) (13.632) (964402) (1892650) Vincristine Vinblastine

.BA Vincristine Vinblastine :

Identification of Vinblastine and Vincristine in Callus of *Catharanthus roseus* L. by High Performance Liquid Chromatography (HPLC) Apparatus

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ABSTRACT

Parts of leaves, nodal explant, and internodes of *Catharanthus roseus* were cultured on solid MS medium supplemented with 30 gm / L sucrose, 6 mg / L agar with addition BA at 0.0, 0.1, 0.2, 0.3, 0.5 mg/ L with 0.75 mg /L 2,4-D for callus initiation and growth. Vinblastine and Vincristine were identified in these calli by using High Performance Liquid Chromatography.(HPLC). Data refers: highest fresh weight of callus and highest protein percentage 1.907 gm, 14.47% were achieved respectively from cultured parts of leaves on MS medium supplemented with 0.3 mg/ L BA with 0.75 mg/L 2,4-D. cultured nodal explant on MS medium supplemented with 0.75 mg/ L 2, 4-D produced highest fresh weight of callus and highest protein percentage 0.496 gm, 9.15% respectively, culture internodes explant on MS medium supplemented with 0.2 mg/ L BA and 0.75 mg/ L 2,4-D produced highest fresh weight of callus and highest protein percentage 0.717 gm, 11.90 % respectively. The callus produced from cultured parts of leave on MS medium supplemented with 0.3 mg/ L BA and 0.75 mg/L 2,4-D gave highest absorption value for Vinblastine at retention time (13.536) with detected area (255647). highest detected area was (975021) at retention time (18.886) for Vincristine assessed from callus produced from cultured parts of leave on MS medium supplemented with 0.75 mg/L 2,4-D, callus produced from cultured nodes on MS medium supplemented with 0.2 mg/ L BA and 0.75 mg/ L 2,4-D gave highest detected area for Vinblastine (318395) at retention time (12.809) but culture nodes on MS medium supplemented with 0.3 mg/ L BA with 0.75 mg/L 2,4-D gave highest detected area (577979) for Vincristine at retention time (18.139), callus produced from cultured internodes on MS medium supplemented with 0.2 mg/ L BA and 0.75 mg/ L 2,4-D gave highest absorption value for Vinblastine and Vincristine (1892650) and (964402) at retention time (13.632) (18.309) respectively.

Keywords: *Catharanthus roseus* plants, Callus, Vinblastine, Vincristine, BA.

Vinca rosea

Catharanthus roseus (L) G. Don

Apocyanaceae

(2003)

(Gilman and Howe, 1999)

100

80-40

(1986)

.(2000)

40

Serpentine Ajmalicine

Vinblastine Vincristine

.....

.(Van der Heijden *et al.*, 2004 ; Leveque *et al.*, 1996) Hypertension

(Umamaheswari and Lalitha, 2007)

bioconversion

.(Yong *et al.*, 2008 Bhojwani and Razdan, 1996 Phillipson, 1990)
(Hartmann *et al.*, 2002)

(Organogenesis)

(1987 2002)

91.39 Raouf *et al.*, (2008)

NAA / 2.0 BA / 4.42 → MS *Vinca minor*

BA / 7.21 → 129.75

2.25

Taha *et al.*, (2008) NAA / 2.0

5 2,4-D / 1.0 Kin / 1.0 → MS

BA / 1.0 NAA / 1.0 → MS

Kalidass *et al.*, (2010)

/ 0.09 MS

2,4-D / 0.11 Kin / 0.1

BA / 0.2 NAA

/ 1.0 BA / 0.5 MS

(2011)

3 %92.2

NAA

NAA / 0.5 4.7 / 9

%100

Yuan *et al.*, (2011)

MS BA / 1.0

/ 1.0 2,4-D / 1.0 → MS

%80

.TDZ / 0.1 NAA

2 NAA / 0.1 BA / 0.5 → MS

MS

Talebi *et al.*, (2012)

Vinca Molchan *et al.*, (2012) .BA / 1.0 NAA / 5.0

7 9.5

NAA / 0.2 MS *minor*

/ 0.5 → MS

Srinivasan (2012)

NAA / 0.25 BA / 0.5 → MS BA

2.0 → MS

Vardhan *et al.*, (2012) .IBA / 0.25

Verma *et al.*, (2012) . 8-6

2,4-D /

.....

(50)

(2002) A.O.A.C. Micro-kieldahl

%100 (1)

2,4-D / 0.75 BA / 0.3 MS 1.907

%50 (1990) DNA

(1) BA / 0.1 2,4-D / 0.75

2,4-D / 0.75 BA / 0.1 12

(2011) (Purohit, 1999 1996)

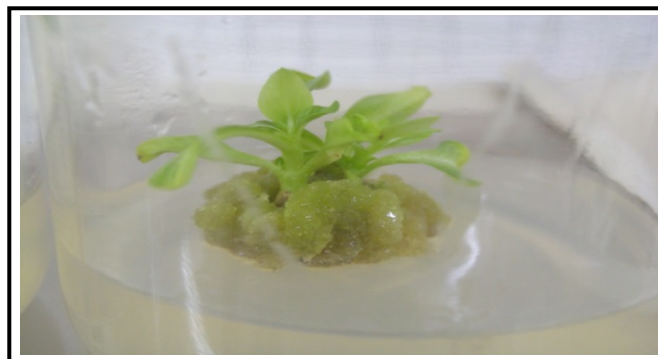
MS *Catharanthus roseus* L. :1

50 2,4-D / 0.75 BA

| | (%) | (%) | () | (%) | 2,4-D / | BA / |
|------|-----|-------|-------|-----|---------|------|
| 11.6 | 50 | 12.35 | 1.148 | 100 | 0.75 | 0.0 |
| 12.0 | 50 | 13.77 | 1.819 | 100 | | 0.1 |
| - | - | 13.95 | 1.833 | 100 | | 0.2 |
| - | - | 14.47 | 1.907 | 100 | | 0.3 |
| - | - | 13.86 | 1.530 | 100 | | 0.5 |

%5

*
*



0.1 MS *Catharanthus roseus* L. :1

50 2,4-D / 0.75 BA /

(2)
 %100 2,4-D / 0.75 BA
 0.75 0.496
 (-2) 2,4-D /
 / 0.2 0.717 .%9.15
 %11.90 .(-2) 2,4-D / 0.75 BA

(Hopkins and Hiiner , 2004 ; 2002 ; 1988)

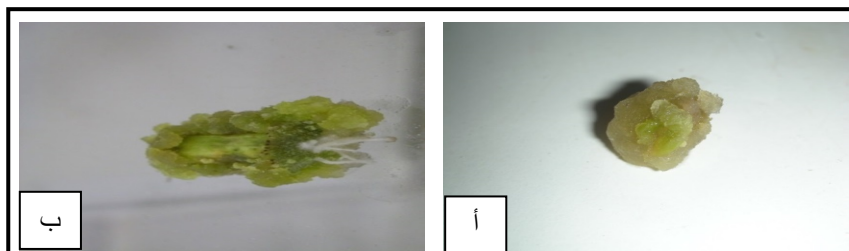
***Catharanthus roseus* L.**

:2

50 2,4-D / 0.75 BA MS

| | | | | | | 2,4-D / | BA / |
|-------|-------|-----|------|-------|-----|---------|------|
| (%) | () | (%) | (%) | () | (%) | | |
| 8.78 | 0.432 | 100 | 9.15 | 0.496 | 100 | 0.75 | 0.0 |
| 11.54 | 0.711 | 100 | 8.70 | 0.307 | 100 | | 0.1 |
| 11.90 | 0.717 | 100 | 8.93 | 0.369 | 100 | | 0.2 |
| 9.10 | 0.471 | 100 | 7.14 | 0.224 | 100 | | 0.3 |
| 9.13 | 0.457 | 100 | 7.02 | 0.204 | 100 | | 0.5 |

.%5



/ 0.75 MS *Catharanthus roseus* L. : :2
 2,4-D / 0.75 BA / 0.2 MS : 2,4-D
 50

Vincristine Vinblastine

4 3

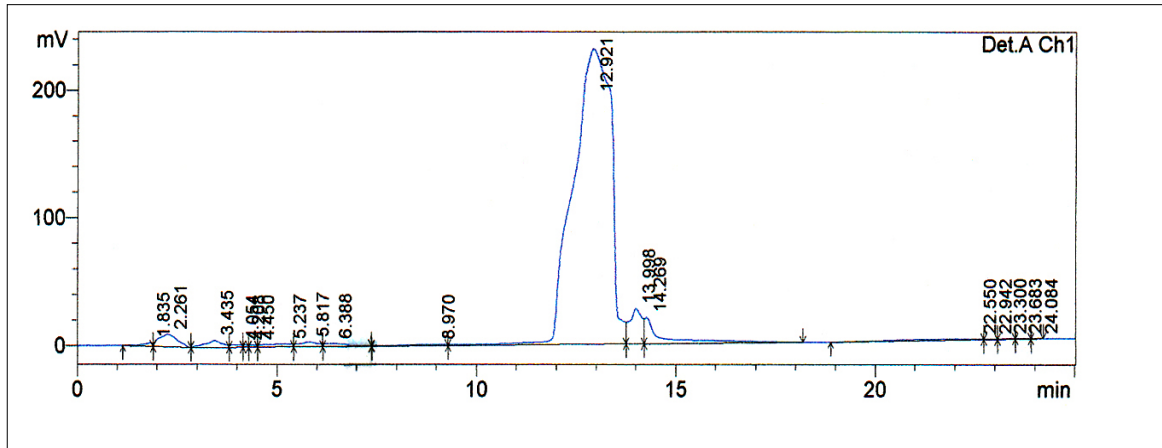
(12.921) Vinblastine

Vincristine

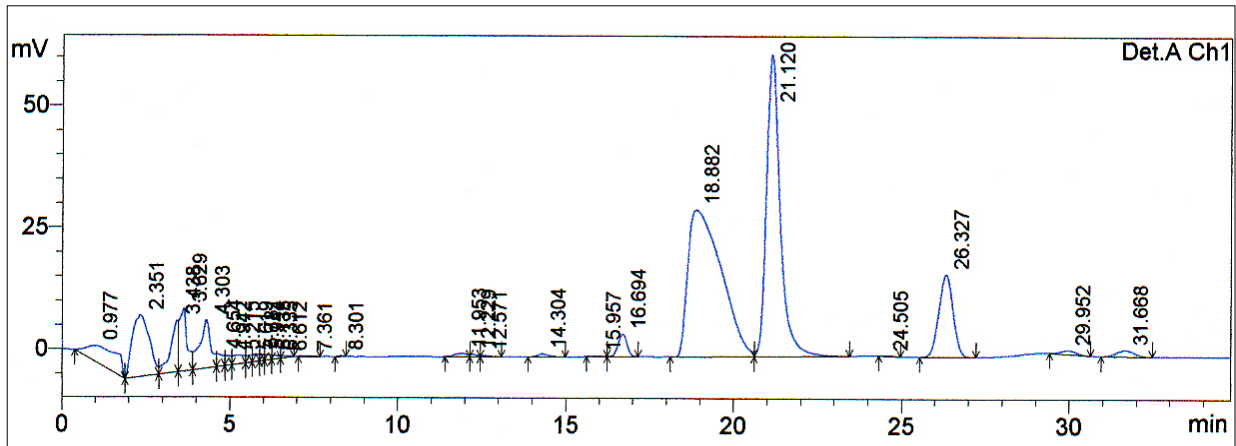
(15153803)

(2095603)

(18.882)



() :3



() :4

Vincristine Vinblastine

(3)

0.75

BA

MS

C. roseus

2,4-D /

0.75

BA /

0.3

2,4-D. /

(5)

(255647)

(13.536)

Vinblastine

14.47%

1.907

2,4-D /

75.0

BA /

0.3

2,4-D / 0.75 (18.886)

Vincristine

(1)

.(6) (975021)

:3

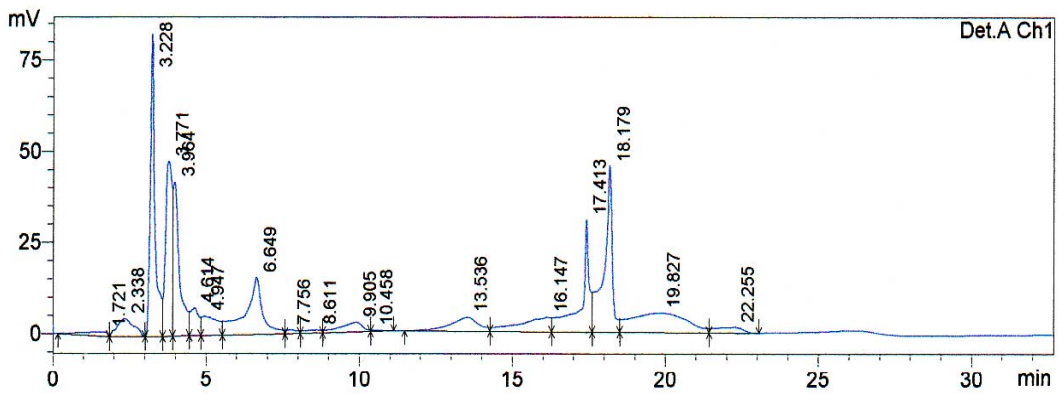
BA

MS

Catharanthus roseus L.

50 2,4-D / 0.75

| Vincristine | | Vinblastine | | 2,4-D / | BA / |
|-------------|---------|-------------|---------|---------|------|
| | R.t () | | R.t () | | |
| 975021 | 18.886 | 70435 | 12.945 | 0.75 | 0.0 |
| 182505 | 19.626 | 197909 | 12.968 | | 0.1 |
| 508113 | 18.038 | 254389 | 13.501 | | 0.2 |
| 851585 | 18.179 | 255647 | 13.536 | | 0.3 |
| 152537 | 19.001 | 176110 | 13.097 | | 0.5 |
| 2095603 | 18.882 | 15153803 | 12.921 | | |



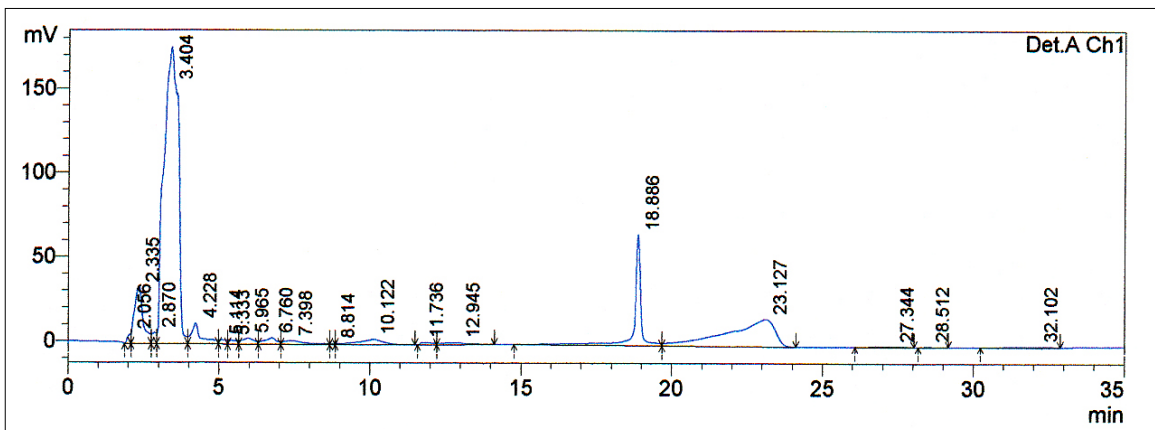
Catharanthus

()

:5

50 2,4-D / 0.75 BA / .3 0 MS

roseus L.



Catharanthus

() :6

50 2,4-D / 0.75 MS

roseus L.

Vincristine Vinblastine

(4)

/ 0.75 BA MS *C. roseus*

2,4-D / 0.75 BA / 0.2

2,4-D

(7) (318395) (12.809) Vinblastine

Vincristine 2,4-D / 0.75 BA / 0.3

(8) (577979) (18.139)

(Hopkins and Hiiner, 2004)

:4

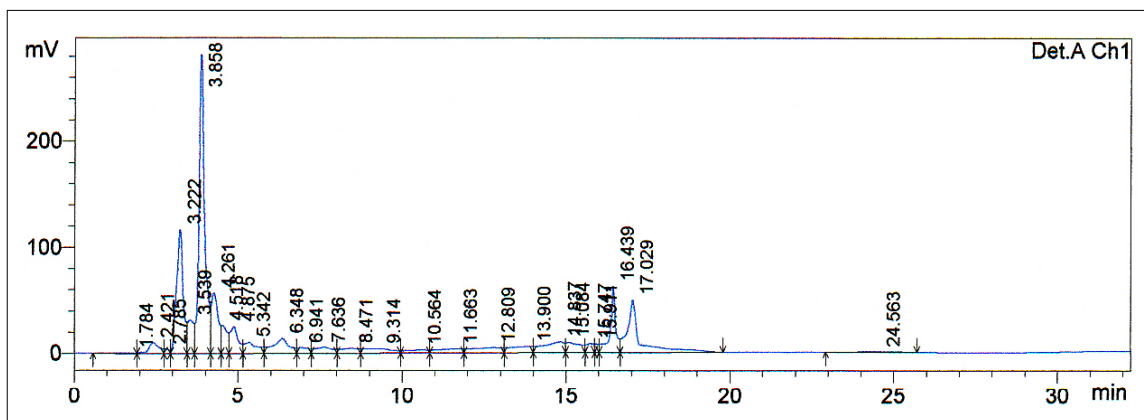
2,4-D / 0.75 BA

MS

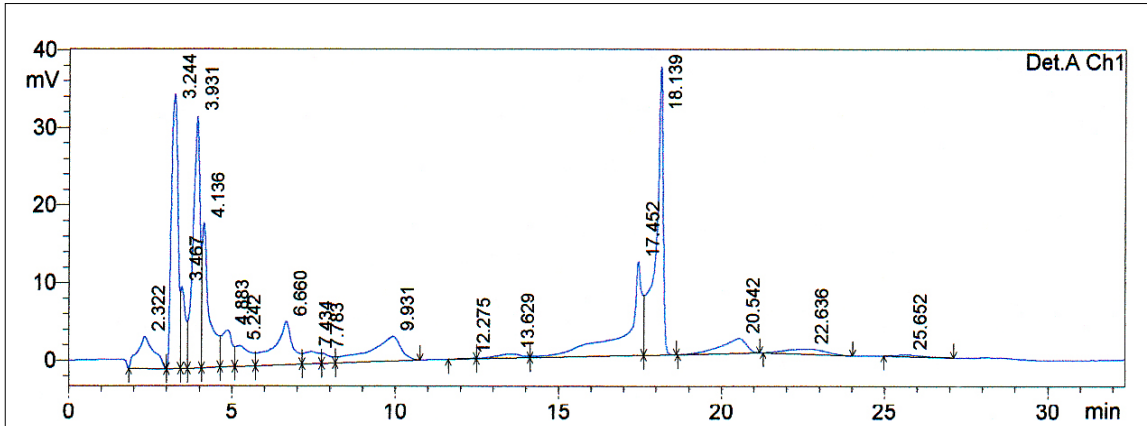
Catharanthus roseus

50

| Vincristine | | Vinblastine | | 2,4-D / | BA / |
|-------------|---------|-------------|---------|---------|------|
| | R.t () | | R.t () | | |
| 338457 | 18.708 | 1095 | 11.608 | 0.75 | 0.0 |
| 99321 | 19.055 | 82312 | 12.422 | | 0.1 |
| | | 318395 | 12.809 | | 0.2 |
| 577979 | 18.139 | 2977 | 12.275 | | 0.3 |
| 42478 | 18.973 | 67197 | 12.657 | | 0.5 |
| 2095603 | 18.882 | 15153803 | 12.921 | | |



Catharanthus () :7
 50 2,4-D / 0.75 BA / 0.2 MS *roseus* L.



Catharanthus () :8
 50 2,4-D / 0.75 BA / 0.3 MS *roseus* L.

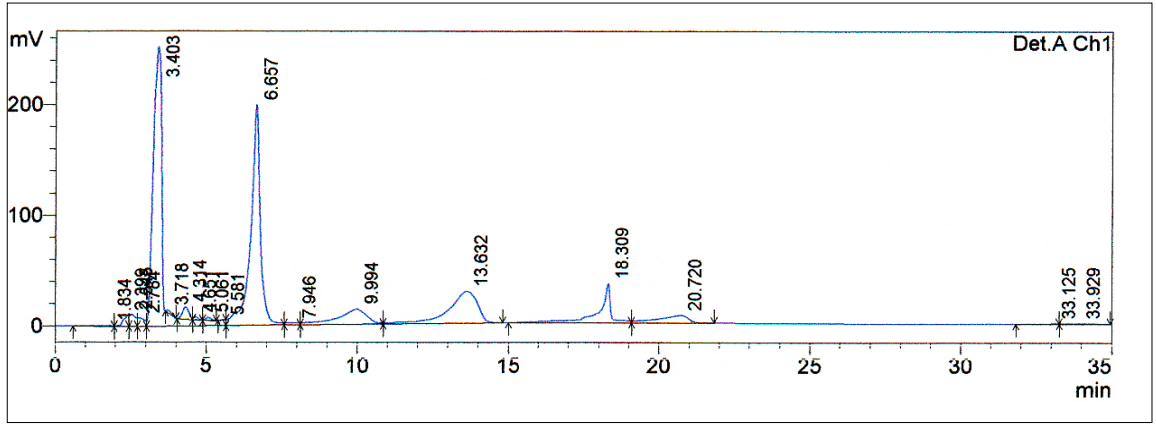
Vincristine Vinblastine (5)
 0.75 BA MS *C. roseus*
 2,4-D / 0.75 BA / 0.2 2,4-D. /
 (1892650) (13.632) Vinblastine
 (18.309) Vincristine
 (2) (9) (964402)
 .%11.90 0.717

BA MS *Catharanthus roseus* L. :5
 50 2,4-D / 0.75

| Vincristine | | Vinblastine | | 2,4-D / | BA / |
|-------------|---------|-------------|---------|---------|------|
| | R.t () | | R.t () | | |
| 468422 | 19.167 | | | 0.75 | 0.0 |
| 43908 | 19.202 | 113024 | 12.833 | | 0.1 |
| 964402 | 18.309 | 1892650 | 13.632 | | 0.2 |
| 801922 | 18.166 | 15242 | 13.644 | | 0.3 |
| 58043 | 19.460 | 88714 | 13.013 | | 0.5 |

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| | | | | |
|---------|--------|----------|--------|--|
| 2095603 | 18.882 | 15153803 | 12.921 | |
|---------|--------|----------|--------|--|



() :9

50 2,4-D / 0.75 BA / 0.2 MS

Catharanthus roseus L.

Vinblastine

Vincristine

".(2002)

.(2003)

".(1988)

".(1986)

".(2000)

Vinca rosea

.(2011)

".(1987)

".(1990)

.(1996)

.40-32 25 .

.*Glycine max*

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