

***Melissa officinalis* L.**

2,4- D BA

(2007/9/10 2007/6/4)

)

) *Melissa officinalis*

(/

"

(

Dichlorophenoxyacetic acid 2,4 - D Benzyl Adenine BA

10^{-7} 10^{-5} , 10^{-3}

. 50 25 (Murashige & Skoog) MS

1.5 (100 / 0.025)

MS 2,4-D BA

(10^{-5} , 10^{-3}) 2,4 - D BA

, (50) (25)

2,4 - 10^{-7}

3.9 3.7

BA 10^{-7} D

(9.0)

BA 10^{-5} 2,4 - D 10^{-7}

. 2,4 - D 10^{-5} (50)

Effect of BA and 2,4 – D on growth of nodes of *Melissa officinalis* L. *in vitro*

Hana S. Al – Saleh

Rehab A. AL – Baker

Department of Biology
College of Science
Mosul University

ABSTRACT

Melissa officinalis L. has been used for *in vitro* culture to study the effect of ethanol, sodium hypochlorite and Mercury Chloride (with different concentrations) on the viability of explant , controlling contamination and effect of addition 10^{-3} , 10^{-5} , 10^{-7} molar BA and 2,4 – D to MS medium , each was added to the culture medium alone or with interaction between them. The results showed that using Mercury Chloride as sterilant at 0.025 g/100ml for 1.5 min was the most effective , also the results showed that addition of BA and 2,4 – D to MS medium at different concentrations , affect variably the response of explants to initiate callus or to regenerate shoots , which was noticed at 25 and 50 days after culture . It was shown that 10^{-3} and 10^{-5} Molar of both BA and 2,4–D causes death of explants after 25 days of culture . Addition of 10^{-7} Molar of 2,4–D to the culture medium alone or with 10^{-7} Molar BA was effective in stimulating the explants to regenerate shoots with wellgrown leaves , shoots reached to 3.7 and 3.9 cm respectively represented by the mean of length, number of leaves grown were 9.0 on both treatments , It was observed that explants grown on medium with 10^{-7} and 10^{-5} Molar of 2,4 – D and BA respectively were able to regenerate few roots after 50 days of culture . The optimum treatment for callus production was 10^{-5} Molar of 2,4 – D .

(Lemon Balm) *Melissa officinalis* L.

2000

) Lamiaceae

(

(2004 ;2004 ;1993 ,)

. (Wolbling and Leonhardt , 1994 ; Grieve, 1976)

"

,

. (Anicic et al ., 2005 ; Koytchev et al. , 1999)

rosmarinic ferulic

(TLC)

.(Boyadzhiev and Dimitrova ,2006; Dimitrova et al., 1993)

(Koroch et al. , 2002 ; 1988)

. (1990)

Melissa officinalis

. 2,4 - D BA

:

Melissa officinalis L.

(1.5 1)

:

:

/

)

1.5 % 96

% 6

(:) (1 : 2)

(

(5 4 3 2 1)

(5)

.2,4 – D BA

(Murashige and Skoog , 1962)(MS)

:

/

100 / (0.025 0.05 0.1)

(7 - 5)

(2.0 1.5)

.

Melissa officinalis :

10^{-7} 10^{-5} , 10^{-3} MS 2,4 - D BA

(16) 1500 . ⁰ 22 (8)
(50 - 25)

·
:
-1
/

(24)
· (7 - 5)

:
(24)

(25)
(30) . (1)
(100 / 0.1)

100 / (0.025 0.05)
(100 / 0.025)
· (1.5)

:
:
25
-2
/

2,4 - D BA
 10^{-7} 10^{-5} 10^{-3} BA
· BA

,
10⁻³ 2,4 - D
2,4 - D 10^{-5}
2,4 - D 10^{-7}

2,4 – D BA .

2,4 – D 10^{-3} BA (10^{-7} 10^{-5} , 10^{-3})
. 2,4 - D 10^{-5} BA 10^{-3}
2,4 – D 10^{-5} BA 10^{-7} 10^{-5}
 10^{-3}
BA 10^{-5} . 2,4 - D 10^{-7} BA
2,4 - D 10^{-7}
 10^{-7} .
. (2) 2,4- D BA
: 1

MS 25 *Melissa officinalis*

2,4 – D BA

0.025		0.05		0.1		100 /
2.0	1.5	2.0	1.5	2.0	1.5	()
0.0	0.0	0.0	0.0	* 0.0	* 0.0	%

30 *

. :
: 50 /
50
 10^{-5} , BA 10^{-7}
 10^{-5} . BA
, 2,4 - D

2,4 - D 10^{-7}
· (3) (- 1)
2,4 - D BA 10^{-5}
BA 10^{-7} (- 1)
· 2,4 - D 10^{-5}
 10^{-7} 10^{-5} , 10^{-3} 2,4 - D 10^{-7}
2,4 - D BA 10^{-7} BA
,
(- 1)
2,4 - D BA 10^{-7} 10^{-5} 40
· (3) (- 1)

2,4 - BA *Melissa officinalis* : 2

MS		(25)	D
10^{-7} +	10^{-5} +	10^{-3}	BA 2,4 - D
			10^{-3}
*	*		10^{-5} * +
+ +	* +	+	10^{-7} + +

(+) (*)
(++) ()
· (5) :



	2,4 – D	BA		: 1
.		50	<i>Melissa officinalis</i>	
.	: BA	$10^{-5} + 2,4 - D$	$10^{-5} + MS$	/
.	: BA	$10^{-5} + 2,4 - D$	$10^{-7} + MS$	/
.				
.		: 2,4 – D	$10^{-7} + MS$	/
.	: BA	$10^{-3} + 2,4 - D$	$10^{-7} + MS$	/
.	: BA	$10^{-5} + 2,4 - D$	$10^{-7} + MS$	/
.	: BA	$10^{-7} + 2,4 - D$	$10^{-7} + MS$	/
.				

10 ⁻⁷		10 ⁻⁵		10 ⁻³		BA		
	()		()		()	2,4-D		
—	—	3.0	1.3	—	—		()	
—	—	—	—	—	—	—	—	10 ⁻³
—	—	—	—	—	—	—	—	10 ⁻⁵
9.0	3.9	8.0	3.5	8.0	3.6	9.0	3.7	10 ⁻⁷

()

Melissa officinalis

Huichao, ; 2004 ; Wolbling and Leonhardt ,1994)

(2006

/ (0.025)

(1.5) 100

. (1990 ; Street , 1977)

(1988 , ; Chand and Roy ,1980)

10⁻³

(2 1)

(1996 ; 1990 ; Raven et al. , 1986)

10⁻⁵ 2,4 - D 10⁻⁵
 , ; 1990 , ; Skoog and Miller , 1957) ,BA
 (1998

BA , BA 10⁻⁵

.(Wareing and Philips, 1978; Skoog and Miller, 1957)
 , 10⁻³ BA 10⁻⁷ 2,4 - D
 10⁻⁷ 10⁻⁵
 2,4 - D

. (Hooykass et al. , 1999 ; Bowes , 1999)

BA 10⁻⁵ 2,4 - D 10⁻⁷

. (Bowes , 1999 Skoog and Miller , 1957)

Melissa officinalis

.1993 ,

;

.1996

. 2004

.1988

.1990

. 2004

. 1990

.1998

REFERENCES

- Anicic, N.V. ; Dimitrijevic, S.; Ristic M.S. Petrovic S.S.; Petrovic, S.D. 2005. Antimicrobial activity of essential oil of *Melissa officinalis*, Lamiaceae. Hemijska industrija 59.(9/10) : pp.243-247.
- Bowes , B. G. 1999 . A Colour Atlas of Plant Propagation and Conservation . Manson Publishing Ltd. UK.
- Boyadzhiev, L. and Dimitrova V. 2006. Extraction and liquid membrane pre concentration of Rosmarinic acid from Lemon Balm *Melissa officinalis* L. separation Science and Technology 41 (5) : pp.877-886.
- Chand , S. and Roy , S.C. 1980 .Study of callus from different parts of *Nigella sativa* (Ranunculaceae) Experiential , 36 : pp.305 – 306 .
- Dimitrova , Z. ; Dimov , B. ; Manolova, N. 1993 . Antiherpes effect of *Mellissa officinalis* extracts . Acta Micobiol. ; 29 : pp.65 – 72 .
- Grieve , M. 1976. A Modern Herbal Penguin , Middlesex , England .
- Hooykass, P. J. J. ; Hall , M. A. and Libbenga , K. R. 1999. Biochemistry and Molecular Biology of Plant Hormones . Elsevier . Scientific Publication . Oxford .
- Huichao, L. 2006. Tissue culture and Rabid propagation of *Melissa officinalis*. Journal of Anhui Agriculture Science .34. 19: 4882p..
- Koytchev , R. ; Alken R.G. and Dundarov , S. 1999 . Balm mint extract (Lo-701) for topical treatment of recurring herpes. Phytomedicine ; 6: pp.225- 230 .
- Koroch , A.; Juliani , H.R ; Kapteyn , J. and Simon , J. E. 2002. *In vitro* regeneration of *Echinacea purpurea* from leaf explants . Plant Cell Tiss. Org. Cult. 69 : pp.79 – 83 .
- Murashige, T. and Skoog, F. (1962). A revised medium for rapid growth and bioassays with tobacco tissue culture. Physiol. Plant, 15: pp.473-497.
- Raven , P.H. ; Evert , R. F. and Eichhor , S.E. 1986 . Biology of plants . 4th . Ed. , Worth publishers , INC.
- Skoog , F. and Miller , C. O. 1957 . Chemical regulation of growth and organ formation in plant tissue cultured *Invitro* . Symp . Sco. Exp. Bio. , 11: pp.118-130 .
- Street , H.E. 1977 . Plant Tissue and Cell Culture. Black well scientific publication . Oxford , London , Edinburgh , Melbourne .
- Wareing , P. F. and Philips , I. D. J. 1978 . The Control of Growth and Differentiation of Plant . 2nd ed . Pergamon Press, Oxford .
- Wolbling , R.H. and Leonhardt K. 1994 . Local therapy of herpes simplex with dried extract from *Melissa officinalis* . Phytomedicine ; 1 : pp.25 - 31 .