

شبكة المعلومات الجامعية

بسم الله الرحمن الرحم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



بعض الوثائق الاصلبة تالفة



بالرسالة صفحات لم ترد بالاصل



Biotechnological studies on

potato (Solanum tuberosum L.) plants.

A thesis
Submitted for the degree of Ph.D. of Science in Botany

(Cell and Genetics)

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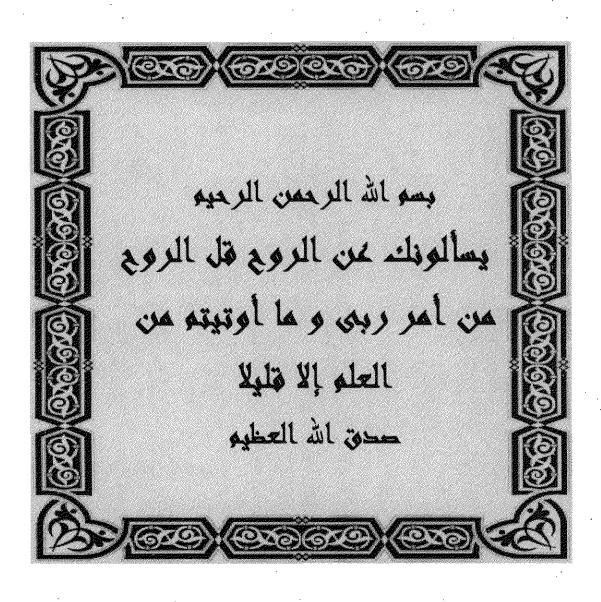
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Abstract

Potato plantlets were produced free from : PVA, PVM, PVS PVX, PVY and PLRV viruses, by a combination between different meristem sizes and chemotherapy (virazole). Three different meristem sizes were used (0.3, 0.5 and 1 mm) in a combination with five virazole concentrations (0, 80, 100, 120 and 150 mg/l). The studies showed that the most difficult virus to be removed completely was PLRV, where there was a must to use the highest-virazole concentration (150 mg/l) combined with the smallest meristem size (0.3 mm). Then, Random amplified polymorphic DNA (RAPD) markers were used to characterize and detect the variations which might be occurred as a result of virazole presence in potato tissues. Five treatments were used involving different virazole concentrations (0, 80, 100, 120 and 150 mg/l). Ten primers were run here, only six primers were found to be polymorphic.

Also, the effect of virazole on protein content in potato tissues was studied. This process was performed using SDS-PAGE technique for the five treatments of the same concentrations of virazole (0, 80, 100, 120 and 150 mg/l). The results showed that when virazole concentration increases, protein density also increases up to virazole concentration (150 mg/l), protein density here decreases. This may be due to plants excrete more protein to overcome the negative effect of virazole which delay potato growth. The effect of virazole on some isozymes activity was studied concerning four isozymes (peroxidase, esterase, alkaline phosphatase and acid phosphatase).

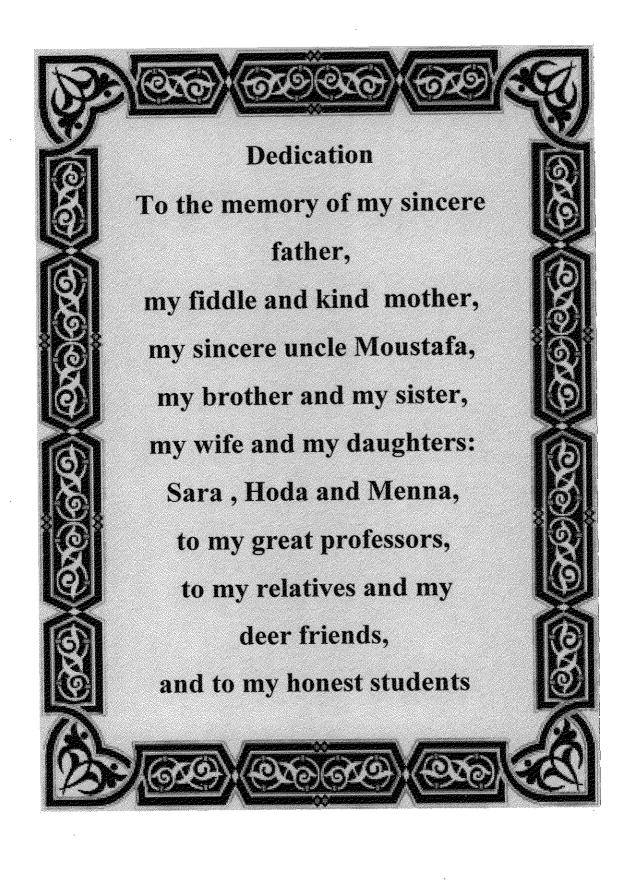
There is no any effect of virazole on isozyme peroxidase activity in potato tissues.

In case of esterase, increasing virazole concentration led to an increase in the density and the activity of the esterase isozyme.

The results showed also that virazole has a negative effect on the activity of acid phosphatase isozyme in potato tissues.

The final isozyme was alkaline phosphatase, where its activity was very high in control treatment (0mg/l virazole) while this activity was decreased in all the other treatments with the same degree (the higher virazole concentration had the same effect like the lower one), so the effect here of all virazole concentrations is similar which decreases alkaline phosphatase density and activity. Using virus-free potato plantlets, A trial to make an adjustment for transformation conditions in potato was carried out here. Agrobacterium tumefaciens (LBA4404) clones were used, where results were verified by both GUS Assay and PCR reaction.

Virus-free potag microtubers were produced, while the best treatment for microtubers production was that of (0.5) mg/i 2,4-D which gave 2.5 microtuber per plant with an average weight of 627 mg. Also, Potao minitubers were produced where two treatments were carried out here, the first one was involving plants which were cultured in vitro in MS supplemented with 2 mg/l silver thiosulphate (STS), and the other was involving plants which were cultured in normal MS without STS. It was found that the treatment of silver thiosulphate (STS) { 2mg/l} gave the best results for all the parameters.



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i

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Contents

Title	Page
l-Introduction	1
II- Review of Literature	5
III- Materials and Methods	38
IV- Results and Discussion	52
Production of virus-free potato plantlets Effect of meristem size and virazole on the percentage of survivals	. 52 55
Effect of meristem size and virazole on elimination of some potato viruses	57
Effect of virazole on DNA in potato tissues using RAPD Markers method	60
Effect of virazole on protein in potato tissues Effect of virazole on isozyme peroxidase activity in potato tissues.	71 80
Effect of virazole on isozyme esterase activity in potato tissues Effect of virazole on isozyme acid phosphatase activity in potato tissues.	82 84
Effect of virazole on isozyme alkaline phosphatase activity in potato tissues.	86
Adjustment of transformation conditions in Potato.	88
Production of potato microtubers	93
Production of potato minitubers	98
V -Summary	102
VI-References	108
VII-Arabic summary	

List of Tables

Table no.		Page
Table (1)	Chemical ingredient of Murashige and Skoog's medium	40
Table (2)	Different treatments used for virus elimination.	41
Table (3)	Code and sequence of primers used in the present stubby	43
Table (4)	Detection of Potato viruses A, M, S X, Y, and PLRV in Potato (<i>Solanum tuberosum L</i> . cv. Lady Rosetta) plantlets using ELISA test.	54
Table (5)	Summation number of polymorphic PCR banding patterns using six primers with all samples.	62
Table (6)	The total specific polymorphic bands in each sample.	63
Table (7)	Molecular weights of common amplified bands between two or more samples.	64
Table (8)	Number of bands in Primer 1.	65
Table (9)	Number of bands in Primer 2.	66
Table (10)	Number of bands in Primer 3.	67
Table (11)	Number of bands in Primer 4.	68
Table (12)	Number of bands in Primer 5.	69
Table (13)	Number of bands in Primer 6.	70
Table (14)	Protein Zero-0ne table	73
Table (15)	Bands parameters in all lanes.	76
Table (16)	Total specific polymorphic bands in each protein sample	79
Table (17)	Percentage of calli formation and regeneration	89
Table (18)	Effect of 2,4-D and Silver thiosulphate (STS) on production of Potato (Solanum tuberosum L. cv. Lady Rosetta) microtubers.	96
Table (19)	Effect of Silver thiosulphate (STS) on production of potato	100
	(Solanum tuberosum L. cv Lady Rosetta) minitubers from	
	micropropagated plants in green house.	

List of Figures

Figure no.		n
Figure (1)	Potato tubers (<i>Solanum tuberosum L.</i> cv. Lady Rosetta).	Page 50
Figure (2)	Sprouted Potato tubers.	50
Figure (3)	Potato leaflets incubated with Ms liquid media with Agrobacterium tumefaciens. The binary T1 plasmid pBI121 carrying NPT-II as	50
Figure (4)	selectable marker for kanamycin resistance and GUS genes beside the T-DNA left and right borders.	51
Figure (5- 10)	RAPD profile generated by primers (1,2,3,4,5 and 6)	61-66
Figure (11)	Rosetta).	74-75
Figure (12)	Different protein bands in potato cv. Lady Rosetta.	78
Figure (13 and 14)	Different bands and Zymogram of peroxidase isozyme patterns in potato leaves.	80
Figure (15	Different bands and Zymogram of esterase isozyme patterns in potato leaves.	82
and 16) Figure (17 and 18)	Different bands and Zymogram of acid phosphatase isozyme patterns in potato leaves.	84
Figure (19 and 20)	Different bands and Zymogram of alkaline phosphatase isozyme patterns in potato leaves.	86
Figure (21)	Potato formed callus	91
Figure (22) Figure (23)	Potato regenerated callus GUS-expressing blue spots on callus of potato Agarose gel (1.5%) in TAE buffer stained with	91 92
Figure (24)	ethidium bromide showed the detection of GUS gene.	92
Figure (25)	Potato microtubers	95
Figure (26)	Histogram represent the effect of 2,4-D and STS on tuberization	97
Figure (27) Figure (28) Figure (29)	Potato plants grown in green house. Potato minitubers. Potato plant carrying minirtubers.	99 100 101