TRANSFER OF GLUCANASE GENE TO RESIST LATE BLIGHT DISEASE IN POTATO

By

HEBA SAYED SHEBL

B.Sc. Agric. Sci. (Genetics), Ain Shams University, 2008

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ABSTRACT

Heba Sayed Shebl Mohammed.Transfer of Glucanase Gene to Resist Late Blight Disease in Potato. Unpublished M.Sc.,Thesis, Department of Genetic, Faculty of Agriculture, Ain Shams University,2017.

Potato late blight is a pandemic disease caused by the highly virulent *Phytophthora infestans* fungus. Two different types of explants (internode and leaf) were cultured for induction and regeneration from three potato cultivars (Spounta, Diamont and Desiree). The highest value of Desiree leaf explants was 80% induced from develop callus in 2.4.Dmedia.The best value of maximum shoot regeneration was 90.3 for Spounta in NAA and 4mg/L KIN media form internode and 88.4 for Desiree in BA, IAA and GA3 media from leaf proved to be more effective. Cloning of glucanase gene in pRI 201-AN plasmid which carrying kanamycin resistance (nptII) gene were perfomed and followed by transformation in *Agrobacterium tumefaciens* strain LBA4404 which used for plant transfection. Nucleotide and amino acid sequences of transformed *Agrobacterium* were analyzed. The putatively transgenic plants were confirmed using polymerase chain reaction (PCR) for genomic and cDNA.

Keywords: Potato, Late blight, Glucanase gene

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LIST OF ABBREVIATIONS

BA	:	Benzyl amino purine
Bp	:	Base pair
^{o} C	:	Celsius degree
$CaCl_2$	:	Calcium chloride
c DNA	:	Complementary synthesized from a mRNA
cm	:	Centimeter
dd H_2O		Distilled deionized water
DNA	:	Deoxyribonucleic acid
DNA ase		deoxyribo nuclease enzyme that catalyzesThe hydrolyticcleavage of phosphodiesterlinkages in the DNA backbone.
2,4-D	:	2,4-dichlorophenoxyacetic acid
et al.		Et alia
IAA		Indole acetic acid
in vitro	:	In an artificial environment outside the livingorganism
Kb	:	kilobase
Kinetin	:	Furfuryl amino purine
LB Luria	:	Bertani media
M	:	Molar
Min	:	Minute
Mg	:	Milligram
µg	:	Microgram
Ml	:	Milliliter
µL	:	Microliter
mM	:	Millimolar
mm	:	Milimeter
mRNA	:	Messenger ribonucleic acid
MS		Murashige and Skoog (1962)
NaOH	:	Sodium hydroxide
Nptll	:	Neomycin phosphor transferase gene

O. D.	:	Optical density
PCR	:	Polymerase Chain Reaction
P35S	:	Cauliflower mosaic virus 35S promoter
pH	:	Per hydrogen
RNA	:	Ribonucleic acid
Rpm	:	Revolutions per minute
RT-PCR	:	Reverse transcription polymerase chain reaction
TAE	:	buffer solution containing Tris base, aceticacid and EDTA
Ti plasmid	:	Tumor inducing plasmid
UV	:	Ultraviolet
%	:	Percentage