

## عنوان مقاله:

MAPK cascades is activated through StMAPKKKε by Phytophthora infestans infection

## محل انتشار:

چهارمین کنگره بین المللی و شانزدهمین کنگره ملی ژنتیک (سال: 1399)

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## خلاصه مقاله:

**Background and Aim:** Innate immunity is generally initiated by recognition of conserved pathogen-associated molecular patterns (PAMPs) such as chitin. In turns, PAMPs are perceived by cell membrane-embedded pattern recognition receptors (PRRs). Receptor-like cytoplasmic kinases (RLCKs) are directly activated by ligand-activated PRRs and initiate pattern -triggered immunity (PTi). RLCKs transducing the perception of invading pathogens into effective defence responses, eventually leading to activation of a series of immune responses, including the expression of defence genes, reactive oxygen species (ROS) production and activation of Mitogen-activated protein kinase (MAPK) cascades. The direct links between PAMP perception to MAPK cascades in plants remain largely unknown, in this study. According to previous studies and protein docking analysis, we try to shed light on relationship between PAMP perception and StMAPKKKε as a trigger of MAPK cascades following *P. infestans* infection in potato. **Methods:** In order to investigate engagement of StMAPKKKε in biochemical pathways, the candidate genes involved in MAPK signalling cascades activated by fungal pathogens was used in String server. Next, Easymodeller V software was used to model selected proteins based on homology modelling. The models were optimized and validated, using Chimera UCSF 1.8.1 and Swiss-Pdb viewer 2.10.1. The models were then docked using the Hex 1.0.0 software and the ZDOCK server. **Results:** The results of string and docking analysis showed a good linking among the proteins. PAMP receptor chitin elicitor receptor kinase 1 (StCERK1) perceives immune signalling transmits to an MAPK signalling cascade through a MAPK kinase kinase, the StMAPKKK?. Also *P. infestans* RXLR effector PexRD2 activates a MAPK cascade through interaction with the kinase domain of StMAPKKK?. **Conclusion:** It seems that StMAPKKKε has multi roles to modulate defensive mechanisms in plants to combat pathogens, suggesting that different motif of StMAPKKKε can be good candidates for gene editing.

## کلمات کلیدی:

StMAPKKKε, MAPK cascade, StCERK1

