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Development of Transgenic Peppers Resistant to A New CMV Pathotype

Yun Hee Lee^{1,3*}, Min Jung¹, Ju Yeon Kim¹, Yoon Sik Park¹, Soon Ho Choi¹, Dong Bo Shim¹,
Nam Han Her¹, Jang Ha Lee¹, Mi Yeon Lee², Ki Hyun Ryu², Kee Yoeup Paek³, Seung Gyun Yang¹ and
Chee Hark Harn¹

¹Biotechnology Institute, Nong Woo Bio Co., Ltd., Yeosu, Gyeonggi, Korea;

²Dept. of Environmental and Life Science, Seoul Women's Univ., Seoul, Korea;

³Dept. of Horticultural Science, Chungbuk National Univ., Chungbuk, Korea

Objectives

To develop a pepper transgenic line resistant against a new CMV pathotype

Materials and Methods

1. Material: Several pepper inbred lines were transformed by a *CMV^{Po}-CP* gene.
2. Methods: For transformation, the callus induced transformation (CIT) method was used with *Agrobacterium* strain EHA105.

Results and Discussion

Thanks to a brilliant breeding method, pepper breeders had been able to develop CMV resistant pepper against CMV^{Po} pathotype and consequently produced many different pepper varieties. Those varieties have been commercially available for last several years in Korea. Very recently, however, those CMV resistant varieties have become susceptible by a new CMV strain, called CMV^{P1} pathotype that has not been identified officially yet. In other words, the peppers that have been resistant to the Po type are now susceptible by P1 type pathogen. The CMV^{P1} outbreak has been so rapid during last a couple of years and this has raised a concern that the outbreak could affect the pepper industry in Korea. Since there is no resistant pepper plant, a *CP* gene was cloned from CMV^{Po} pathogen and subcloned into pCambia vector. Using CIT method for pepper transformation, we have obtained 10 different To plants transformed by a *CMV^{Po}-CP* gene. Around 600 T1 peppers were exposed to CMV^{P1} pathogen and the resistant transgenic peppers were selected. A total of 19 peppers were found as immune to CMV^{P1} infection. Currently, transgenic peppers resistant to CMV^{P1} were self-crossed for further research and these materials would be used in breeding program for biosafety assessment.

