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**One-step multiplex reverse transcription-polymerase chain reaction for the simultaneous detection for barley virus diseases****Bong Choon Lee, Ju Young Bae, Sang Min Kim, Ji-Eun Ra, Nak Jung Choi, Man Young Choi and Ki Do Park**  
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Virus disease surveys on barley cultivation areas were conducted during 2014-2015 in Korea. In this result, we detected *Barley yellow mosaic virus* (BaYMV), *Barley mild mosaic virus* (BaMMV) and *Barley yellow dwarf virus* (BYDV) by RT-PCR from barley leaves. These viruses are of great economic importance for wheat and barley, causing significant quantitative and qualitative losses in yield. In this study, a multiplex reverse transcription polymerase chain reaction (mRT-PCR) method was developed for the simultaneous detection of these three viruses. Virus-infected barley leaves were collected from naturally infected barley in several provinces of Korea. Primers were designed from conserved regions of the capsid protein (CP) gene of viruses and the GenBank accession numbers for the CP coding genes are as follows: D01091 (BaYMV), L49381 (BaMMV), and NC021481 (BYDV). Three sets of specific primers targeted to the CP coding genes of BaYMV, BaMMV and BYDV were used to amplify fragments that were 594 bp, 461 bp, and 290 bp, respectively. The one-step mRT-PCR assay proved to be a rapid and specific barley virus diagnostic tool. The diagnosis of mixed infections with barley viruses in one single reaction will reduce the cost, significantly increase the number of samples that can be analyzed, which will allow an examination of the viral disease epidemiology in barley.

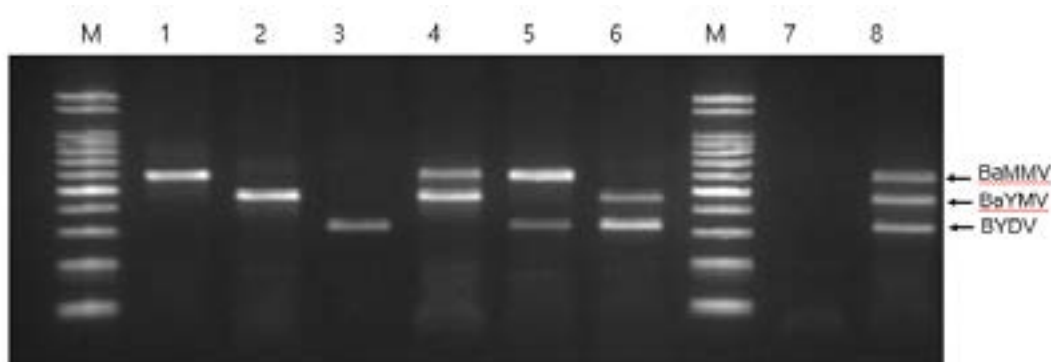


Figure 1. One-step mRT-PCR results from field barley plants collected in several provinces of Korea. One-step mRT-PCR for the single detection of BaMMV, BaYMV, BYDV (lanes 1,2,3) and the simultaneous detection of BaMMV + BaYMV (lane 4), BaMMV + BYDV (lane 5), BaYMV + BYDV (lane 6) and BaMMV + BaYMV + BYDV (lane 8). Lane 7 is negative control.

**Biography**

Bong Choon Lee has completed from Hokkaido University in Japan and Postdoctoral studies from Chonnam National University in Korea. She is the Senior Researcher of National Institute of Crop Science, RDA, Korea. She has published more than 50 papers in journals and has been serving as an Editorial Board Member of Research in *Plant Disease Journal* in Korea.

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