

IRANIAN WHEAT STRIPE VIRUS: PARTIAL SEQUENCE OF RNA 1, SEROLOGICAL RELATION TO OTHER TENUIVIRUSES, AND EVIDENCE OF NATURAL OCCURRENCE IN RICE

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Abstract

Iranian wheat stripe virus (IWSV) is a tentative member of the genus *Tenuivirus*. In this study, several properties of the virus were studied. To determine the polarity of the IWSV RNA 1 segment and compare it to corresponding segment of other tenuiviruses, about 650 bp fragments of the 3' end of this segment was amplified, cloned and sequenced. Sequence comparison showed that similar to other tenuiviruses, the IWSV RNA 1 is of negative polarity and more similar to tenuiviruses causing white leaf in American continent. Previously, only wheat had been reported as the natural host of IWSV. In this study, we identified rice as an economical natural host of the virus in rice growing areas in north of Shiraz. The coat protein (CP) and non-structural protein (NS4) genes of IWSV rice isolate were amplified, sequenced and compared with the corresponding genes of the wheat isolate. The nucleotide and amino acid sequence identities of the CP and NS4 genes between two isolates were 99.6 and 99-100%, respectively. The serological relationships between IWSV and five tenuiviruses were determined by agar gel diffusion (AGD), dot-immunobonding assay (DIBA) and/or indirect enzyme-linked immunosorbent assay (ELISA) using antisera against CP or NS4 proteins. These results showed that among five tenuiviruses, IWSV is related only to *Rice hoja blanca virus* (RHBV). Serological and molecular studies again confirmed similarities between IWSV and tenuiviruses causing white leaf in American continent. IWSV was successfully transmitted by embryo injection of wheat seeds presoaked in water for 30 mins at 25°C with an efficiency of 5.2%.

Keywords: Iranian wheat stripe virus, tenuivirus, Agar gel diffusion, DIBA, ELISA, Embryo injection, Virus transmission

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