

## MOLECULAR DETECTION OF *Citrus exocortis viroid* AND BIOLOGICAL INDEXING OF EXOCORTIS – LIKE AFFECTED CITRUS TREES IN MAZANDARAN PROVINCE

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### Abstract

The symptoms of exocortis disease including bark scaling on trifoliolate orange (*Poncirus trifoliata*) rootstock and stunting of citrus trees have been observed in some citrus orchards of Mazandaran province. To study the biological properties of *Citrus exocortis viroid* (CEVd) isolates, thirty samples with various degrees of severity in exocortis symptoms were collected from three large citrus orchards of Mazandaran in 2004. Having graft-inoculated into Arizona 861-S1 Etrog citron (*Citrus medica* cv. Etrog), the samples caused variable symptoms on the inoculated citron plants. The results of reverse transcription-polymerase chain reaction (RT-PCR) with specific primer pairs for CEVd showed that eighteen samples with the symptoms of the disease were infected with CEVd. In these samples, the related DNA bands were purified using High Pure PCR Product Purification Kit (Roche, Germany) and prepared for single-strand conformation polymorphism (SSCP) analysis. The DNA samples of the seven isolates were selected based on their differences in SSCP and cloned in p<sup>TZ57R/T</sup> ( Fermentas ), and sequenced at SeqLab Company ( Germany ). Sequence analysis revealed the existence of two or three nucleotide in the sequences of three isolates, while there were no differences in the sequences of the other four isolates despite the differences in the symptoms produced in citron. It seems that exocortis disease is caused by exocortis-like agents other than CEVd in Mazandaran. This is the first report on molecular characterization of CEVd in the infected citrus plants in Iran.

**Keywords:** *Citrus exocortis viroid*, Molecular detection, Mazandaran province, Biological properties, Conformation polymorphism.

See Persian text for figures and tables (Pages ۲۶۹ –۲۷۵ ).

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