Abstract

Wheat is the major food for human. The most important disease of this plant is rust that lost great amount of annually produce. Fast detection and identifying of this disease before epidemic incidence can be useful for create a control system on time and prevent high damage to product. morphological methods for identification of these disease have not enough accuracy and speed. molecular conventional methods also require large amounts of spore for identification of this fungus. In this study for remove of this problem and rapid detection and identification of three fungus *Puccinia striiformi, P. triticina and P. recondita*, Real-time PCR technique was used. After the collecting of uridiniospores of three fungus first identified by using morphological feature of uridiniospores and then DNA extracted from samples and the ITS1 region of them were amplified by PCR. Then ITS1 region of two fungi *P. triticina* and *P. recondita* sequenced for compare with two fungal ITS1 sequences in the Gene Bank and was showed significantly similarity between each of these two species and their sequence in Gene Bank. The sequencing could identify with 98 percent similarity of these fungi. Also the 28S region to the internal control in all of samples were amplified. DNA samples of each fungus was detected with specific probes by using Real-time PCR. Probes can amplify the samples specially. The results of these studies showed that the Real-time PCR technique can separated the fungus completely and detected the DNA of rusts about 1 picogram.

Key words:***Puccinia striiformis- Puccinia triticina - Puccinia recondita*- Fast detection-Real-time PCR**

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Title

Detection of yellow and brown rusts of wheat and barley using Real-time PCR

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