Title Detection of fumonisin-producing strains of *Fusarium verticillioides* and genes related to toxin production

Author V. Karthikeyan, P. Titone, D. Spadaro, M.L. Gullino and A. Garibaldi.

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Abstract

Fusarium verticillioides (Sacc.) Nirenberg (teleomorph *Gibberella moniliformis*) occurs worldwide on rice, and is known to produce various mycotoxins, including fumonisins which constitute a potential health hazard in rice and rice products. In order to have an early detection PCR-based technique, two primers, VERTF1 and VERTF2 (based on the IGS region of the multicopy rDNA unit) were used on 42 strains of *F. verticillioides* isolated from rice collected from different locations of rice growing areas in north-westernItaly. DNA was extracted using a modified CTAB method and quantified by spectrophotometer. Among the 42 strains, 17 were confirmed as fumonisin producers, amplifying a PCR product of 385 bp. The same 42 strains were subjected to another set of PCR primers specific for the gene fum5, and 15 of them gave a band at 845 bp, confirming the presence of a polyketide synthase. The primer specificity was confirmed with the strains ITEM-231 and ITEM-1746 of *F. verticillioides* coming from the ITEM collection of ISPA (Bari, Italy). The early detection of biosynthetic and regulatory genes will improve the control of fungal growth and toxin production and would help to minimize the application of chemicals.