**Identification by PCR of *Fusarium culmorum* Strains Producing Large and Small Amounts of Deoxynivalenol**

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**Abstract:**

Thirty deoxynivalenol-producing *F. culmorum* strains, isolated from wheat grains, were incubated in vitro and analyzed for trichothecene production. Seventeen strains produced more than 1 ppm of deoxynivalenol…..etc.

**Key words:** DNA barcode, COX 1 gene, ITS rDNA, fungal identification, biodiversity.

**Introduction:**

Trichothecenes, including deoxynivalenol, acetyldeoxynivalenol, nivalenol, and fusarenone X, are sesquiterpene toxins produced by *Fusarium* species, including *Fusarium culmorum*, which are common fungal contaminants of cereals. Trichothecenes can be found naturally worldwide on cereals (1, 2, 3), and the consumption of these toxins is a potential problem for humans and farm animals (4).

**Materials and methods**

strains isolated from cereals from different areas in France were used in this study, as presented in Table 1. *Fusarium* strains may also be obtained from the first author.

**Toxin production.**

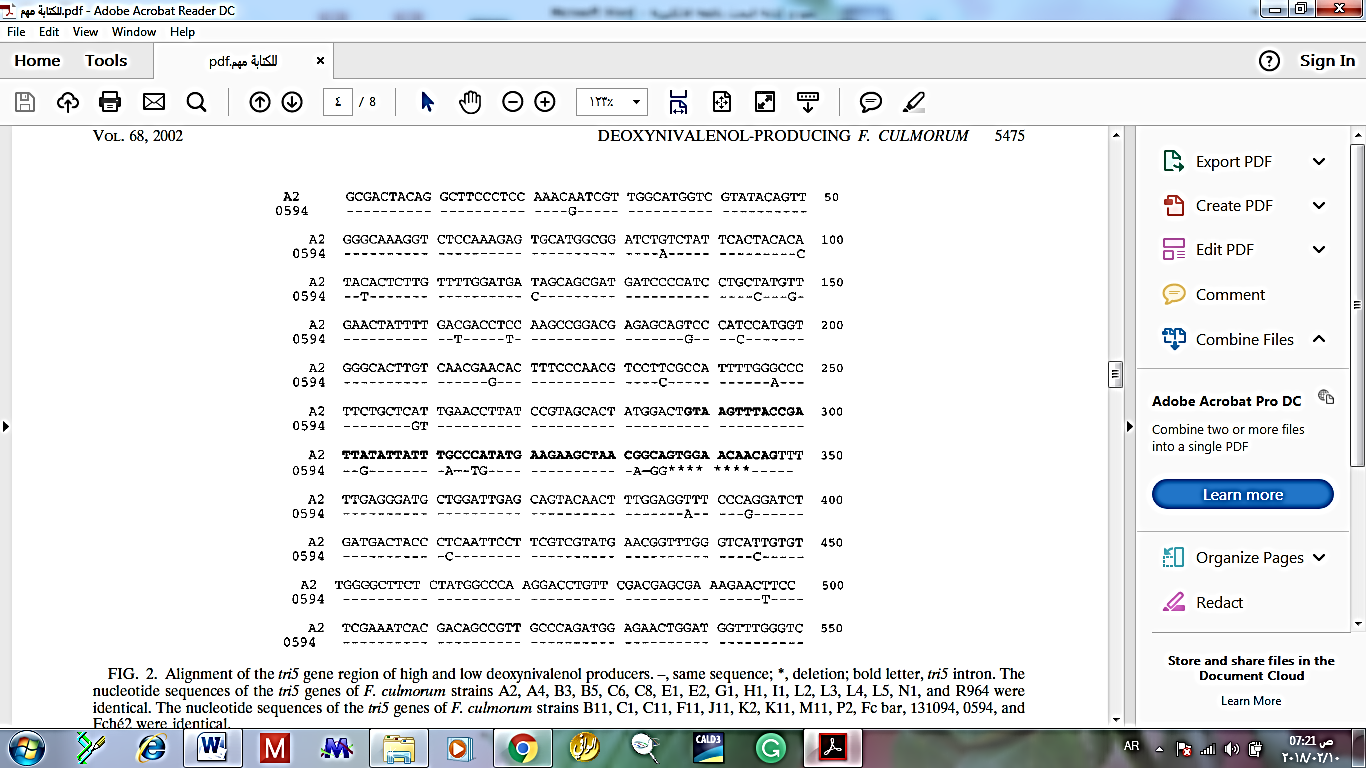
Toxin production by the *Fusarium* strains was conducted on autoclaved wheat grains. Wheat grains (Soissons) were moistened with sterile distilled water for 4 days at 4°C until thermodynamic water activity was maximal…..etc.

**Trichothecene analysis.**

Wheat grains (25 g) were analyzed by gas chromatography- electron capture detection and gas chromatography-mass spectrometry etc.

**Results**

***F. culmorum* identification.** The *Fusarium* strains studied were isolated from commercial wheat kernels. Morphological identification of *F. culmorum* strains was confirmed by PCR….etc.



**Figure 1: nucleotide sequence generated from PCR products amplified from ……**

**Table 1: Oligonucleotide pairs used for gene specific amplification**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene name** | **Primer**  **abbreviations** | **Primer sequence (59–39)**  **Amplification product** | **expected size (kb)** |
| **Isocitrate lyase\*** | **ICL-F** | **GGC TGG CAG TCN TCY TCT ACM G** | **1** |
|  | **ICL-R** | **TKG TAN CGG TAG TAN CCC TCR** |
| **Transcription factor** | **MST12-F** | **GCS CCW GTN GAC TGG CAA CCC** | **1.1** |
|  | **MST12-R** | **CCS GTC TCC TCG TTG GCN ATG TA** |
|  |  | **……etc….** |  |

\*Gene name and primer sequence were obtained from NCBI.

**References:**

1. **Godoy, P.; Cano, J.; Gene, J.; Guarro, J. Hoüfling-Lima, A. L. and Colombo, A. L. (2014)** Genotyping of 44 isolates of *Fusarium solani*, the main agent of fungal keratitis in Brazil. *Journal of Clinical Microbiology*, 42: 4494-4497. **(An example of a paper of a Journal).**
2. **Ahmad, T. (2001):** Molecular detection and characterization of *Fusarium verticillioides* in maize (*Zea mays.* L) grown**.** M.Sc. Thesis, Plant Protection Dept., Coll. of Agric., Univ. of Kerbala, pp. 85. **(An example of a thesis or report)>**
3. **Agrios G. N. (2005)**: *Plant Pathology*, 4th Edition. Elsevier Academic Press, Burlingto, pp. 922. **(An example of a book)**

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