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Abstract

“Luminex based detection and identification of pathogenic *Fusarium* species”

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A Luminex-based multilocus genotyping assay was developed for high throughput identification of several of the most important pathogenic *Fusarium* species. To achieve this objective, we constructed a RNA polymerase subunit II (*RPB2*) DNA sequence dataset for 200 phylogenetically diverse type A trichothecene fusaria. This dataset complements a *EF-1 α* dataset generated earlier. Phylogenetic analyses of the *RPB2* and *EF-1 α* combined 2-locus dataset recovered trees that were highly congruent with previously published data and identified several strongly supported monophyletic clades. Results of the phylogenetic analyses were used to infer species boundaries. In addition, nucleotide polymorphisms identified within *RPB2* and *EF-1 α* were used to design clade and species-specific probes for the Luminex assay. All probes were designed with tags corresponding to the anti-tag sequences on the MicroPlex xTAG beads. The assay was validated against a panel of more than 400 *Fusarium* isolates. Several isolates that gave negative genotypes with the assay were shown to be non- type A trichothecene fusaria by analysis of *RPB2* and *EF-1 α* gene sequences. The validated assay was implemented and re-validated against more than 50 type A trichothecene producers from Norway. The results show that the assay is robust and transferable between laboratories. Further, the assay can be implemented and expanded to include additional trichothecene toxin producing fusaria with a minimum of effort. An R based software tool was developed as a decision support tool suitable for both the validation and routine applications of the Luminex assay. The software script compares the results *a posteriori*.

Biography

Working as a scientist at the Norwegian Veterinary Institute, Section of Mycology, Oslo, Norway. Specialist in molecular detection and identification of pathogenic fungi, especially the important field fungal genus, *Fusarium*. Developed several multiplex detection assays for *Fusarium*, including an xTAG beads based assay.