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Development of reduced trichothecene formulations of *Myrothecium verrucaria* for use as a bioherbicide

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Introduction and Objectives

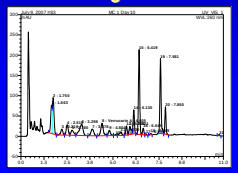
Myrothecium verrucaria is a fast-acting, broad-spectrum pathogen that can kill several invasive plant species that are poorly controlled by currently available herbicides.

This fungus also produces several macrocyclic trichothecene mycotoxins. The toxicity of *M. verrucaria* formulations prevents development of this agent as a commercial bioherbicide.

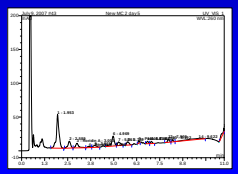
This study evaluated methods of producing and formulating *M. verrucaria* to minimize toxicity while maintaining pathogenicity.

Trichothecene production by *M. verrucaria* grown on solid media

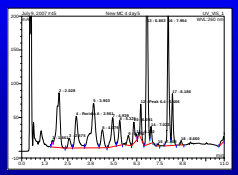
Potato dextrose agar



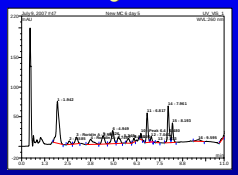
Minimal medium with sucrose



Minimal medium with molasses

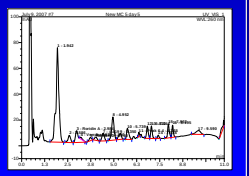


Minimal medium with glucose

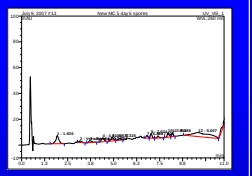


Removal of trichothecenes from *M. verrucaria* spores by washing spores with water

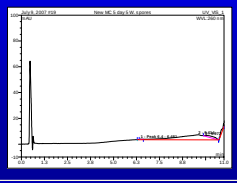
Crude preparation of *M. verrucaria*



Extraction of spores from *M. verrucaria*



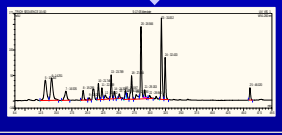
Extraction of washed spores from *M. verrucaria*

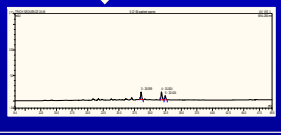


Efficacy of washed spores of *M. verrucaria* against kudzu

Untreated kudzu | ***M. verrucaria* spores** | **Washed *M. verrucaria* spores** | **Glyphosate treatment**

HPLC chromatograph of crude spore preparation





HPLC chromatograph of washed spore preparation

Conclusions

Production of trichothecene mycotoxins is dependent on media composition and culture conditions

Trichothecenes can be removed from spore suspensions by repeated water rinses

Excellent weed control can be obtained by formulations of *M. verrucarria* without trichothecene mycotoxins

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