Biological and Molecular Characterization of *Ascochyta caulina*, a Biocontrol Agent of *Chenopodium album*

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*Chenopodium album*, commonly called lambsquarters or fat-hen, is an important and widely distributed weed in the world. It is considered to be the most dangerous weed in 10 major crops because of the abundance and longevity of its seeds. *C. album* has developed resistance to some chemical herbicides, and for this reason is considered a good target for biological control. Recently the use of a fungus, *Ascochyta caulina*, as a biocontrol agent of this weed has been proposed, and the main phytotoxic metabolite produced by the fungus, named ascaulitoxin, has been identified and biologically characterized.

Within a European project involving several research institutions (FAIR5 PL97-3525 - “Optimizing biological control of a dominant weed in major crops”), having the aim of studying and improving the practical application of *A. caulina*, more than 50 strains of this fungus, isolated from fat-hen leaves, stems, and seeds collected in different European locations, were supplied to our institute in order to study their molecular and biological differences.

Strains of the fungus were grown in a defined liquid medium for 4 weeks at 25°C and the phytotoxic activity of their culture filtrates was evaluated using different biological assays. A preliminary screening was conducted to assess some molecular differences and to identify good primers useful for further studies on strains. Several decamers of arbitrary base composition were screened on *Ascochyta* isolates from diverse origin. Isolates displaying polymorphic bands have been further characterized by sequencing variable ribosomal regions (ITS1/ITS2, 28S).

Preliminary results on differences in toxin production and genetic variability between isolates will be shown.