

# TG2018



## 15<sup>th</sup> International *Trichoderma & Gliocladium* Workshop

*Opportunism and Conversations in the Environment*



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**15<sup>th</sup> International *Trichoderma & Gliocladium* Workshop**

*Opportunism and Conversations in the  
Environment*

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## ***Trichoderma harzianum* lipolytic enzymes – a contribution**

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*Trichoderma* sp. has been related to the mycoparasitism process due to an extraordinary range of cell-wall degrading enzymes (CWDE): chitinases,  $\beta$ -1,3 and  $\beta$ -1,6 glucanases, cellulases and proteases. However, the role of lipases and carboxylesterases in this process is less known, although lipids were up to 3% of fungal CW (Feofilova, 2010). According to Silva et al. (2009) and Lopes et al. (2012), in experiments involving *T. reesei* and *Pythium ultimum*, it seems that lipases are implicated in mycoparasitism and are secreted in a phytopathogen-dependent manner, as they, like most of the CWDE already described, are inducible by substrate. Here we present our contribution to the knowledge of *T. harzianum* T34 lipolytic enzymes (EC 3.1.1).

Some ESTs of a *T. harzianum* cDNA library coming from the EU-funded TRICHOEST project and obtained under mycoparasitism, nutritional stress and plant interaction conditions were BLAST screened, and two of them were completed by HE-TAIL PCR (Michiels et al., 2003) and sequenced, showing significant homology with EC 3.1.1 enzymes.

The *Lip1* gene, with a 1677 bp ORF and accessed in EMBL database (AM180877.1), codifies a deduced 56,3 kDa protein of 532 amino acids (B0B099\_TRIHA), a carboxylesterase\_B\_1 (EC 3.1.1.1; PROSITE PS00122, E-value  $2,9 \times 10^{-126}$ ), with affinity for short chain fatty acids (C<10) and soluble substrates. The *Lip2* gene (AM774154.1) has a 1215 bp ORF and codifies a deduced 44 kDa protein (B7ZET5\_TRIHA), a triacylglycerol lipase (EC 3.1.1.3; Pfam PF01764), with affinity for long chain fatty acids (C>10) and acting on insoluble substrates.

These results shows that *T. harzianum* has different kind of lipolytic enzymes that could have synergistic effects with other hydrolytic enzymes in the process of mycoparasitism, although its role is not so well-known.

### References

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