

# Mycokey

Integrated and innovative key actions for mycotoxin management in the food and feed chain

Lay summaries

Knowledge transfer to stakeholders



# Aflatoxin B<sub>1</sub> and M<sub>1</sub> degradation by Lac2 from *Pleurotus pulmonarius* and redox mediators

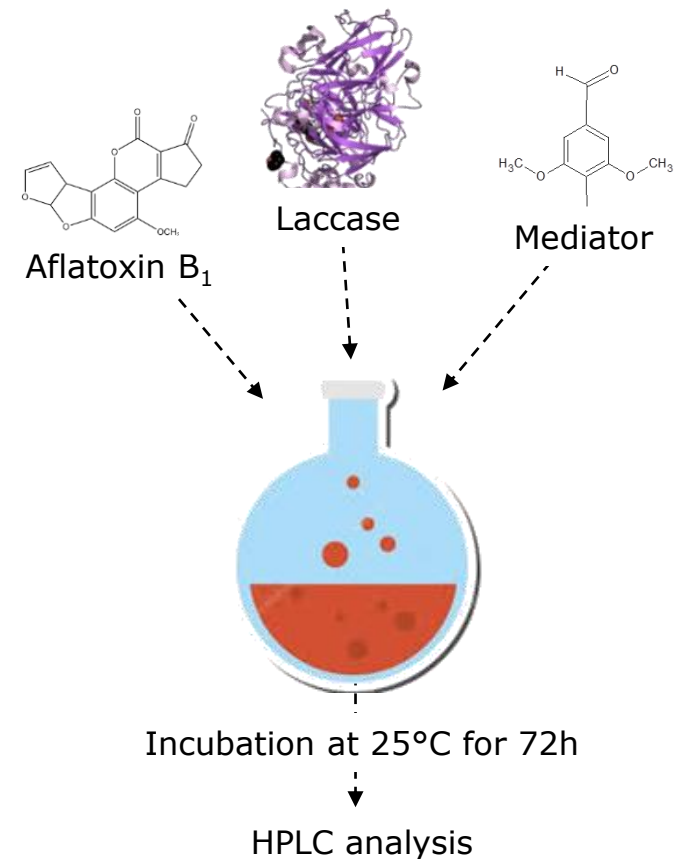
## ISSUE

Mycotoxin contamination of staple food commodities is a relevant health and economic issue worldwide. The development of green and effective reduction strategies has become an urgent need. Enzyme-based biotransformation is considered the most promising yet challenging approach to reduce mycotoxins accumulation.

Aflatoxins biotransformation  
by Laccase enzyme

## APPROACH

Laccase enzyme from *Pleurotus pulmonarius* was purified using three chromatographic steps and identified as Lac2 through zymogram and LC-MS/MS. Pure Laccase solution was used in in vitro assay towards aflatoxin B<sub>1</sub> and M<sub>1</sub>. The effect of direct and mediated oxidation was also elucidated using a model synthetic mediator, ABTS, and two naturally-occurring phenols, acetosyringone (AS) and syringaldehyde (SA).



# OUTCOMES

*P. pulmonarius* Lac2 was unambiguously identified as capable of degrading AFB<sub>1</sub> and AFM<sub>1</sub> in the presence of natural redox mediators. This enzyme based method showed to be promising for the application as a bio-transformation agent in the food and feed supply chains.

Loi M., Fanelli F., Zucca P., Liuzzi V., Quintieri L., Cimmarusti M., Monaci L., Haidukowski M., Logrieco A.F., Sanjust E., Mulè, G. (2016). Aflatoxin B1 and M1 degradation by Lac2 from *Pleurotus pulmonarius* and redox mediators. *Toxins*, 8(9), 245.

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AFB<sub>1</sub> degradation by

- ▶ Lac2: **23%**
- ▶ LAc2 with redox mediators: up to **90%**

