

Mycokey

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

Lay summaries

Knowledge transfer to stakeholders



In vitro single and combined mycotoxins degradation by Ery4 laccase from *Pleurotus eryngii* and redox mediators

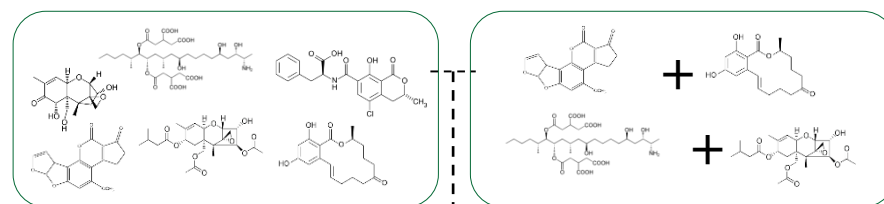
ISSUE

Food and feed contamination by mycotoxins is a concerning issue worldwide. Multiple mycotoxin contamination frequently occurs and poses serious concerns, due to the additive or synergistic effects on human and animal health. The development of green and effective reduction strategies to counteract the contamination by multiple mycotoxins is crucial.

APPROACH

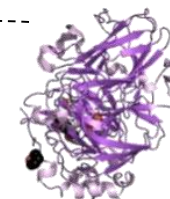
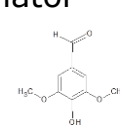
The direct and mediated degradation activity of Ery4 laccase from *Pleurotus eryngii* was evaluated *in vitro* towards aflatoxin B₁, fumonisin B₁, ochratoxin A, deoxynivalenol, zearalenone and T-2 toxin. In addition, the simultaneous mycotoxin degradation capability with selected redox mediators was evaluated with combinations of aflatoxin B₁ and zearalenone, and fumonisin B₁ and T-2 toxin.

Single toxin or combinations



Mediator

Laccase



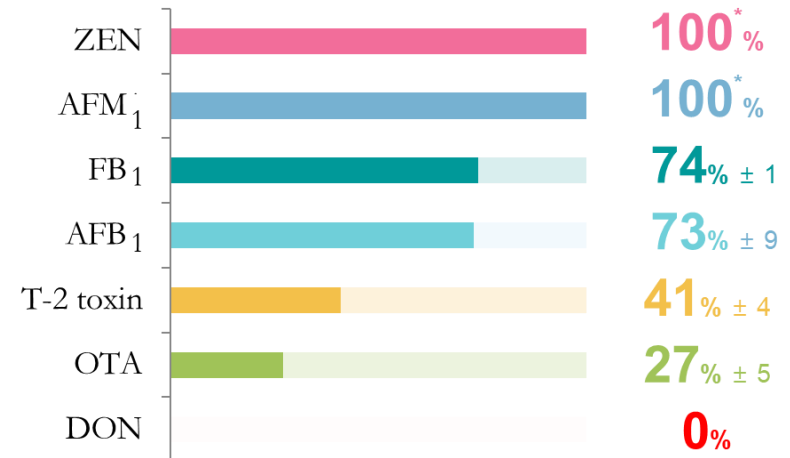
Incubation at 25°C for 72h

HPLC analysis

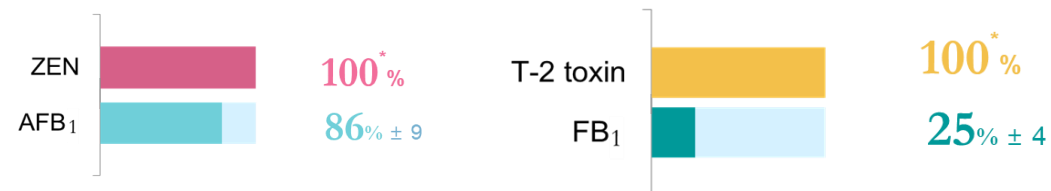
OUTCOMES

The use of redox mediators proved to be an effective approach to enhance the degradation properties of Ery4 enzyme towards aflatoxin B₁, fumonisin B₁, zearalenone and T-2 toxin, also when tested in combination.

Single mycotoxin assays



Combined mycotoxin assays



Loi M., Fanelli F., Cimmarusti M.T., Mirabelli V., Haidukowski M., Logrieco A.F., Caliandro R., Mule G. (2018). In vitro single and combined mycotoxins degradation by Ery4 laccase from *Pleurotus eryngii* and redox mediators. *Food control*, 90, 401-406.

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