

## **(P49) Inhibitory effect of essential oils on *Aspergillus* growth and Aflatoxin accumulation**

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Mycotoxins are produced as secondary products of filamentous fungi growth. Aflatoxins (AFs) are one of such toxins, being synthesized by various species of the genus *Aspergillus*. These mycotoxins have been widely studied, since they contaminate many foods used in human and animal diet, resulting in toxic effects in consumers. Thus, it is of extreme importance to find methodologies to reduce or inhibit the fungus and the production of toxins in food. Plants of some families are distinguished for their richness in essential oils and produce volatile fractions which have been used for various purposes. Research on essential oils has gained high attention in recent years due to their natural antimicrobiologic properties, which suppress the growth and the biosynthesis of mycotoxins. The aim of this study is to evaluate the effect of essential oils on fungal growth and on AF accumulation.

Essential oils from eight aromatic plants were tested for their inhibitory effect. The antifungal activity was carried out in *in vitro* conditions, on PDA, by assessing the volatile phase effect towards mycelial growth of *Aspergillus parasiticus* MUM 92.02 and aflatoxin production. Mycelial growth was monitored by measuring the diameter of growing colonies, while aflatoxin was quantified by HPLC. *The Baranyi model was adjusted to the diameter values of colonies by nonlinear regression. In this model, the logarithmic term  $D_{max}$  (maximum diameter) was deleted in order to omit the upper asymptote.*

The results showed that the essential oil from the leaves of *Cinnamomum zeylanicum*, *Cymbopogon nardus* and *Melaleuca alternifolia* prevented or inhibit fungal growth and affected the production of aflatoxins. However,

*although inhibiting micelial growth, some essential oils, in lower concentration, enhance the production of aflatoxins.* These results give important insights on the antimicrobial activity of essential oils in food commodities, preventing undesirable secondary effects on public health.



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