

Inhibitory activities of myristica fragrans essential oil on aflatoxigenic strains

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Abstrak

Aflatoxin B1 is a highly toxic and carcinogenic metabolite produced by aflatoxigenic strains that commonly contaminate food and agricultural commodities. This study evaluates the inhibitory effects of *Myristica fragrans* Houtt (nutmeg) essential oil extracted by hydrodistillation on the mycelial growth, sporulation, and aflatoxin B1 production of *Aspergillus flavus* IMI 242684 and *Aspergillus parasiticus* IMI 283883 by fumigation and contact application. An analysis of *M. fragrans* essential oil using the chromatography-mass spectrometry showed that its major components are safrole (42.50%), 4-terpineol (23.81%) and methyl eugenol (11.14%). At a concentration of 1000 ppm of essential oil, the mycelial growths of both *Aspergillus* strains were completely inhibited by vapor treatment but only reduced by about 70% by contact treatment. However, the sporulation and aflatoxin B1 production were completely inhibited by both contact and vapor treatments. Vapor treatment induced a higher level of inhibition than contact treatment. In conclusion, nutmeg essential oil is a potential biochemical agent that can help prevent contamination of stored foods and feeds.