MOLECULAR MECHANISTIC BASIS FOR RISK ASSESSMENT OF MYCOTOXINS IN FOODSTUFFS

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Abstract: Several mycotoxins are of human health concern worldwide. In addition to the well-known aflatoxins, toxins such as ochratoxin A, zearalenone and other Fusarium toxins are threatening when considering the risk for infants, ill people and/or immune deficient people. Several cell lines including the Caco-2 cells, from a human adenocarcinoma, were used to compare several selected toxins, ochratoxins, (OTA) Fumonisin B1 (FB1), Deoxynivalenol (DON) and Zearalenone (ZEA) as well as their respective combinations, under identical conditions in order to yield basis for risk assessment based on molecular mechanisms leading to the main observed related pathologies. These mycotoxins are mostly either nephrotoxic, immunosuppressant, mutagenic and potentially carcinogenic. Their molecular mechanisms triggering the pathologies are being more and more known. The relations between ingested quantities, tissue burden in vivo and in vitro concentrations are also better established giving way to molecular mechanisms-based assessment of the risks linked to exposure to these toxins by foodstuffs. Using molecular toxicology techniques the cases of several mycotoxins will be presented and discussed. Interestingly the results of such assessment show that the regulatory limits in force at present have to be lowered.