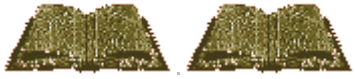
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Book Reviews: Technical Books Section



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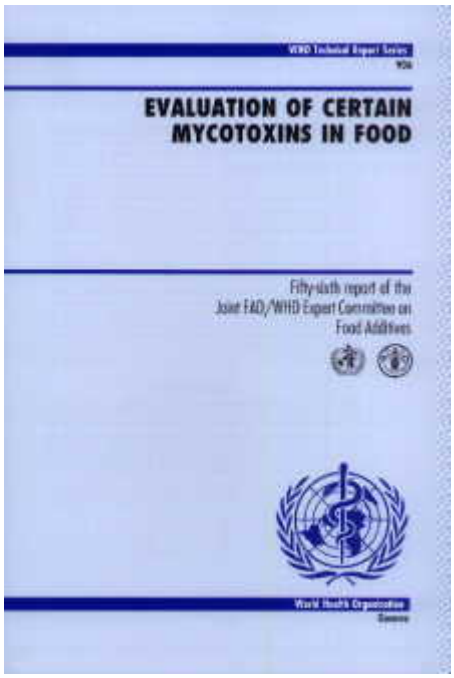
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MYCOTOXINS IN FOOD

Evaluation Of Certain Mycotoxins In Food, (WHO Technical Report Series 906), Fifty-sixth report of the Joint FAO/WHO Expert Committee on Food Additives,
World Health Organization, Avenue Appia 20, 1211 Geneva 27, Switzerland, Publication Date 2002, viii + 62 pages, ISBN 92 4 120906 2: Price: Not mentioned

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The World Health Organization was established in 1948 as a specialized agency of the United Nations to direct and coordinate activities relating to international health matters and public health. One of the functions of the WHO is to provide information and advice in the field of human health, and this is accomplished through its extensive programme of publications. The book under review is one of a series of technical reports brought out by the World Health Organization regularly on a broad range of medical and public health subjects, based on the findings of various international groups of experts. This book represents the 56^{th} report of the Joint FAO/WHO Expert Committee on Food Additives which met in Geneva from 6 to 15 February 2001. This was the first meeting of the Committee that had been convened to consider only contaminants, reflecting the importance being given to food contaminants by the Codex Committee on Food Additives and Contaminants.

In this book, six mycotoxins (fumonisins B_1, B_2, and B_3, deoxynivalenol, and T-2 and HT-2 toxins) have been evaluated for the first time, while two others (aflatoxin M_1 and ochratoxin A) have been re-evaluated.

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Aflatoxins are well known contaminants of plant products, as well as milk or milk products obtained from livestock that have ingested contaminated feed. Extensive studies have already been done on several types of aflatoxins, especially aflatoxin B_1 which is a potent carcinogen. This carcinogenic potency is substantially higher in carriers of hepatitis B virus, and hence reduction of intake of aflatoxins in populations with a high prevalence of HbSAg+ individuals would result in a greater reduction in liver cancer rates than reduction of aflatoxin intake in populations with low HBsAg positivity. The present work discussed in this monograph is in relation to aflatoxin M_1, the toxicity of which had not been adequately tested so far. Apart from direct intake of aflatoxin M_1 from dietary sources, it is known that up to 6% or more of aflatoxin B_1 in animal feed is transformed to aflatoxin M1 in milk. In fact the authors suggest that the most effective means for controlling aflatoxin in the food supply is to reduce the amount of aflatoxin B_1 in the feed of dairy

cows. This is important because (apart from the well recognised carcinogenic potential of aflatoxin B_1) aflatoxin M_1 has been found to be carcinogenic in animals. Concentration of aflatoxin B_1 in feed can be reduced by good manufacturing and storage practices. If preventive measures fail, the concentration of the toxin in feed can be reduced by blending, or physical or chemical treatment. The former includes the use of heat, irradiation, etc., while the most effective chemical treatment involves the use of ammonia.

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Unlike aflatoxins, fumonisins have not received the kind of attention of toxicologists that it deserves. These are mycotoxins produced by fungi of the genus *Fusarium*. Fumonisin contamination is most commonly encountered in maize leading to kernel rot. Intake of fumonisins B_1, B_2, and B_3 can lead to hepatorenal toxicity. The authors have thoroughly discussed the biochemical modes of action of toxicity resulting from intake of contaminated maize. The importance of toxicological studies on fumonisins assumes great importance for India in light of the outbreak of human disease (involving gastrointestinal symptoms) resulting from consumption of mouldy sorghum. Further, the authors indicate a possible association of fumonisins with oesophageal and liver cancer. The Committee stressed the need for further research on the toxicity of fumonisins.

Similar recommendations have also been made with reference to ochratoxin A (a mycotoxin produced by certain *Penicillium* and *Aspergillus* species) which is a contaminant of cereals and cereal products in Canada and Europe, since there are indications of its nephrotoxic potential in animals. The authors have also indicated the need for further studies on the toxicity of trichothecenes, especially deoxynivalenol which has been implicated in incidents of human disease, and T-2 and HT-2 toxins which have been indirectly linked to outbreaks of gastrointestinal distress.

All in all, the monograph makes important conclusions about the toxicity of several mycotoxins in contaminated foods and food products, which has so far not received the attention that it deserves. This book should serve as the basis for further research into this hitherto neglected area of mycotoxicology. Like all other WHO publications, the book bears the stamp of authenticity and credibility, being the product of deliberations of an impeccably constituted Committee of Experts. This reviewer recommends it very highly to all nutritionists, toxicologists, and medical and public health professionals.



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Dr.V.V.Pillay has been in the vanguard of the movement among medical professionals in India to develop the neglected field of Toxicology. He has published extensively in both the scientific and lay press on matters relating to Toxicology, as well as his chosen discipline - Forensic Medicine. Dr.Pillay has authored 6 books on Forensic Medicine and Toxicology, and has received an award for one of them (Modern Medical Toxicology), generally considered to be a trend setter among books on the subject in India. He has reviewed several books on Toxicology for the Internet Journal of Forensic Medicine and Toxicology. Dr.Pillay received a scroll of honour in appreciation of work done in the field of Toxicology from the Medicolegal Society, All India Institute of Medical Sciences, New Delhi. He has established a state-of-the-art Poison Control Centre, recognized by the World Health Organization at the institute where he is currently employed (AIMS, Cochin). Among his most sought-after publications is a 700 page reference work on Toxicology.

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