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Washington, DC

Humana Press  **Totowa, New Jersey**

999 Riverview Drive, Suite 208
Totowa, New Jersey 07512

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ANSI Z39.48-1984 (American Standards Institute) Permanence of Paper for Printed Library Materials.

Cover design by Patricia F. Cleary.

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Printed in the United States of America. 10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging in Publication Data

Methods in molecular biology™.

Mycotoxin protocols / edited by Mary W. Trucksess and Albert E. Pohland.
p. cm.—(Methods in molecular biology; 157)
Includes bibliographical references and index.
ISBN 0-89603-623-5 (alk. paper)
1. Mycotoxin—Laboratory manuals. I. Trucksess, Mary W. II. Pohland, Albert E. III. Methods in molecular biology (Clifton, N.J.); v. 157.
[DNLM: 1. Mycotoxins—analysis. QW 630.5.M9 M9945 2000]
QP632.M9 M895 2000
615.9'5295—dc21 00-020616
CIP

Preface

Mycotoxins produced by molds are common contaminants of many important crops, including wheat, corn, rice, and peanuts. Some mycotoxins are found in fruits and vegetables. These contaminants have a broad range of toxic effects, including carcinogenicity, neurotoxicity, and reproductive and developmental toxicity. The occurrence of mycotoxins in foods is an unavoidable worldwide problem. About 80 countries have imposed regulatory limits to minimize human and animal exposure to mycotoxins. Regulatory limits, including international standards, have tremendous economic impact and must be developed using science-based risk assessments. The purpose of *Mycotoxin Protocols* is to provide the scientific and technological basis for analytical methods for use in obtaining the exposure data needed for risk assessments.

Mycotoxin Protocols is divided into four sections, which are interconnected. The first section: Chapters 1–5 describe the general techniques for mycotoxin analysis with emphasis on the importance of method validation based on statistical parameters; sampling procedures for collecting a sample as representative as possible of a bulk lot; the isolation of mycotoxins for use as analytical standards or for toxicological studies; the evaluation of purity and preparation of standards; and the detection and identification of impurities in isolated mycotoxins. Sections 2–4: Chapters 6–19 describe the most current chromatographic and immunochemical methods for studies on the major mycotoxins. The equipment, reagents, and procedures are given in great detail for the analysis of aflatoxins, aflatoxin M_1, cyclopiazonic acid, ochratoxin A, deoxynivalenol and other trichothecenes, moniliformin, fumonisins, zearalenone, *Stachybotrys* toxins, citrinin, patulin, ergot alkaloids, and *Alternaria* toxins.

Almost half of the methods are the molecular-based immunochemical or immunochemical/chromatographic techniques. The modern era of immunoassay techniques began with the development of a radioimmunoassay technique for insulin by Yalow and Berson in 1959. Although aflatoxin was discovered in 1960, immunochemical methods for mycotoxin analysis did not become widely used until commercial kits were developed in the 1980s. Immunochemical methods have now become an integral part of advanced techniques, such as mass spectrometric analysis, and complement such other useful analytical

procedures as thin layer chromatography, liquid chromatography, and capillary electrophoresis. With the development of biosensors, immunochemical methods will probably become the methods of choice for mycotoxins in the future.

We trust that readers will find each chapter of *Mycotoxin Protocols* helpful and informative for their own analytical needs. We wish to thank the authors for their enthusiastic and diligent work in preparation of this book.

Mary W. Trucksess, PhD
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