

Microbial Toxins

VOLUME III

BACTERIAL PROTEIN TOXINS

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Preface

The scope and objective of this treatise on microbial toxins have been presented in the Preface to Volume I. The second and third volumes are related to the first since they all deal with bacterial protein toxins. Whereas the emphasis of Volume I is on general problems and approaches, Volumes II and III are designed to give as complete a picture as possible of each specific toxin in question.

Since the number of bacterial protein toxins to be included is rather large, practical considerations dictated that they be distributed in two volumes. Many of these toxins have been studied intensively and much is known about them; research on others is of recent vintage and the researches are essentially in a developmental stage. Consequently, one consideration was to attain a comparatively even distribution within the two volumes of these two rough categories of toxins.

The second criterion for including these toxins in either Volume II or III was based on any general features that any of them may have in common. Thus, it will be noted that Volume II contains most of the bacterial protein toxins that are often referred to, on the basis of their physiological effects, as neurotoxins. Of course, a number of other toxins whose mode of action can by no stretch of the imagination be confined to the nervous system are also described in Volume II.

The classification of the bacterium producing the particular toxin was also taken into account. In instances in which protein toxins are produced by two or more species belonging to a particular bacterial genus, the toxins have been grouped together. Thus, the clostridial toxins will be found in Volume II and the staphylococcal and streptococcal toxins as well as those elaborated by the genus *Bacillus* have been assigned to and compose the bulk of Volume III since many of these proteins are considered to be cytolytic toxins as discussed by Dr. Bernheimer in Volume I.

The final chapter of this volume deals with the toxins of *Mycoplasma*. The mycoplasma do not possess rigid cell walls and are in many other ways quite different from bacteria. Nevertheless, these organisms have been examined in many textbooks of bacteriology and have been classified traditionally with the bacteria. Thus we chose to include the protein toxins produced by mycoplasma in this volume. Quite recently, long after the decision was made to have a chapter written on the toxins of *Mycoplasma*, the mycoplasma were given an official, separate classification in

the order Mycoplasmatales under the class Mollicutes, and are now on a taxonomic basis distinct from bacteria, fungi, and viruses.

The cooperation and patience of the contributors to the present volume are greatly appreciated. We also extend our thanks and gratitude to the staff of Academic Press for their encouragement and expert assistance.

The scope and objective of this treatise on microbial toxins have been presented in the Preface to Volume I. The second and third volumes are devoted to the first stage of the study, which is the general properties of toxins. The emphasis of Volume I is on general properties and approaches. Volumes II and III are designed to give as complete a picture as possible of each specific toxin in detail.

Since the number of bacterial protein toxins to be included is rather large, practical considerations dictated that they be distributed in two volumes. The first stage of the study has been studied in detail and given a separate volume. The second stage of the study, which is the general properties of toxins, is also included in this volume. The third stage of the study, which is the specific properties of toxins, is also included in this volume.

A second criterion for including these toxins in Volume II is that they be based on any general features that any of them may have in common. This is what is noted in Volume II, and it is the basis of the total protein toxins that are often referred to as the basis of their physiological effects. The general properties of these toxins are also included in this volume. The specific properties of these toxins are also included in this volume.

The classification of the bacterium producing the particular toxin was also taken into account. In instances in which protein toxins are produced by two or more species belonging to a particular bacterial genus, the toxins have been grouped together. Thus, the diphtheria toxin, which is found in Volume II and the streptococcal and staphylococcal toxins, as well as those elaborated by the genus *Streptococcus*, have been assigned to and compose the bulk of Volume II, since many of these proteins are considered to be cytotoxic toxins as discussed by Dr. Berthel in Volume I.

The final chapter of this volume deals with the toxins of Mycoplasma. The mycoplasmas do not possess rigid cell walls and are in many other ways quite different from bacteria. Nevertheless, these organisms have been examined in many textbooks of bacteriology and have been classified traditionally with the bacteria. Thus we choose to include the protein toxins produced by mycoplasmas in this volume. (Unfortunately, some of the toxins produced by mycoplasmas are not yet known.)

The decision was made to have a separate chapter on the toxins of Mycoplasma. The mycoplasmas were given an official taxonomic classification in 1966.

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