TOXICOLOGY AND PHARMACOLOGY OF VENOMS FROM POISONOUS SNAKES

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PREFACE

The study of snakes is a science not unlike other sciences. The expansion of knowledge of snakes is not only important because of its ecologic relationship to other biological species of animals, but also because poisonous snakes pose a threat to animal life, in general, and man, in particular. Thus poisonous snakes constitute a serious problem in public health in many parts of the world.

The toxicities of many snake venoms were reported in the older literature in terms of a minimum lethal dose or MLD, a term which was rather vaguely defined. Thus, a MLD meant the smallest dose of venom killing at least one animal of those used in the study, the dose that would kill half but not all of the animals, or the smallest dose that would kill all of the animals.

Since many of the more recently reported values of lethality of snake venoms have been expressed in terms of a standardized index of toxicity, *viz.* the LD_{50}, and venom of possibly better quality was employed in assessing the latter, and it became apparent that a re-evaluation of toxicity values could be useful to medical science, in general, and pharmacology and toxicology, in particular.

The purpose of this monograph was, therefore, to bring together as many values of lethality of snake venoms as possible, in tabular form. In this way the relative toxicities of these venoms could be shown factually; too many myths have already pervaded the nonscientific literature concerning the toxicities of snake venoms. Together with the tabulated amounts of venom obtainable from poisonous snakes, the LD_{50} values (derived from mice), with certain assumptions, have been combined to calculate an index of the lethality of certain snake venoms for humans. Some unique correlations between estimated human lethality and the known incidence of mortality have thus been derived. The section on pharmacology is included to explain the lethality of snake

venoms using data obtained from representative families and species.

To carry out research on venoms, one must either purchase the venoms or extract and process one's own venom. Thus a section has been included to outline techniques of hunting for and housing venomous snakes and extracting their venoms.

DEDICATION AND ACKNOWLEDGMENTS

This book is dedicated primarily to Nancy who still fears that a snake by any other name is still a snake. Without the insistence by Findlay Russell for investigators to obtain the best possible data on poisonous snake venoms in order to expand the true knowledge of such, I may not have been stimulated to compile this text. The author is greatly indebted to Drs. Sherman Minton and Richard Goris for color photographs. Dr. Minton has long been a pioneer in research on snakes and snake venoms. Finally, it could not have been compiled without the assistance and excellent typing of Mrs. Bea Abene.

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