

**ALCOHOL AND
ALDEHYDE METABOLIZING
SYSTEMS—IV**

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ALCOHOL AND ALDEHYDE METABOLIZING SYSTEMS–IV

Edited by Ronald G. Thurman

ALCOHOL AND ALDEHYDE METABOLIZING SYSTEMS—IV

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PREFACE

The papers in this book represent the proceedings of the Third International Symposium on Alcohol and Aldehyde Metabolizing Systems which was held at the Addiction Research Foundation in Toronto in July, 1979. The purpose of this meeting was to bring together experts in the field from a wide variety of backgrounds in an attempt to gain some clarity and insight into the problems of alcohol and aldehyde metabolism.

One might ask, "Why have such a meeting and a collection of research papers?" The answer is clear. The societal problem of alcoholism is, unlike many other health problems, growing instead of abating. Treatment efforts are largely ineffective (e.g., Griffith Edwards' classic work), and fundamental research has yet to identify rational therapy based on sound mechanisms for this disease which effects 5% of the population severely and a much greater percentage to a lesser degree or indirectly.

I have become impressed with the possibility that this lack of progress may be—in large part—due to a fundamental oversight on the part of investigators in the field of alcohol research. Simply, this possible problem could be stated as follows: an alcoholic is defined the same way as all other alcoholics. Attempts to identify possible subpopulations of alcoholics with defined and treatable diseases has been minimal. One could argue, however, that little evidence, with the exception of the gross psychiatric definitions (e.g., Jellinek) exists that there are different types of alcoholics. This argument is countered, first, by the dismal lack of progress made in this field by classifying an alcoholic equal to other alcoholics, and second, by analogy with cancer research. Now we know that "cancer" is only a generic term which defines a broad group of diseases, some caused by specific environmental chemicals, others by viruses, etc. Progress was only possible after suitable animal models were developed. More importantly, however, is the fact that once specific forms of the disease (i.e., once the diseases themselves were separated from the generic term) were identified, it was a relatively easy task to develop tests for early identification of some forms of the disease (e.g., the pap smear, etc.).

This analogy can be extended to alcoholisms. First, let us assume that we have failed to develop tests for early identification of alcoholisms because the population is not carefully defined into subgroups. If we assume that subpopulations of alcoholics exist, we can again turn to the cancer literature for examples of how to proceed. Much progress in this field rests on the careful development of strains of animals which differ in their susceptibility to certain carcinogens. By analogy, distinct forms of alcoholisms could be identified by the use of genetics (e.g., Goodwin). First, distinct phenotypes need to be developed for certain characteristics suspected to be important in alcoholism. Second, a test specific for early identification of this specific phenotype can then be developed. Third, longitudinal studies must be performed in humans to see if the animal work can be applied to man. Implicit in this rationale is the thought that progress is not possible by studying alcoholics 20 years after primary changes have occurred, nor even by studying prealcoholics until specific subforms of the disease are identified.

Thus, the need for fundamental research into the mechanisms responsible for alcoholism is required. Unfortunately, alcohol research appears to suffer some of the stigma of the alcoholic. In the best of times, meager resources are available. For example, in the United States, nearly four times as much is spent on research on tooth decay as on alcoholism. And in times of economic difficulty, alcohol research is the first to suffer. Thus, the larger need for this meeting—to hopefully gain insight into mechanisms responsible for alcoholism—is necessary and timely.

The papers in this volume are divided into the four major topics covered in the symposium (Enzymology of Alcohol and Aldehyde Dehydrogenases and Cytochrome P-450, Mitochondrial Energy Transducing Membrane and Minor Pathways of Alcohol Metabolism, Biochemical Compartmentation and Intermediary Metabolism, Neurochemistry and Neuropharmacology). Renowned experts were invited to present material covering general principles in depth. These expert lectures were followed by specific work relating to alcohol and aldehydes.

I wish to thank Ms. Elaine Woody for her tireless efforts in the organization of the symposium and Ms. Connie Doss for her help in the preparation of the manuscript. A grant from the National Institutes on Alcohol Abuse and Alcoholism is greatly acknowledged.

Ronald G. Thurman
Chapel Hill, North Carolina
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