## PLANT DRUG EVALUATION A laboratory guide





## Dr.Madhu.C.Divakar B.Sc., M.Pharm, PhD, PGDHRM

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Dr.Madhu.C.Divakar

B.Sc., M.Pharm., PhD, PGDHRM



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Plant Drug Evaluation - A laboratory guide Dr. Madhu C. Divakar, B.Sc., M.Pharm. PGDHRM, Ph.D.

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**Dr. S.B. Rao**, Dr. rer-nat (Munich) F.I.C. Visiting Prof. Faculty Med. Kerala University

A-1C, Garden Court Apartments, Alinchuvadu, Edapalli (P.O) – 682024.

Grams: Pharmacy, Cochin Phone: 535032.

Ref: .....

Date: 15-2-1996

#### FOREWORD

Sri. Madhu C. Divakar's book, Plant Drug Evaluation (a laboratory guide) serves as an excellent guide to students of pharmacy at the Diploma degree and Post graduate level. The book gives sketches of a few leaves, flowers, barks, seeds, roots, rhizomes, woods, fruits and herbs. The macroscopic as well as the microscopic descriptions enables the students to remember the salient features regarding their identification.

The phytochemical part covers test for various classes of plant constituents. Experimental procedures described for their isolation are very instructive. The chapter on analysis helps the students to understand the basic principles of analysis of important plant constituents. The chapter on reagents describes the preparation of important reagents involved in the identification of plant constituents.

The book serve as an excellent practical guide for studying the subject Pharmacognosy. I wish the author all success.

Prof. Dr. S.B. Rao

#### **PREFACE** (First Edition)

The syllabus of the practical course in Pharmacognosy and Phytochemistry at different universities mainly covers the phytomorphology powder characters, quantitative microscopy and extraction and identification of active constituents of various plant drugs. The subject matter described in this book covers much of the basic practical pharmacognostical and phytochemical aspects necessary for a student who wishes to study Pharmacognosy as a subject at diploma, degree or post graduate level. The brief introduction before each chapter attempts only to give or recall knowledge in that field. Furthermore a list of references has been given at the end for additional studies.

I am thankful to Mr. Francis Selashier M.Pharm, for giving relevant details and subject matter concerned with the quantitative chemical evaluation of plant drugs. Selected experiments and procedures were chosen for each chapter considering the availability of drug materials and work period. Various experimental procedures were designed to the modest facility of the student's laboratory. Emphasis was placed primarily on the evaluation of crude drugs obtained from natural resources. I am grateful to Mr. T.K. Ravi, M.Pharm. (Ph.D.) Principal, College of Pharmacy, Sri Ramakrishna Institute of Paramedical Sciences, Coimbatore, for their valuable help in the making of this book. I am indebted to our beloved Managing Trustee, Dr. R. Venkatesalu, for his encouragement and support.

Last but certainly not the least I would like to express my profound gratitude to my beloved parents and my teachers of the College of Pharmaceutical Sciences, KMC, Manipal and the College of Pharmaceutical Sciences, Medical College, Trivandrum for their interest and encouragement.

#### September 1994

#### Madhu C. Divakar

#### **PREFACE** (Second Edition)

The second edition of Plant Drug Evaluation is prepared to meet the current demand of Natural product formulations and their evaluation methods. New chapters like Plant classifications, Ayurveda, Enzymes, Quality control of herbals, Natural product assays, Chromatography, etc. give more insight for the research people and students engaged in natural product research.

I am thankful to Mr. Francis Selashier M.Pharm, for giving relevant details and subject matter concerned with the quantitative chemical evaluation of plant drugs and to Mr. Satish Alwar, Express Box, printer and publisher for his valuable help in the process of design and layout of this book. Also I am thankful to Mr. Venkatasamy, M.Sc., M.Phil, for helping me in the various stages of the making of this manual. I am grateful to Mr. Ramprakash, M.Pharm, for his contributions for preparing the chapter on Enzymes.

I am grateful to my wife Mrs. Manju for her continuous efforts during the organisation and editing of the manuscript of this second edition. Finally I am deeply indebted to Dr. S.B. Rao; my guide for his incessant encouragement and advices.

#### June 2002

#### Madhu C. Divakar

#### **PREFACE** (Third Edition)

Our team is extremely happy to finish and update the book Plant Drug Evaluation by making its third edition. From this edition onwards, this laboratory guide is transforming as an e-book style to make better visibility to all readers, researchers and Pharmacy students. The present edition includes seven extra chapters compared to the previous editions. I feel these chapters may be of high use for those who are interested in exploring various fields and advanced topics pertaining to Pharmacognosy and Phytochemistry.

#### January 2014

Madhu C. Divakar

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The second and third editions of Plant Drug Evaluation is prepared to meet the current demand of Natural product formulations and their evaluation methods. Hope the new chapters like Plant classifications, Ayurveda, Enzymes, Quality control of herbals, Natural product assays, Chromatography, Drug -Food/ Herb interactions, Herbal bitters, Natural and artificial sugar substitutes, Nutraceuticals and Nutricosmetics, Marine natural products, Natural flavors and fragrances, Herbal biocides, The concept of markers in herbal analysis etc. may, give more insight for the research people and students engaged in natural product research. The book is now available as an electronic edition in the form of pdf book format.

Dr.Madhu.C.Divakar

