

Bioprospecting Rumphius's *Ambonese Herbal*: Volume I

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Received 10 December 2003; received in revised form 6 July 2004; accepted 18 August 2004

Available online 12 October 2004

Abstract

Collaborating with traditional healers remains a valid method for the identification of potential lead compounds for novel pharmaceuticals. However, the knowledge of these traditional healers is rapidly being lost. Historic herbal texts provide a unique window to identify plants whose specific uses are no longer known. We have identified nine plants in the 17th century *Ambonese Herbal*: Volume I which were documented as having medicinal properties but which have not been examined in the current literature. We demonstrate that by evaluating plant and herb efficacy reports from historic texts, in the context of comprehensive modern databases such as NAPRALERT™, we can ultimately identify candidate specimens deserving further pharmacological study.

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Keywords: Historic text; Ambon; Rumphius; Indonesia; Ethnobotany; Medicinal; Plants

1. Introduction

Most indigenous societies maintain traditional medicine systems, and even in the United States, 42% of people utilize a form of complementary or alternative medicine (CAM) (Eisenberg et al., 1998) that typically incorporates some aspect of a traditional medicine system. Commonly, such traditional systems support an integration of health care approaches, such as the incorporation of mind–body–spirit healing in traditional Chinese medicine (Yin et al., 1999). These traditional practices often also incorporate plant-based medicines derived from years of trial and error treatment applications (Staugard, 1985). In turn, many plants utilized in traditional medicine systems have yielded lead compounds for pharmaceutical discovery: plant-based pharmaceuticals

represent approximately one-half of the anti-cancer drugs developed since 1960 (Kim and Park, 2002), and have led to over 100 other successful pharmaceuticals (Farnsworth, 1994). Examples of these plant derived compounds include agents, such as etoposide, a semi-synthetic chemotherapeutic agent originally derived from *Podophyllum peltatum* (Vogelzang et al., 1982), and quinine, an agent effective in the treatment of malaria derived from compounds isolated from members of the genus *Cinchona* L. (Warhurst et al., 2003).

The scientific leads for new plant-based pharmaceuticals have typically been generated using either high-throughput screening programs (Hunter, 2001) or ethnobotanical studies (Houghton, 1995). While the major focus for drug discovery has recently shifted to high-throughput screening coupled with computational and molecular modeling (Young et al., 2002), working with traditional healers remains a valid method for the identification of potential compounds for novel pharmaceuticals (Martin and Ernst, 2003; Ram, 2001). However, this important source for potential medicines is threatened, not only because the knowledge of these

Abbreviations: CAM, complementary or alternative medicine; VOC, Dutch East Indies Company; NAPRALERT™, Natural Products Alert.

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Sean Ekins



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Computer Applications in Pharmaceutical Research and Development Sean Ekins, 2006-06-30 A unique holistic approach covering all functions and phases of pharmaceutical research and development While there are a number of texts dedicated to individual aspects of pharmaceutical research and development this unique contributed work takes a holistic and integrative approach to the use of computers in all phases of drug discovery development and marketing It explains how applications are used at various stages including bioinformatics data mining predicting human response to drugs and high throughput screening By providing a comprehensive view the book offers readers a unique framework and systems perspective from which they can devise strategies to thoroughly exploit the use of computers in their organizations during all phases of the discovery and development process Chapters are organized into the following sections Computers in pharmaceutical research and development a general overview Understanding diseases mining complex systems for knowledge Scientific information handling and enhancing productivity Computers in drug discovery Computers in preclinical development Computers in development decision making economics and market analysis Computers in clinical development Future applications and future development Each chapter is written by one or more leading experts in the field and carefully edited to ensure a consistent structure and approach throughout the book Figures are used extensively to illustrate complex concepts and multifaceted processes References are provided in each chapter to enable readers to continue investigating a particular topic in depth Finally tables of software resources are provided in many of the chapters This is essential reading for IT professionals and scientists in the pharmaceutical industry as well as researchers involved in informatics and ADMET drug discovery and technology development The book's cross functional all phases approach provides a unique opportunity for a holistic analysis and assessment of computer applications in pharmaceuticals

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