

**IX. PLANT COLLECTING PROGRAM IN SOUTHEAST ASIA
UNDER THE SPONSORSHIP OF THE UNITED STATES
NATIONAL CANCER INSTITUTE (NCI) (1986-1991)**

D.D. SOEJARTO

University of Illinois at Chicago and Field Museum of Natural History (Botany), Chicago, U.S.A.

Under the funding from the United States National Cancer Institute (NCI)¹, a program was undertaken to collect plant samples in Southeast Asia to be tested for their cancer- and AIDS-arresting properties, for the period of September 1, 1986 through August 31, 1991. The program was implemented with the collaboration of the Arnold Arboretum and the Bishop Museum. Botanists from these and other institutions collaborated in the field work operation for the program, among others: J.S. BURLEY (A), B.C. STONE (BISH), D.G. FRODIN (Philadelphia), F.-C. HO (HCT), D.A. MADULID (PNH), W. MEIJER (KY), T. SMITINAND (BKF), E. SOEPADMO (KLU), W. TAKEUCHI (BISH), E. WIDJAJA (BO), and W.J.J.O. DE WILDE (L).

During the 5-year period, 35 botanical collecting trips of 4-12 weeks duration were carried out in the tropical rain forests of Thailand (265 collection numbers), Malaysia (Malay Peninsula, Sarawak, Sabah; 964), Taiwan (43), the Philippines (Luzon, Panay, Mindoro, Palawan; 1360), Indonesia (Sumatra, Kalimantan, Sulawesi, Seram, Irian Jaya; 878), and Papua New Guinea (463). More than 10,000 plant samples, each 400-1000 gram dry weight, were collected and delivered to the NCI Frederick Cancer Center (Frederick, Maryland, U.S.A.) under a USDA special import permit. Every one of these samples was specially numbered and documented with properly labeled voucher herbarium specimens. These voucher specimens were processed at the John G. Searle Herbarium of the Field Museum of Natural History, Chicago, and were distributed to, among others, the following herbaria: A, F, L, and US; a set of relevant duplicates was also deposited in the herbarium of each host botanical institution in the respective country of collection. A database of the collection (DBase 3+, IBM PC XT/AT) is maintained both at the University of Illinois at Chicago and at the NCI's Frederick Cancer Center. More than 2,500 species of flowering plants, belonging to more than 1,000 genera in 214 families (based on the family concept used in Willis and Airy Shaw, Dictionary of Flowering Plants and Ferns, 1980) were collected. Seventy percent of the collection has been identified to species. Although field ethnobotanical inquiries on the medicinal uses of the plants collected have not been extensively made, many plants collected do have information on their folk medicinal uses.

Considering that there are probably 25,000 species of flowering plants, or more, in the tropical rain forests of Southeast Asia, the program's accomplishments to date represent but a fraction (perhaps 10%) of the flora. As of January, 1992, only invitro test results of extracts against the HIV (human immunodeficiency virus, the causative agent of AIDS) had been received from the NCI. These test results indicate that a large number of the plants collected showed activity against the HIV. Of 776 fully identified species that have been tested, 106 showed activity; of the 106 active species, 62 have a history of folk medicinal use (based on data from Perry and Metzger's Medicinal Plant of East and Southeast Asia, 1980; on the NAPRALERT database on natural products at the University of Illinois at Chicago; and on inquiries from the local populace), while 44 do not have a history of folk medicinal use.

Aside from its goal and expected benefit of finding clinically useful drug(s) to treat cancer and AIDS, the NCI-sponsored plant explorations in Asia have contributed substantially in advancing our botanical and biogeographic knowledge of the flora of the region. The program has helped enrich the Southeast Asian herbaria in particular, and the herbarium database of Southeast Asian plants worldwide, by distributing more than 50,000 new herbarium collections (including non-NCI voucher specimens) from the tropical rain forests of Indonesia, the Philippines, Malaysia, Papua New Guinea, Thailand, and Taiwan to a number of herbaria. Directly or indirectly, the NCI-sponsored plant exploration program has also helped stimulate and strengthen further research activities, both in the plant sciences and in the elucidation of tropical rain forest biological diversity, as well as in other scientific endeavour that may lead to the discovery of new drugs.

A second cycle of funding was again awarded to the PCRPS, University of Illinois at Chicago² in September, 1991, to continue the collecting operation in Southeast Asia for the period of September 1, 1991 through August 31, 1996. The Arnold Arboretum of Harvard University, the Bishop Museum, and the Rijksherbarium collaborate with the project in this second cycle of funding.

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