CHAPTER I

Oldenlandia diffusa and Acanthus (ilicifolius & ebracteatus)

Introduction

A knowledge of the biological and/or chemical constituents of plants is desirable, not only for the discovery of new therapeutic agents, but because such information may be of value in disclosing new sources of such economically important materials as tannins, industrial oil, gums, precursors for the synthesis of complex chemical substances, etc. Also a novel chemical structure, isolated from plant sources, often leads to the preparation of a series of synthetic analogs which may have some medicinal or economic value. A knowledge of the chemical constituents of so-called "toxic" plants could place the treatment of plant poisonings of both humans and animals on a more rational and specific basis. The chemical constituents of area of chemotaxonomy (biochemical systematic), biosynthesis, and deciphering the actual value of folkloric remedies.

The problems of the natural product investigator interested in biologically active compounds are complex and differ distinctly from those of the organic chemist who synthesizes or manipulates molecules using structure-activity relationships as his theoretical motivation to design. Natural product investigators

must initially select their plants from a total number of available species that have been estimated to be as high as 750,000, excluding the bacteria and fungi. When this selection has been made, whether it be on theoretical grounds or on the basis of preliminary experimentation, the problems of acquisition and the variability of plant material become complicating factors. Also, the natural product investigator must enlist the aid of a cooperative pharmacologist, or make other arrangement to insure a suitable biological evaluation for his extracts and isolated compounds. The problems inherent in the biological evaluation of crude plant extracts are in themselves unique since those who are concerned with biological evaluation usually have little interest in crude plant extracts. In effect, priority is usually given to the biological evaluation of crystalline compounds. However, it should be remembered that in natural product studies, these pure compounds are realized only after initial biological tests on crude extracts provide justification for a phytochemical investigation. The lack of interest in the biological evaluation of crude plant preparation will probably continue as the major block to progress in the study of natural products.

The importance of plant-derived compounds in modern medicine is often underestimated. A recent survey has pointed out that 47% of some 300 million[(1)] new prescriptions written by

physicians in 1961 contained, as one more active ingredients, a drug of natural origin. Furthermore, between 1950 and 1960, prescriptions containing drugs of natural origin increased by 7.7 % [2]

Oldenlandia Linn. [3, 4] A large genus of herbs or somewhat shrubbly plants of the family Rubiaceae, is found throughout the tropical and subtropical regions of the world. About seventy species occur in India, some of which are used in medicine. The study of Oldenlandia Linn. is far from completion . Only six species have been collected (O.alata, O. biflora, O. diffusa, O. herbacea, O. corymbosa, O. dichotoma), while W.G. Graib in Florae Siamensis Enumeratio reported in 1931 that there are eighteen species of Oldenlandia Linn. in Thailand.

Oldenlandia diffusa Linn.[3, 4], a sub-prostrate weak herb, is diffuse annual with linear leaves and usually solitary white flowers; occurring throughout in the tropical parts of Asia such as India, Thailand, Malaysia, Philippines, in the Peninsula all down the west coast, but not yet reported for the east side.

The decoction is used for general weakness, biliousness, impure blood, excessive thirst and heat, fever and gonorrhoea. In Philippines, a brew of the plant is used as mouth wash in toothache. Alvins [3,4] records its use for poulticing apparently for lumbago in Malaya. In addition, the Oldenlandia Healthy Water; which is sold in common market by China National Cereals Oils and Foodstuffs Import and Export Corporation Tsingtao, the People's Republic of China, is labelled that efficacy of Oldenlandia Healthy Water is generally recognized for precaution of

cancer, chronic affections of gastric enteritis and other troubles of the stomach. Oldenlandia Healthy Water is also good for precaution of other diseases and served as refreshment.

Acanthus Linn. A small genus of thistle plants, of the Acanthaceaes family, with thorny leaves, is found in the Mediterranean region, tropical Africa and eastwards through tropical Asia and Malaysia. About fourteen species are found in the tropical region of the World. Only two species have been collected in Thailand (A. ilicifolius and A. ebracteatus)

A. ilicifolius Linn. and A. ebracteatus Vahl. (3, 4), both are small genus of xerophilous plants with thorny leaves, but only the colour of their flower is different; the former is violet whereas the latter is white. In domestic medicine, they are used for curing the same ailments.(5)

It seems curious that in India very little use has been made of this genus: Tavera(3, 4) makes mention of fomentations with the aid of the leaves as a treatment for rheumatism and neuralgia, practised in God, but otherwise there is nothing on record from India. Crevost(3, 4) states that in default of something better the leaves are used as a masticating in Tonkin. There seems to be a slight quantity of tannin in them; and therefore the chewing; but there is so little that they are quite innocuous. Paranjpye(6) describes how the plant, chopped and bruised, may be fed to cattles, at the rate of 12 to 15 lbs. per day to an animal, which begins to like it in about a couple of days.

The goal of this research is the isolation, study of the chemical constituents and structure elucidation of tumour inhibitors from Oldenlandia diffusa Linn. and Acanthus (ilicifolius Linn. and ebracteatus Vahl.). The resource of the former is found in Thailand at Khlongthom and Krabi and is called 'Mharkdipnamkhang' in Thai. The latter grown in the salt-marshes of the sea such as Samutprakarn, Samutsakorn, Samutsongkram, etc, is called Nguakplamho in Thai.