Pham Van Tat

# Development of New Anticancer Agents From Leaf Of Plants In Viet Nam

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# Preface

Scientific research for us is important and necessary works in order to improve and expand the knowledge. Since 1990s our role of scientific research had become to be important in our university. We had have some published articles in Viet Nam about natural products. We also participated the projects for scientific research of Ministry of Education and Training. We had the scientific researches in which our works had been published by academic journals in the field of Pharmaceutical Sciences in Viet Nam:

- Studying the process of extracting and purifying the total alkaloid extract from Dichroa febrifuga Lour and the screening process for alkaloid from the extract of leaves of Dichroa febrifuga Lour.
- Using artifical neural network for screening process of alkaloids from Dichroa febrifuga Lour.
- During this duration, we had also a number of scientific works in the fields of new scientific computer applications in chemistry. For example the using QSAR in design for new drugs.
- Quantitative Structure-activity relationship (QSAR) study on a set of benzodiazepine derivatives. In those years, we had a project at Vietnamese government level in the field of computer applications in the chemistry, with the topic: Study of quantitative relationship between the structure and activity of the group antimalarial compounds, anti-cancer, anti-HIV, anti-fungal and anti-bacterial.

Some plants *Cynara scolymus* L, *artocarpus incisa* L, *zingiber zerumbet* SM, *perilla ocymoides* L and *glucine max* L in Viet Nam were a precious species originating from the Mediterranean region. It acclimatized to Viet Nam and grown in Dalat region. The studies for these plants showed that its ingredients from flowers, leaves, stems, roots are very effective in healing and for food. The flavonoid compounds were extracted from them working in the treatment of some diseases such as liver, bile, cardio, antioxidants and reduce cholesterol in blood, especially HIV anti-virus. These also showed in Do Tat Loi works [1]; Artocarpus Incisa L. is a species originating from the South Pacific Islands, Oceania (Australia). Currently Artocarpus Incisa L has acclimatized to the Islands Giava, Sumatra (Indonesia), Malaysia and Asia regions. In Vietnam, Artocarpus Incisa L scattered only has been planted in the orchard of the Vietnamese family. Artocarpus Incisa L is the kind of big trees. The compound groups in leaf Artocarpus Incisa L were determined quantitatively, the results showed that the leaves of Artocarpus Incisa L contain substances: flavonoids, saponins, anthranoid, tannin, reducing sugar, acid amines and polysaccharides. The water extract from the leaves of Artocarpus Incisa L showed that the blood pressure is lowered and decreased heart rate in mice. The water extract from leaves of Artocarpus Incisa L

effects on cancer cells of the pancreas. The methanol extract from leaves of Artocarpus Incisa L also is capable for selectively toxic effects to cancer cells of the pancreas [1].

The success of our researches motivated us to prepare this book. Since operating systems of computers become much faster than printed media, we decided the use of semi-empirical quantum calculations and construction of quantitative structure activity relationship (QSAR) models. The flavones and isoflavones are constructed and optimized by means of molecular mechanics MM+. The atomic charge descriptors resulting from Parametric Model number 3 (PM3) method are used to build the multivariate QSAR models such as multiple linear regression (MLR), partial least squares regression (PLS) and artificial neural network (ANN). The modern techniques of nuclear magnetic resonance spectroscopy and mass spectrometry have used for the isolated processes of flavonoid substances to determine the molecular structures. We have developed the ways of statistical analysis for modeling greatly extended the capabilities of these methods. However, since the amount and quality of available flavonoids with anticancer activities has considerably increased over the years, we decided to prepare a significantly this manuscript to contribute for the database of anticancer compounds.

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