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**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 artificial 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.

Contents

Part 1: Prediction Of Anticancer Activities Of Cynaroside And Quercetin In Leaf Of Plants <i>Cynara Scolymus</i> L And <i>Artocarpus Incisa</i> L Using Structure – Activity Relationship	3
Abstract	3
1. Introduction	3
2. Computational details	4
2.1. Materials and means	5
2.2. Isolated technology of quercetin and cynaroside	6
2.2.1. Chemicals and equipment	6
2.2.2. Isolation and identification of flavonoids	7
2.3. Constructing QSAR models	8
3. Results and discussion	9
3.1. Calculation of charge parameters	9
3.2. Constructing QSAR _{MLR} and QSAR _{PLS} model	9
3.3. Building QSAR _{ANN} model	12
3.4. Prediction of biological activity for new substance	12
4. Conclusion	15
References	16
Part 2: Anticancer Agents Of Kaempferol-3-O-METHYLEETHER And Kaempferol-3-O-(2,4-O-Diacetyl-Alpha-L-Rhamnopyranoside) In Leaf Of Plants <i>Zingiber Zerumbet</i> SM using 2D, 3D Descriptors	18
Abstract	18
1. Introduction	18
2. Materials and methods	19
2.1. Dataset	19
2.2. Constructing QSAR model	19
3. Results and discussion	21
3.1. Calculation of molecular descriptors	21
3.2. Development of QSAR _{MLR} and QSAR _{PCR} model	21
3.3. Building QSAR _{ANN} model	25
3.4. Predictability of QSAR model	25
4. Conclusion	29
References	29

Part 3: Prediction Of Anticancer Activities Of Luteolin And Daidzin In Leaf Of Plants <i>Perilla Ocymoides</i> L And <i>Glucine Max</i> L Using 2D, 3D Descriptors	31
Abstract	31
1. Introduction	31
2. Materials and methods	32
2.1. Dataset	32
2.2. Constructing QSAR model	33
3. Results and discussion	34
3.1. Calculation of molecular descriptors	35
3.2. Development of QSAR _{MLR} and QSAR _{PCR} model	35
3.3. Building QSAR _{ANN} model	38
3.4. Predictability of QSAR model	39
4. Conclusion	42
References	42
Appendices	45