

THE NATURAL PRODUCTS INSTITUTE

Trevor H. Yee, BSc (Hons), PhD UWI, MBA (Hons) Nova
– Executive Director

WORK OF THE INSTITUTE

Dr. Trevor Yee of the Natural Products Institute and Prof. Helen Jacobs of the Dept. of Chemistry were granted a local patent for their invention, “A Commercial Process to extract Quassinoids from Bitterwood, in January, 2007.” A patent application has also been filed for the invention, in the USA on June 12th, 2006 and in Europe on Nov. 8th, 2006. Jamaica is a main source of the Bitterwood tree, which is exported in wood chips, as raw materials for processing overseas. The extracted quassinoids, which are extremely bitter, stimulate the appetite and aid digestion, when used in small quantities. The extractives are therefore formulated in a number of aperitifs and other beverages, used clinically as a treatment for anorexia nervosa, as a pesticide, lice treatment, vermifuge, and as a cattle feed additive to encourage weight gain, among other uses. Attempts are presently being made for the commercialization of the invention, other ethno-medical claims for the plant being investigated, and further research on the process is being investigated.



Research is also continuing on a number of potential new commercial essential oils and the commercialization of this research.

During the year, Mr. Mario Shields, who had completed a M. Phil. degree under Dr. Rupika Delgoda at the Institute and had continued research as a Research Fellow, was granted a full scholarship to pursue a Doctoral degree in Cancer Research at Northwestern University, in Chicago, USA. The fellowship has been continued with attempts to establish cancer cell lines and the investigation of natural and synthetic compounds with anti-cancer potential.

RESEARCH IN PROGRESS

A new research investigation was undertaken by Dr. Trevor Yee into a potential new host plant for a Citrus pest, with a chemical investigation in the phytochemicals that attract the pest to lay and feed on the different host plants. These investigations may lead to methods for control of the pest.

In addition, Dr. Yee has also started to investigate plant extracts with bio-herbicidal potentials these are plant extracts that have herbicidal properties against other plants.

- The prevalence of the practice of poly-pharmacy involving herbal and prescription medicines in Jamaica. Dr. Rupika Delgoda and Dr. Novie Younger.
- The study of potential interactions between herbal and prescription medicines; molecular modeling. Dr. Rupika Delgoda, Prof. Michael Sutcliffe (UK)
- The inhibition of cytochrome P450 enzymes by natural and synthetic compounds: the search for chemoprotectors. Dr. Rupika Delgoda, Prof. Paul Reese, Prof. Helen Jacobs, Prof. Yvette Jackson and Dr. Winklet Gallimore.
- The establishment of screens for anti-cancer activity assays. Dr. Rupika Delgoda, Prof. David Gangemi (USC, U.S.A.).

Client Services

The following client services were continued:

- Development of nutraceuticals from local ethnomedical formulations.
- Assistance with the bioactivity claims of a herbal preparation.
- Assistance with the formulation/product development of several household preparations.

International Collaborations

A number of international collaborations were established or continued by Dr. Delgoda:

- with Prof. David Gangemi at the National Nutraceutical Institute, Clemson University, South Carolina, U.S.A.

The Institute is very grateful for Prof. Gangemi and Clemson University for inviting and training Mr. Shields from NPI, and for the gifts of valuable research materials towards establishing anti-cancer activity testing at UWI, Mona.

- with Prof. Michael Sutcliffe at the Manchester Interdisciplinary Biocentre, University of Manchester, U.K., in the area of molecular modeling of CYP450 enzymes.
- with Prof. Edith Sim of University of Oxford. U.K. The Institute is grateful for the gift of valuable research material sent by Prof. Sim for testing natural products with potential anti-tuberculosis activity.

New Grants:

A grant of US\$ 1,380 was received from the Postgraduate Research fund and the Principal, UWI, Mona and the University for Mr. Mario Shields to visit Clemson University to undergo a one month training there.

Continuing Grants

SuperPlus graduate grant (worth J\$1.5 M) to Dr. R. Delgoda. A research Fellowship to Dr. Delgoda and awarded to Mr. Mario Shields, and Ms. Simone Badal.

International Foundation for Science (Worth US\$11,900) to Dr. Delgoda.

Environmental Foundation of Jamaica (worth US\$62,000) to Drs. T. Yee, R. Delgoda, and Prof. R. Young.

Letters Patent

A Commercial Process to Extract Quassinoids from Bitterwood, Dr. Trevor Yee, Prof. Helen Jacobs, recorded at The Registrar of Companies, Jamaica, 19th January, 2007.

PAPERS PRESENTED

Delgoda, R.

- “Adversity considerations of herbal products”, Neutraceutical Symposium organized by the Scientific Research Council, 2006

- “The use of high throughput screens for the search of bioactive natural products”, Workshop on Drug Development from Natural Products: Past, Present and Future. Faculty of Medicine, UWI, November 2006
- (Bramwell A., Thompson T., and Martin A.) “Characterization of cytochrome P450 enzymes in normal and diseased human tissue”, 15th Annual Research Conference, Faculty of Medical Sciences, UWI, November 2006

PUBLICATIONS

Refereed Journal Articles

WIMJ = *West Indian Medical Journal*

- * G-A Junor, R. Porter, P.Facey and T. Yee, Investigation of the essential oil extracts from four native Jamaican species of *Bursera* for Antibacterial activity, *WIMJ*. 2007, 56(1), 22-25.
- * Delgoda R., Bramwell A., Thompson T., and Martin A. Characterization of cytochrome P450 enzymes in normal and diseased human tissue, *WIMJ*, 2006, 55(suppl 4), 28 (abstract)

PUBLIC SERVICE

Dr. Trevor Yee

- Treasurer, International Society for the Development of Natural Products
- Member, Editorial Board, Jamaica Journal of Science and Technology
- President, The Natural History Society of Jamaica
- Member, Advisory Steering Committee for Complimentary Medicine-Ministry of Health
- Member, Steering Committee: Towards a National Bioprospecting Programme, National Commission of Science and Technology, Office of the Prime Minister

Dr. Rupika Delgoda:

- UWI representative and Research Sector Representative, Caribbean Herbal Business Association, Jamaica Chapter

- Executive Committee Member, Jamaica Sri-Lanka Friendship Association

Supervision of Research Students:

Postgraduates:

Two MPhil and One PhD students working jointly with the Natural Products Institute, The Depts. of Chemistry, Basic Medical Sciences, and Life Sciences, are being supervised by Dr. Trevor Yee, Dr. Lisa Lindo, Prof. Phyllis Coates-Beckford.

One MPhil student completed his degree working at the Natural Products Institute supervised by Dr. Rupika Delgoda and co-supervised by Prof. Paul Reese at the Department of Chemistry. One Research Fellow is also supervised by Dr. Delgoda.

Undergraduates:

One undergraduate student registered in the Dept. of Chemistry was supervised over a 2 months summer work program by Dr. Yee.

Three undergraduate students registered in the Department of Biochemistry for final year Biochemistry, were supervised by Dr. Rupika Delgoda for a 6 month project each.

Dr. Delgoda lectured in B.Sc. final year Advanced Biochemistry course.

Dr. Yee guest lectured in the Mycology course to the BSc Life Science students.

Drs. Yee, Delgoda, and Sylvia Mitchell coordinated and taught the Herbal and Complimentary Medicine course to the B. Pharm. Final Year students at the University of Technology.