

# THE NATURAL PRODUCTS INSTITUTE

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

## WORK OF THE INSTITUTE

During the year 2010/2011, the Institute won a number of awards for its research. At the Scientific Research Council's Innovations in Science and Technology Competition for the year 2010, the Institute swept all the major prizes in the competition, by winning First prize in the Manufacturing, Food and Agriculture Category, and First prize as the Overall Winner of the Competition. This was for Dr. Trevor Yee's, Ms. Charah Watson's and Ms. Nemoi Chisholm's of the Institute research project,

“A study of Two Invasive Citrus pests in Jamaica, *Heraclides andraemon* and *Papilio demoleus* and the Development of Control Measures against them.” In addition Mrs. Simone Badal-McCreath, Ph. D. candidate supervised by Dr. Rupika Delgoda of the Institute, won the Young Scientist of the Year Award. The title of her presentation was, “Uncovering the Anticancer Efficacies of Jamaican Natural Products”.

Later in the year Dr. Yee, Ms. Watson, Ms. Chisholm and their collaborators, Dr's. Eric Garraway and Dwight Robinson of the Dept. of Life Sciences also won the Principal of the Mona Campus' Award for the Most Outstanding Research Activity for the Faculty of Pure and Applied Sciences for the year 2010, for their research project. Then, at the Faculty of Pure and Applied Sciences Awards they were also awarded the Outstanding Research Award for the year. Finally, there was international recognition for our research project in Ms. Charah Watson being recognized as one of the one hundred most outstanding young chemists in the world. She was one of only two persons from this region to be so



honoured and received full sponsorship of her airfare, accommodation and conference fees paid' She was presented with her award at a Natural Products, Medicinal and Organic Synthesis Chemistry conference in Sao Paulo, Brazil to celebrate the International Year of Chemistry and at which four Nobel Prize winners in Chemistry were among the invited speakers. She presented on her research at this conference.

Mr. David Picking, former Commonwealth Scholar and current MSc/PhD student with Dr. Delgoda was awarded the Best Presenter at the well attended 56th annual Caribbean Health Research Council Meeting, April 2011, Guyana, for the oral presentation outlining their work, 'The Prevalence of Herbal Medicine Home Use and Concomitant Use with Pharmaceutical Medicines in Jamaica'.

A year after our submission of two preliminary U. S. Patent Applications for "Methods of Controlling the Breeding Behavior of Butterflies" and "Methods and Products for Reducing the Population Size of *Papilio demoleus* L. (Papilionidae)", we have now submitted these as full patent applications, on 29<sup>th</sup> Jan. 2011. Dr. Yee and Prof. Helen Jacobs of the Dept. of Chemistry has also made significant improvements to their original process to extract the active ingredients of Bitterwood, and for which they were awarded U.S. and Jamaican Patents. They were able to submit a new preliminary U.S. Patent application for their improved process, "A Simplified Process for Extracting Quassinoids", submitted to the US. Patent Office on 1<sup>st</sup> Feb. 2011.

Major funding was also received by Dr. Delgoda as main Principal Investigator from the Forest Conservation Fund for her project entitled, "Bioprospecting forest medicinal plants for the development of a nutraceutical industry: aiding alternative livelihoods". With this funding, the Institute will be forging ways for a new cancer research laboratory dedicated to investigating natural products with potential anti-cancer bioactivity.

Research is also continuing on a number of research projects as well as some new projects, including an investigation into the use of some of our agricultural wastes as alternative energy sources, and new grant

applications for additional external funding for our research projects have been submitted.

Work has been presented in international and local scientific conferences by both staff and students registered at the Institute.

## U.S. Patent Applications

- **Trevor H. Yee, Charah T. Watson**, and Eric Garraway, 2010. Methods of Controlling the Breeding Behavior of Butterflies. Full Utility Patent Application filed with the U. S. Patent Office, Jan. 29, 2011.
- **Trevor H. Yee, Charah T. Watson**, Eric Garraway, **Nemoi Chisholm**, and Dwight E. Robinson, 2010. Methods and Products for Reducing the Population Size of *Papilio demoleus* L. (Papilionidae). Full Utility Patent Application filed with the U. S. Patent Office, 29th Jan., 2011.
- **Trevor H. Yee** and Helen M. Jacobs A Simplified Process for Extracting Quassinoids. Preliminary U. S. Patent Application, filed 1<sup>st</sup> Feb., 2011.

## PAPERS PRESENTED

- **T. H. Yee, C. T. Watson**, E. Garraway, D. Robinson and **N. Chisholm**, A Study of Two Invasive Citrus Pests in Jamaica, *Heraclides andraemon* and *Papilio demoleus* and the Development of Control Measures against them, Scientific Research Council 23<sup>rd</sup> Science and Technology Conference and Exposition, Nov. 9-11, 2010.
- **C. Watson** and **T. Yee**, A Study on Two Invasive Butterfly Species in Jamaica, *Heraclides andraemon* and *Papilio demoleus* and the Development of control Measures against them. Scientific Research Council 23<sup>rd</sup> Science and Technology Conference and Exposition, Nov. 9-11, 2010.
- **C. Watson**, The Development of Control Measures against the Invasive Citrus Butterfly *Heraclides andraemon* (Papilionidae)

Hubner using Green Technologies. (University of Technology Seminar, November 2010)

- **R. Delgoda, S Francis, O Dunbar**, M. McNeil, H Jacobs and R Porter, “Inhibition of bacterial NAT activity by natural products and their derivatives”, Symposium from drug metabolism to drug discovery, July 15-17, 2011, Oxford, U.K.
- **S. Francis, S Badal**, D. Hasse, G. Huang, TJ, Tzeng, J. Jacobs, E. Brantley and **R. Delgoda**. “Cytochrome P450 (CYP) inhibition screening with extracts from Jamaican plants”, Inaugural scientific conference, “Science, Technology and Sport: Bridging the gap between research and practice”, June 8-10, 2011, Kingston, Jamaica
- **D Picking**, N Younger, S Mitchell and **R Delgoda**, “Herbal Medicine Home Use in Jamaica” 1st Public Health conference, May 2011, Kingston Jamaica
- **S Badal**, W Gallimore, DG Huang, TJ. Tzeng, and **R Delgoda**, “Anticancer and Chemopreventive Leads From The Marine Algae *Cymopolia Barbata*” 56th annual Caribbean Health Research Council meeting, April 2011, Guyana.
- **D Picking**, N Younger, S Mitchell and **R Delgoda**, “The Prevalence of Herbal Medicine Home Use and Concomitant Use with Pharmaceutical Medicines in Jamaica” 56th annual Caribbean Health Research Council meeting, April 2011, Guyana.
- **S Badal, S Francis**, D Haase, G Huang, TJ Tzeng, H Jacobs and **R Delgoda**, Potential chemopreventive xanthenes found in *Garcinia humilis*”, 56th Annual Caribbean Health Research Council meeting, April 2011, Guyana.
- **Badal S**, Gallimore W, Huangc, T.J, Tzengc, D.J. Gangemi D, and **Delgoda R** “Chemopreventive and Anti-Cancer leads from the marine algae *Cymopolia Barbata*”, 19th Annual Medical Research Conference, UWI, November 2010.
- **Picking D**, Younger N, Mitchell S and **Delgoda R**, “The prevalence of herbal medicine home use in rural and urban

communities in Jamaica”, 19th Annual Medical Research Conference, UWI, November 2010.

- **Badal S**, Huang G, Jacobs H, Tzeng T, and **Delgoda R**, “Uncovering the anticancer efficacies of Jamaican natural products” 23rd Science & Technology Conference & Exposition, Scientific Research Council, Kingston, November 2010.
- **Picking D**, Younger N, Mitchell S and **Delgoda R**, “ Herbal medicine use in urban and rural communities in Jamaica” 23rd Science & Technology Conference & Exposition, Scientific Research Council, Kingston, November 2010.
- **Badal S**, Picking D, **Franis S**, Simposn D.S., Huang G, Vendantam P, Jacobs H, Tzeng T.J. and **Delgoda R**, Anti cancer efficacy of Jamaican natural products, Proceedings of the College of Health Sciences, Health Professionals Conference 2010, July 10-11, 2010, University of Technology, Jamaica.

## PUBLICATIONS

- \* **Picking D**, Younger N, Mitchell S, **Delgoda R**, The prevalence of herbal medicine home use and concomitant use with pharmaceutical medicines in Jamaica. *J Ethnopharmacol.* 2011; 137 (1): 305-11. Epub, May 27, 2011.
- \* **Francis S**, **Delgoda R**, Young R, Effects of embryonic exposure to  $\alpha$ -Lipoic acid or ascorbic acid on hatching rate and development of Zebrafish (*Danio rerio*), *Aquaculture Research*, Epub. June 7, 2011.
- \* **Badal S**, Williams SA, Huang G, **Francis S**, Vendantam P, **Dunbar O**, Jacobs H, Tzeng TJ, Gangemi J and **Delgoda R**, Cytochrome P450 1 enzyme inhibition and anticancer potential of chromene amides from *Amyris plumieri* 2011, *Fitoterapia*, 82, 230-236
- \* **Delgoda R**, Younger N, Barrett C, Braithwaite J, Davis D, The prevalence of herbs use in conjunction with conventional

medicines in Jamaica, 2010, *Complementary therapies in Medicine*, 18, 13-20.

## **Income Generation**

Forest Conservation Fund (J\$11.94M); Bioprospecting forest medicinal plants for the development of a nutraceutical industry: aiding alternative livelihoods; approved for 3 years, Awarded to Dr. Delgoda (NPI, PI) and Dr. Lindo (Biochemistry)

The Institute earned J\$150,000 for an investigation on behalf of a client.

## **PUBLIC SERVICE**

### **Trevor H. Yee**

- Treasurer, International Society for the Development of Natural Products.
- Acting President, the Natural History Society of Jamaica.
- Member, Steering Committee: Towards a National Bioprospecting Programme, National Commission of Science and Technology, Office of the Prime Minister.

### **Rupika Delgoda**

- Executive Director, TEDx Jamaica (a nonprofit organization devoted to ideas worth spreading).
- UWI representative, Caribbean Business Herbal Association - Jamaica Chapter.
- Executive committee member, Jamaica Sri-Lanka Friendship Association.
- Executive committee member, Eleven Millsborough residents association.