

## THE NATURAL PRODUCTS INSTITUTE

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– Executive Director

### WORK OF THE INSTITUTE

Research has continued on the extraction process for Bitterwood, *Picrasma excelsa* (Simaroubaceae), which has been granted local and US Patents. An application for a European Patent has been filed. The process along with two improvements are being completed for additional filings.



As a result of the investigations carried out into novel control methodologies against two alien invasive pests of Citrus, two Patent Applications were filed with the US Patent Office, on 29<sup>th</sup> January, 2010, “Methods of Controlling the Breeding Behavior of Butterflies” and “Methods and Products for Reducing the Population Size of *Papilio demoleus* L. (Papilionidae)”. The first of these described the methodology developed against the butterfly species, *Heraclides andraemon*, which arrived in Jamaica in 1945, and for which the Citrus industry spends several million dollars annually in control measures. The second pest, *Papilio demoleus*, which has the reputation of being a potentially devastating pest was first observed in the Western hemisphere in the Dominican Republic in 2004, and had spread to Puerto Rico in 2005, and Jamaica in 2006. Since the filing of these applications, research has continued into additional measures of control against these pests.

The Institute received a major grant valued at J\$11.95M from the Forest Conservation Fund, to conduct research for developing a Nutraceutical industry in Jamaica. Granted to **Dr. Delgoda**, and collaborators, one of the major outcomes would be to establish bioactivity screens (especially a Cancer screening facility) at UWI, Mona. Cancer training was also obtained for one of our PhD candidates, **Ms. Simone Badal**, at Clemson

University, South Carolina, with funding from U.S.A. and Graduate Studies, UWI, Mona.

One of our students, **Ms. Charah Watson**, who is completing her PhD degree, entered the Florida Entomological Society's PhD Students' Research Competition in July 25-28, 2010, and won second prize from a field of eight competitors for her presentation. The competition was held at the Society's Annual Meeting at Jupiter Beach, Florida. She presented on the new pest control methodologies developed which resulted in the filing of the two patent applications mentioned. She had been awarded a travel grant by the Research and Publications Committee to travel to Florida.

One of our posters (by **Dr. Delgoda**, and PhD candidate **Simone Badal**), won first place (for technical excellence) at the 23<sup>rd</sup> Mona Symposium on Natural Products and Medicinal Chemistry, January 4-7, 2010. One of the posters (by **Dr. Yee**, PhD student **Denise Daley-Beckford**, **Dr. R. Lindo**, **Prof. P. Reese**) won second prize at the UDOP Conference, March 26-29, 2010.

Research is continuing on plants with chemopreventive properties (prevention of the formation of cancers), herbicidal activity (particularly useful in organic agriculture), anti-tuberculosis activity and those with value as bio-fuels. Major surveys spanning local and rural populations on the use of herbs alone and along with prescription medicines have been conducted, along with laboratory investigation to predict likely drug-herb interactions.

## RESEARCH GRANTS

- **Forest Conservation Fund (J\$11.946M)** for project "Bioprospecting forest medicinal plants for the development of a nutraceutical industry: aiding alternative livelihoods", 2010-2013, granted to Dr. R. Delgoda (Principal Investigator, NPI) and Dr. L. Lindo (Biochemistry, UWI).
- **Research and Publication Grant, UWI (2 graduate students, US\$4000)** to Dr. Delgoda

- **Research and Publication Grant US\$ 2000** (for travel for Simone Badal, PhD candidate).
- **Research and Publication Grant US\$ 1035** (for travel for Charah Watson, PhD candidate).

## PAPERS PRESENTED

### Trevor H. Yee

- **Watson C.**, Jacobs H., Garraway E., Robinson D., **Chisholm N.**, **Yee T.** Novel Investigations and applications with economic significance from the Jamaican Biodiversity. Joint 7<sup>th</sup> International Symposium on Chromatography of Natural Products and 6<sup>th</sup> International Society for the Development of Natural Products, Lublin, Poland, June 14-17, 2010.
- **Trevor H. Yee, Charah T. Watson,** Eric Garraway, Dwight E. Robinson, and **Nemoi S. Chisolm.** Studies on Two Invasive Butterflies and Development of Methods to Control Them. Annual General Meeting of the Natural History Society, 20<sup>th</sup> March, 2010.

### Rupika Delgoda

- **Badal S, Picking D, Franis S,** Simpson D.S., Huang G, Vendantam P, Jacobs H, Tzeng T.J. and **Delgoda R,** Anti cancer efficacy of Jamaican natural products , Health professionals conference 2010, July 10-11, 2010, University of Technology, Jamaica
- **Badal S, Picking D, Franis S,** Reese P, Jacobs H, Jackson Y, Gallimore W, Tzeng J, Gangemi J and **Delgoda R,** “ Anticancer and chemopreventive properties of natural and synthetic compounds” , 6<sup>th</sup> International symposium of the development of natural products, Poland, June 2010
- **Delgoda R** and Sutcliffe M, “Structure-activity relationship studies of cytochrome P450 1A1 inhibitors”, 23<sup>rd</sup> Mona symposium on natural products and medicinal chemistry, Jan 4-7, 2010

## Posters

### Trevor H. Yee

- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.**, and Reese, P. 2010. Hypoglycaemic Principles Isolated from *Eucalyptus camaldulensis*. The Medical Science Conference, Nov. 11-14, 2009.
- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.**, and Reese, P. 2010. Hypoglycaemic Principles Isolated from *Eucalyptus camaldulensis*. The Mona Symposium: Natural Products and Medicinal Chemistry, Jan. 4-7, 2010.
- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.** and Reese, P. 2010. Hypoglycaemic Compounds Isolated from *Eucalyptus camaldulensis* Showing a Similar Effect in Comparison with Metformin. The University Diabetes Outreach Program Conference, March 26-29, 2010.

### Rupika Delgoda

- **Badal S**, Williams S.A, Jacobs H and **Delgoda R.**, Natural products as inhibitors of CYP enzymes, 23<sup>rd</sup> Mona Symposium on Natural Products and Medicinal Chemistry, Jan 4-7, 2010.
- Parker SA, Jacobs H, **Delgoda R** and **Badal S**. Semi-synthetic polyprenylatedacylphloroglucinols (PPAPS) from 7-epi-nemorosone, the major constituent of *clusia flava*; 23<sup>rd</sup> Mona Symposium on Natural Products and Medicinal Chemistry, Jan 4-7, 2010.
- **Badal S**, Williams S.A, Jacobs H and **Delgoda R.**, Natural products as inhibitors of CYP1 enzymes, 16<sup>th</sup> North American meeting of the International Society for the Study of Xenobiotics, Baltimore, Maryland, October 18-22, 2009.

## Abstracts

### Trevor H. Yee

- **Watson C.** , Jacobs H., Garraway E., Robinson D., **Chisholm N.**, **Yee T.** Novel investigations and applications with economic

significance from the Jamaican Biodiversity. Joint 7<sup>th</sup> International Symposium on Chromatography of Natural Products and 6<sup>th</sup> International Society for the Development of Natural Products, Lublin, Poland, June 14-17, 2010.

- Daley-Beckford, D.K., Lindo, R. L., **Yee, T.**, and Reese, P. 2009. The Isolation, Purification and Elucidation of the hypoglycaemic Principles of *Eucalyptus camaldulensis* in Normoglycaemic Sprague-Dawley Rats, *West Indian Medical Journal*, Vol. 58: (suppl. 1) p. 39.
- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.**, and Reese, P. 2009. Hypoglycaemic Principles Isolated from *Eucalyptus camaldulensis*. The Mona Symposium: Natural Products and Medicinal Chemistry, Vol. 58: (supplement 4) p.44.
- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.**, and Reese, P. 2010. Hypoglycaemic Principles Isolated from *Eucalyptus camaldulensis*. The Mona Symposium: Natural Products and Medicinal Chemistry, Vol. 23: p. 50.
- Daley-Beckford, D.K., Lindo, R.L., **Yee, T.** and Reese, P. 2010. Hypoglycaemic Compounds Isolated from *Eucalyptus camaldulensis* Showing a Similar Effect in Comparison with Metformin. *West Indies Medical Journal*, Vol 59: (suppl. 1) p. 47.

## **Rupika Delgoda**

- Badal S, Williams SA, Jacobs H and Delgoda R., Natural Products as inhibitors of CYP1 enzymes, *Drug Metabolism reviews*, October 18-22, 2009.
- 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.
- Badal S, Picking D, Franis S, Reese P, Jacobos H, Jackson Y, Gallimore W, Tzeng J, Gangemi J and **Delgoda R**, “Anticancer

and chemopreventive properties of natural and synthetic compounds”, 6<sup>th</sup> International symposium of the development of natural products, Poland, June 2010.

- **Delgoda R** and Sutcliffe M, “Structure-activity relationship studies of cytochrome P450 1A1 inhibitors”, 23<sup>rd</sup> Mona symposium on natural products and medicinal chemistry, Jan 4-7, 2010.
- Badal S, Williams SA, Jacobs H and **Delgoda R.**, Natural Products as inhibitors of CYP enzymes, Book of abstracts, 23<sup>rd</sup> Mona symposium on natural products and medicinal chemistry, Jan 4-7, 2010.
- Parker SA, Jacobs H, **Delgoda R** and Badal S. Semi-synthetic polyprenylatedacylphloroglucinols (PPAPS) from 7-epi-nemorosone, the major constituent of *clusia flava*; 23<sup>rd</sup> Mona symposium on natural products and medicinal chemistry, Jan 4-7, 2010

## PUBLICATIONS

### U.S. Patent Applications

- \* **Trevor H. Yee, Charah T. Watson**, and Eric Garraway, 2010. Methods of Controlling the Breeding Behavior of Butterflies. Filed with the U. S. Patent Office, Jan. 29, 2010.
- \* **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). Filed with the U. S. Patent Office, 29<sup>th</sup> Jan., 2010.

### Peer Reviewed Journals

- \* **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.

## **PUBLIC SERVICE**

### **Trevor H. Yee**

- Treasurer, International Society for the Development of Natural Products.
- Executive Committee Member, 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.