

# THE NATURAL PRODUCTS INSTITUTE

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

## WORK OF THE INSTITUTE

The Institute continued to receive further recognition for its research project, “A Study of Two Invasive Citrus Pests of Jamaica, *Heraclides andraemon* and *Papilio demoleus*, and the Development of Control Measures against Them”. One of our students, **Ms. Charah Watson**, was chosen as one of the One Hundred Most Promising Young Chemists in the World on the occasion of the Declaration of 2011 as the International Year of Chemistry by the United Nations Educational, Scientific, Cultural Organization (UNESCO) and the International Union of Pure and Applied Chemistry (IUPAC) based on our pest control research. She presented on her research at the celebratory symposium held Aug. 14-18, in Sao Paulo, Brazil. She was also recognized for this award at the Annual Faculty of Pure and Applied Sciences Awards held in March 2012.



Our staff and students have been invited to present other special lectures at several national and international conferences including the Third World Academy of Sciences (TWAS) Symposium, Tobago, Dec. 2011, the University Diabetes Outreach Programme (UDOP), Montego Bay, March 2012, and at the TRAMIL network for applied research for traditional popular medicine in the Caribbean, Colombia, Feb. 2012.

**Dr. Trevor Yee** of the Institute and **Prof. Helen Jacobs**, Head of the Dept. of Chemistry, were granted another US Patent for their extraction processes of Bitterwood, *Picrasma excelsa* (Simaroubaceae), “Process to Extract Quassinoids”. This latest US Patent No. 8,217,187 B2 was issued July 10<sup>th</sup>, 2012. Another US Patent application with several improvements

to the original processes, was submitted on 1<sup>st</sup> Feb. 2012, and is patent pending.

The Institute, through funds from UWI and a grant awarded to Dr. Delgoda through the Forest Conservation Fund, has refurbished one of its laboratories for conducting anti-cancer screenings. This dedicated space is expected to screen local fauna and flora for potential compounds active against several types of cancers.

The Institute also hosted the visit of Dr. Mark Paine, Liverpool School of Tropical Medicine, U.K. who gave a public seminar and provided expert advice to the Ministry of Health.

Two of the Institute's students, **Mrs. Simone Badal-McCreath** and **Ms. Charah Watson** have completed the requirements for their PhD degrees, the first doctoral students for the Institute. Mrs. Simone Badal-McCreath was supervised by Dr. Rupika Delgoda for her PhD in Biochemistry. Her thesis is entitled, "Chemopreventive and anti-cancer potential of Jamaican natural and synthetic compounds". Ms. Charah Watson was supervised by Dr. Trevor Yee for her PhD in Chemistry. Her thesis is entitled, "Compositions and Properties of Selected Piperaceae and Rutaceae Essential Oils and Their Role in Control Measures against Two Invasive Citrus Pests". Several other students of Drs. Yee and Delgoda should be completing their PhD and MPhil degrees in the coming year.

## **New Research Collaboration**

A new Collaboration Agreement is being negotiated between the Institute and Dept. of Life Sciences, on behalf of the University, and a major citrus company in the island to develop methods for combating the Citrus Greening Disease, which has infected citrus orchards across the island. It is planned that this agreement will be in place early in the coming academic year and research begun.

## **On Going Research**

Research is continuing in several other areas. Dr. Trevor Yee, Dr. Lisa Lindo and Mrs. Denise Daley-Beckford of the Biochemistry Section of the

Dept. of Basic Medical Science and Prof. Paul Reese of the Dept. of Chemistry have been investigating novel blood sugar lowering (hypoglycaemic) and blood pressure lowering (hypotensive) constituents from a local plant and should complete this investigation for a submission for a new US Patent application in the coming academic year.

Research on potential drug-herb interactions, cancer prevention, anti-oxidant and anti-tubercular activities on Jamaican natural and synthetic compounds continue, supervised by Dr. Delgoda in collaboration with Departments of Chemistry, Biochemistry, Biotechnology and Physiology. On-going overseas collaborations on these projects include the Universities of Oxford, Manchester U.K. and Loma Linda and Clemson, U.S.A.

Of particular note is also the first contribution to the TRAMIL database, "Surveys on herbal medicinal consumptions in Jamaica". These surveys were conducted by MPhil/PhD student David Picking supervised by Dr. Delgoda, in a collaboration with Dr. Sylvia Mitchell (Biotechnology).

## **New Patent Granted**

Trevor H. Yee and Helen M. Jacobs. "Process for extracting Quassinoids", U.s. Patent No. 8,217,187 B2, issued July 10<sup>th</sup>, 2012.

## **PAPERS PRESENTED**

- **Delgoda, R.** "Potential Drug-herb interactions in Jamaica", University Diabetes Outreach programme (UDOP), 18<sup>th</sup> Annual International Conference, March-April 2012, Ocho Rios, Jamaica
- **Delgoda, R.** "Potential Drug-Herb interactions in Jamaica", University of Technology Jamaica, School of Pharmacy, Continuing Education Seminar, March 4, 2012, Nutraceuticals in Therapeutic Management; A Wholistic Approach.
- **Picking D. Delgoda, R** and Mitchell S. TRAMIL network 'Applied research for traditional popular medicine in the Caribbean' organized the 14th TRAMIL Workshop held

February 15-19, 2012, University of Cartagena, Cartagena de Indias, Colombia.

- ‘The Prevalence of Herbal Medicine Home Use in Treating Illness in Jamaica. This was Jamaica’s first submission to TRAMIL

## PUBLICATIONS

- \* **Badal S**, Gallimore W, Huang G, Tzeng TR and **Delgoda R**, “Cytotoxic and potent CYP1 inhibitors from the marine algae *Cymopolia barbata*”, Organic and Medicinal Chemistry Letters, 2012 Jun 11;2(1):21.
- \* Nwokocha CR, Owu DU, Kinlocke K, **Murray J**, **Delgoda R**, et al, “Possible Mechanism of Action of the Hypotensive Effect of *Peperomia pellucida* and Interactions between Human Cytochrome P450 Enzymes” Med Aromat Plants 2012, 1:4; 105-9
- \* **Francis S**, Morris D, **Shields M**, Jacobs H and **Delgoda R**, “In vitro assessment of chromones, alkaloids and other natural products from Caribbean plants as potential anti-tuberculars and chemopreventors” in “Natural Products: Structure, bioactivity and applications”, Goncalves, RE and Pinto, MC (Eds) , Nova publishers, New York, February, 2012.
- \* Nwokocha, C, Owua D, McLaren **M**, **Murray J**, **Delgoda R**, Thaxter K, McCalla K, Young L, Possible mechanisms of action of the aqueous extract of *Artocarpus altilis* (breadfruit) leaves in producing hypotension in normotensive Sprague-Dawley rats, Pharmaceutical Biology, 2012 ; 50(9): 1096-1102
- \* **Badal S**, **Sheilds M**, **Delgoda R**, “Cytochrome P450 enzyme inhibitors from nature”, in edited book “Enzyme Inhibition and Bioapplications”, Sharma RR (Ed.), 2012, p39-56.; <http://www.intechopen.com/books/enzyme-inhibition-and-bioapplications/cytochrome-p450-enzyme-inhibitors-from-nature>.

## Special Invited lectures:

- \* **C. Watson.** Methods of Controlling the Breeding Behaviour of Butterflies and Methods and Products for Reducing the Population Size of *Papilio demoleus* L. (Papilionidae) at the International Year of Chemistry Symposium, Sao Paulo, Brazil, August, 2011.
- \* **C. Watson,** Methods of Controlling the Breeding Behaviour of Butterflies and Methods and Products for Reducing the Population Size of *Papilio demoleus* L. (Papilionidae) at the Third World academy of Sciences Symposium, Tobago, Dec. 2011.
- \* **Francis S,** Dunbar O, McNeil M, Porter R and **Delgoda R.** Potential Medicinal Properties of Tropical Natural Products and their Derivatives. TWAS - ROLAC ; December 7-9, 2011 Tobago.
- \* **Francis S,** Morris D, **Shields M,** Jacobs H, **Delgoda R.** Natural products from Caribbean plants as Potential Anti-tuberculars and Chemopreventors. 2<sup>nd</sup> International Scientific Conference, June 5-7, 2012, UTECH, Jamaica.

## PUBLIC SERVICE

### Trevor H. Yee

- Treasurer, International Society for the Development of Natural Products (ISDNP).
- Executive Committee, Natural History Society of Jamaica (NHSJ).

### Rupika Delgoda

- Co-Licencee and organizer, TEDxJamaica
- Executive committee member, Jamaica Sri-Lanka Friendship Association