

FOOD TECHNOLOGY CENTRE

Innovation for the Food & Bioresource Industries

Prince Edward Island, CANADA

NEWSLETTER

April 2008

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The **2008 Canadian Institute of Food Science and Technology/ Agriculture and Agri-Food Canada Conference** will be held in Charlottetown, PE, May 25 - 27.

The conference is offering two full days of programming on a "green" theme and several special events including A Taste of Prince Edward Island Culinary Experience. See the [Program at a Glance](#).

Success Stories

We love to help our clients succeed! A few of their success stories are available on a new feature on FTC's website. See [Success Stories](#).

Free Preliminary Consultation
FTC provides free preliminary consultation services and FTC will help you source appropriate funding for your food development projects.

Microbiology Laboratory Services

- [Sample Submission forms](#)
- [Requirements for the collection and shipping of samples](#)
- [Specific instructions for the collection and shipping of shellfish samples](#)

To obtain swabbing supplies and sterile bottles, or for further information about our laboratory services, please call our microbiology laboratory at (902) 368-5937.

Natural Sources for Modern Pharmaceuticals

By Muhammad Yousaf, PhD, Organic/Purification Chemist



Approximately 63% of all approved small molecule drugs are derived from natural products, or are nature-inspired semisynthetic derivatives of natural products.

Chemical compounds or substances produced from living organisms – natural products – often have a biological activity which may be useful in pharmaceuticals. These natural chemical compounds may be extracted from tissues of terrestrial plants, marine organisms or microorganism fermentation broths. A crude extract from any one of these sources typically contains novel, structurally-diverse chemical compounds.

Most biologically-active natural product compounds are secondary metabolites which are not directly involved in the normal growth, development or reproduction of organisms. The function or importance of secondary metabolites to the organism is usually of an ecological nature as they are used as defenses against predators, parasites and diseases. Plants have always been a rich source of useful drugs (e.g. morphine and quinine).

Clinically useful drugs which have recently been isolated from plants include the antimalarial agent artemisinin from *Artemisia annua*, and the anticancer agent paclitaxel (Taxol) from the yew tree.

Microorganisms produce a large variety of antimicrobial agents which have evolved to give their hosts an advantage over their competitors in the microbiological world. Some examples of antibacterial drugs isolated from microorganisms are cephalosporins, tetracyclines, aminoglycosides, rifamycins, and chloramphenicol.

Marine sources such as coral, sponges, fish, and marine microorganisms have chemicals with interesting biological activities. For example, curacin A is obtained from a marine cyanobacterium and shows potent antitumor activity.

Animals can sometimes be a source of new drugs. For example, a series of antibiotic peptides were extracted from the skin of the African clawed frog. Venoms and toxins from animals, plants, and microorganisms are extremely potent because they have specific interactions with a macromolecular target in the body and have been used as lead compounds in the development of novel drugs. For example, teprotide, a peptide isolated from the venom of the Brazilian viper, was the lead compound for the development of the anti-hypertensive agents cilazapril and captopril.

If the active principle is present in a mixture of other compounds from a natural source, it has to be isolated and purified. The ease with which the active principle can be isolated and purified depends on the structure, stability, and quantity of the compound. The development of experimental procedures such as freeze-drying and modern chromatography and spectroscopy has made feasible the isolation and purification of natural products.

The Food Technology Centre has modern facilities to extract, isolate and purify natural bioactive compounds. Please contact Dr. Muhammad Yousaf, Organic/Purification Chemist, to learn more about our extraction, isolation and purification services: tel: (902) 368-5795; email myousaf@gov.pe.ca.

"I was very happy to have participated in the workshop on Supercritical Fluid Extraction. It was great to learn about such a unique and emerging technique in the world of natural product extraction in North America. There are significant advantages to being one of the few facilities to have this equipment. With such growing interest in natural health products and public awareness of environmental issues, it is exciting to see a technology that is so progressive and attractive to both sectors. I am glad to have had the opportunity to learn about this new and promising method." (K. Ballem, Research Technician, UPEI)

"The Supercritical Fluid Extraction Workshop provided excellent opportunities for discussing the process itself and for networking with other scientists in the community. I would definitely consider attending a similar workshop at the FTC!" (J. Livingston, Research Technician, Dept. of Biology, UPEI)

Food Safety Workshops

Course outlines of all our Food Safety Workshops are available on the [Training page](#) of our FTC website.

For further information on these, or if you would like a course held in your area, please contact Jim Landrigan at 902-368-5772 or by email at jklndri@gov.pe.ca

Funding Programs

Links to information about programs available from our funding partners are available on FTC's website. See [Funding Programs](#).

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Supercritical Fluid Extraction Workshop



With the assistance of Agriculture and AgriFood Canada, the Food Technology Centre was pleased to provide a Supercritical Fluid Extraction Workshop to ten participants on March 25-27. The presenter was Rodger Marentis, of Supercritical Solutions LLC in Pennsylvania, a consultant with many years of experience in this technology. The workshop covered fundamentals of supercritical processing and examples of industrial applications, with emphasis on practical implementation of the technology. Following the workshop, there was an opportunity for one-on-one and small group meetings with Mr. Marentis for those interested in discussing potential extraction processes in detail.

"I appreciated the time I spent with the people at the PEI Food Technology Centre. The seminars were well run and it was very beneficial to see the pilot plant in operation. As a company we are very interested in the application of supercritical technology to our marine oil industry. It was helpful and informative to witness the work in person rather than merely reading about it. The staff of at the Centre were friendly and accommodating. I look forward to hearing of their progress and advancement in this unique extraction method." (D. Richer, Sales and Marketing Director, AquaSource Products Inc., Surrey, BC)

On-the-Job Trainee from the Bioscience Technology Program



Mitchell MacRae, a student of the Bioscience Technology Program at Holland College, Charlottetown, just completed a six week on-the-job training term at the Food Technology Centre. He was mentored by the Natural Products Extraction staff who provided training on specialized equipment such as ultrasonicators, HPLC systems, rotary evaporators, fluidized bed dryers, and supercritical carbon dioxide extraction. MacRae said, "the staff treated me with kindness and respect and helped me in any way they could. It is exciting to know that facilities such as the FTC are capable of extracting and purifying compounds with green technologies here on Prince Edward Island."

Over the six weeks of training MacRae was introduced to the business and production side of working with a client and developing a quality product. The training program provided him with an opportunity to acquire new skills as well as experience working in an ISO 9001 pilot production facility.



Featured FOODTECH Canada Centre: Canadian Institute of Fisheries Technology

Thirteen similar centres across Canada have formed a network incorporated as FOODTECH Canada. The purpose of this network is to provide technical support for Canada's food processors to commercialise new products, to enable the centres to work on large projects that they could not do on their own, and to allow the centres to focus on their particular expertise. This month we are featuring a FOODTECH Canada Centre in Nova Scotia.



The [Canadian Institute of Fisheries Technology \(CIFT\)](#) at Dalhousie University was established in 1979 as a specialized resource centre of advanced technology for research and education in food science and process engineering with an emphasis on seafoods. The Institute promotes technology transfer and the development of advanced technologies aimed at more effective commercial utilization of marine resources in Canada and throughout the world. Major areas of emphasis include aquaculture development, biotechnology, fish/food process engineering, marine oils and nutrition, physical properties of foods, process chemical science, seafood biochemistry and toxicology.

For further information please see <http://cift.engineering.dal.ca/index.html> and contact Canadian Institute of Fisheries Technology Tel: 902-494-6030 or CIFT@Dal.Ca