

# FOOD TECHNOLOGY CENTRE

## Innovation for the Food & Bioresource Industries

Prince Edward Island, CANADA

### NEWSLETTER

May 2006

#### Featured in this issue:

- Extrusion Technology
- C.W. Brabender PL-2000
- Staff Profile: M. Yousaf, Ph.D.
- NRC-IRAP Funding
- Upcoming Training Workshops

#### Free Preliminary Consultation

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

The **Prince Edward Island Food Products Development Fund** will assist Island businesses with projects carried out at the P.E.I. Food Technology Centre. Support is also available for product development activities carried out at FTC for companies in our neighbouring provinces through the NS, NB, and NL governments. Contact Yaw Dako, Food Technologist (902-569-7699)

FTC provides certified **organic processing** services. Contact Leigh Gao, Food Scientist/Engineer at 902-368-5465.

FTC can provide solutions in **natural products extraction** and nutraceuticals/ functional foods product development. Contact Ron Skinner, Project Manager, Natural Products Extraction at 902-368-5919.

#### 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.

For further information on our Centre, please visit our website:

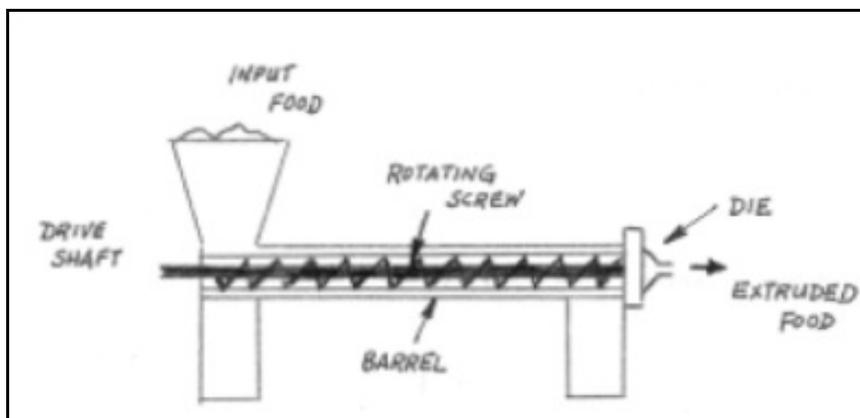
[www.gov.pe.ca/ftc](http://www.gov.pe.ca/ftc)

### Extrusion Technology

by Dr. Edward Charter, Food Science Manager

#### What is Extrusion?

It is a process that was originally developed in the 1950s to produce polymers, but after about 20 years was applied to foods to make products like breakfast cereals and pet foods. Extrusion involves combining heat, pressure and shear conditions to physically alter (rather than chemically alter) food products to give them special properties such as better taste and texture.



#### How Does an Extruder Work?

An extruder uses a rotating screw inside a barrel that can cook and shape foods quickly and efficiently. Food is fed into a hopper at one end, and is moved down the barrel by the screw. The mechanical friction and shearing action, combined with highly controlled heating and pressure caused by steam generated from moisture in the food, causes the physical changes that are desired. The big advantages of this technology are that it is relatively inexpensive, results in good retention of nutrients in the food, and allows the food to be shaped into a variety of forms. Due to the rapid cooking that occurs during extrusion (high temperature for a short time), the extruded food is also safe from a microbiological standpoint.

### Featured Equipment: C.W. Brabender Data Processing Plasti-Corder PL-2000 with Extruder



Carl Wilhelm Brabender developed the first recording torque rheometer, called a Farinograph, over 60 years ago to measure the consistency of dough in flour mixing. Since the introduction of this invention, the recording torque rheometer has evolved substantially, but the fundamental principals behind its operation have remained virtually unchanged.

The PL-2000 Plasti-Corder is equipped with a highly sensitive torque measuring load cell, and an exceptionally durable, heavy duty drive system. It provides for temperature control of up to six heating zones, and pressure monitoring by up to four pressure transducers.

**Prince Edward Island Food  
Technology Centre**  
101 Belvedere Ave.  
P.O. Box 2000, Charlottetown, PE  
C1A 7N8  
Tel: (902) 368-5548  
Fax: (902) 368-5549  
Email: [FTCWEB@gov.pe.ca](mailto:FTCWEB@gov.pe.ca)



To be added to our newsletter  
emailing list, please email:  
[ftcnews@gov.pe.ca](mailto:ftcnews@gov.pe.ca)

To unsubscribe please email  
[ftcnews@gov.pe.ca](mailto:ftcnews@gov.pe.ca)  
with "unsubscribe" in the subject  
line.

**Feedback: If you have ideas for  
future newsletters or any comments  
we would love to hear from you.**  
Please call Janet Docherty at 902-368-  
5226 or email [jvdocher@gov.pe.ca](mailto:jvdocher@gov.pe.ca)



A wide range of attachments can be used with the PL 2000, and FTC presently has a 3/4" single screw extruder attachment. Currently we are evaluating the potential of this unit to produce feed materials for research purposes, but it has a very broad range of potential applications in the food industry. Contact Ed Charter, Food Science Manager, by telephone at (902) 368-5912 or by email at [eacharter@gov.pe.ca](mailto:eacharter@gov.pe.ca), if you would like further information.

A listing of other [food processing equipment](#) is available on our website. Most pieces of equipment are mobile, permitting operators to customize processing lines. A range of pumps and auxiliary equipment is also available.

### **Staff Profile: Muhammad Yousaf, Ph.D., Organic/Purification Chemist, Natural Products Extraction Project**

Dr. Muhammad Yousaf received his Bachelor of Science in Chemistry and Zoology from the Punjab University, Lahore, Pakistan in 1991. He obtained his Master in Science (Chemistry) in 1994 at the Quaid-i-Azam University, Islamabad, Pakistan. During his M.Sc., he worked on structural characterization and analysis of stereo isomeric sugars by HPLC-MS and chromatographic techniques. In 1999, he received his Ph.D. in Organic Chemistry under the direction of Professor Dr. Atta-ur-Rahman and Professor Dr. M. Iqbal Choudhary at the International Center for Chemical Sciences, H.E.J. Research Institute of Chemistry, University of Karachi, Pakistan. During his Ph.D. he worked on the isolation and structural studies on the bio-active constituents of medicinal plants *Withania coagulans* and *Skimmia laureola*.



Dr. Yousaf joined the Research Institute of Pharmaceutical Sciences (RIPS), University of Mississippi as a Research Scientist in 2000, where he worked on the isolation and structure elucidation of prototype anti-infective and anti-cancer agents from marine natural products. In 2005, he joined the Department of Basic Pharmaceutical Sciences, School of Pharmacy, University of Louisiana at Monroe as a Post Doctoral Research Fellow and worked to develop angiogenesis modulators from natural resources. In 2006 he joined the Food

Technology Centre as an Organic/ Purification chemist. He is an author of more than 20 research publications in international journals.

Dr. Yousaf's research interests include the isolation, purification and characterization of chemical compounds from plant /marine sources, biocatalysis, semi-synthesis of active components and process chemistry relevant to pharmaceuticals, nutraceuticals and functional foods development, particularly drug discovery and development of new therapeutic agents. The active component of the extract is isolated using modern chromatographic techniques including preparative high performance liquid chromatography (HPLC) and the structure of the molecule is solved using a combination of 1D and 2D NMR, LCMS, HRMS, IR, UV-Vis, and X-ray Crystallography. He is a professional member of the American Society of Pharmacognosy, the American Chemical Society, the Chemical Institute of Canada, the Canadian Society for Chemistry, the International Union of Pure and Applied Chemistry (IUPAC), the Chemical Society of Pakistan.

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

### **NRC-Industrial Research Assistance Program**

The [NRC Industrial Research Assistance Program \(NRC-IRAP\)](#) is designed to help Canadian small and medium-sized enterprises (SMEs) meet the technological challenges they face in delivering new products, processes or services. Its goal is to enhance innovation capacity, so that you may turn good ideas into profitable business lines as quickly as possible. NRC-IRAP offers advisory services as well as potential access to financial assistance.

NRC-IRAP provides access to technology and business advice, financial assistance, contacts and national and international networks. Firms helped by NRC-IRAP are better equipped to perform R&D, to commercialize new products and processes, and to access new markets. The program provides customized solutions to over 12,000 SMEs annually and is delivered by an extensive integrated network of 260 professionals in 100 communities across the country. Working directly with these clients, NRC-IRAP supports innovative research and development and commercialization of new products and processes.

Tom O'Rourke, Industrial Technology Advisor, NRC-IRAP Atlantic and Nunavut Region, has an office at the Food Technology Centre in Charlottetown, PE, and may be reached by telephone at (902) 626-2965, and fax (902) 626-2969. Email: [Tom.O'Rourke@NRC-CNRC.gc.ca](mailto:Tom.O'Rourke@NRC-CNRC.gc.ca)

For information on IRAP, or to reach an Industrial Technology Advisor (ITA) please contact the [IRAP regional office](#) nearest to you.

### **Food Safety Workshops**

Two courses are being planned in cooperation with the New Brunswick Food & Beverage Processors Association:

- [Introduction to ISO 22000:2005 Food Safety Management System Workshop](#), Moncton, NB; date to be determined.
- [Getting Ready for a Customer Food Safety Audit Workshop](#), Moncton, NB; date to be determined.

These courses will also be offered in other areas if there is enough interest. For further information on these and other available courses, please contact Jim Landrigan at 902-368-5772 or by email at [jklandri@gov.pe.ca](mailto:jklandri@gov.pe.ca)