



OGIRC
Ontario Ginseng Innovation & Research Consortium

Advanced Processing Workshop

Thursday, March 10, 2011

Spencer Engineering Building Room 2009b, UWO Campus

“New Technologies for Emerging Applications of Ontario Ginseng”

Summary

The overall objective of this workshop was to enhance collaboration among Platform Technology Groups (PTGs), particularly between the Pre-Clinical (PC) and Advanced Processing (AP) groups.

Attendees:

PIs	Trainees	Technicians	Other
Ed Lui Jesse Zhu Paul Charpentier John Trevithick John Ciriello	Mehrnaz Salarian Raizye Samimihaggozar Robert Bi Chike Azike Sijun Zhou Di Wu Subhrojit Sen Megan Migchels	Ying Ma Jessica Davie	John Kelly (Advisory Committee) Gary Leong (Advisory Committee) Megan Thomas (Jamieson Labs) Sean Westerveld (Advisory Committee) Marvin Karges (Advisory Committee) Wendy Ambrose-Hope Jen Heidenheim

Agenda

Time	Description
9:00 am	Dr. Ed Lui , OGIRC Scientific Director Welcoming & Opening Remarks
9:05 – 9:40	Dr. Jesse Zhu , Advanced Processing Platform Technology Group Leader Introduction of current processing R&D Part I
9:40 – 10:00	Dr. Paul Charpentier , Advanced Processing PTG Member Introduction of current processing R&D Part II
10:00 – 10:30	Discussion on collaboration
10:30 – 11:30	Lab tours
11:30	Adjourn

This workshop was held to facilitate the planning of an “exit point” for the entire OGIRC project: creation of new, value-added Ontario ginseng products proven to be effective and safe

- Need to be able to test new products using established animal models
 - Advanced Processing group can provide Pre-Clinical researchers with extracts, powders and products to support animal testing and product evaluation
- Evaluate if new extraction/preparation methods impact bioavailability of active constituents

Several members of the **OGIRC Advisory Committee** participated in the workshop to gain a better understanding of what the role of this PTG is and offer feedback about how their research could lead to potential commercial applications.

Dr. Lui reviewed the three main objectives of the OGIRC:

- i) To provide a systematic evaluation of the quality of Ontario-grown ginseng roots and to develop criteria for certification/branding of Ontario ginseng
- ii) To develop a unique (protectable and trackable) ginseng variety with predictable quality, safety and medicinal properties
- iii) To develop new value-added Ontario branded products possessing selected health promotional effects

Dr. Zhu presented the research on the use of fine powder technology to create new dosage forms (chewable, dissolvable and effervescent tablets; ginseng coatings; thermal sensitive gels; etc.) and asked for suggestions, ideas and cooperation from the group for potential methods of product evaluation using animal models and future commercial development of these value-added products. Ultra fine powder has less grit and sandy taste.

- Dr. Lui mentioned research using yoghurt as a ginseng delivery system (will eventually **incorporate with pro-biotics**) – **need to do animals tests to measure bioavailability and** physiological effects

Smaller particles have higher ginsenoside release than larger particles – wide range of potential applications such as teabags, cosmetics, etc.

- John Kelly: a company like “Booster Juice” might be interested in a ginseng booster product for health shakes/smoothies
- Tablets made from ginseng roots (traditional use) and/or with ginseng extracts (can be considered traditional use if prepared in traditional way such as steeping in water or alcohol; or can be treated as a NHP for specific condition or general tonic)
- Gary Leong: Some components are lost during the extraction process, but exactly what is lost isn’t known, and extraction is time-consuming and costly, so using the root powder may be preferable over extracts
 - Two possible approaches: a) extract the molecule of interest from the plant (drug) or b) breed/engineer plants with specific effects and use entire plant

Ultra fine powders mixed with water might not dissolve, but will produce a suspension including both soluble and insoluble fractions – *this may have some potential commercial value, but problem is in scaling up*

Dr. Charpentier described the history of supercritical fluid extraction (SFE) and his previous work with Dr. Lui on ginseng extracts.

- Use super-critical CO₂ crystallize ginseng polysaccharides and ginsenosides into nanoparticles
 - Environmentally friendly process – no use of organic solvents
 - Extract is always a mix of ginsenosides and polysaccharides
 - Sahar is studying the ginsenosides
 - Chike is studying the polysaccharides – how size and charge affects bioactivity, immune effects
 - Mehrnaz is looking at the angiogenic effects of ginsenoside Rg1 (bone cement)
 - Can vary extraction process by using different solvents to selectively extract molecules of interest based on their solubility, polarity, etc.
 - Currently trying to understand the science of extraction methods – what are the effects of sonication, temperature, etc?

Lab Tours – Drs. Zhu and Charpentier conducted tours of their laboratories and provided demonstrations of the equipment and processes used in their ginseng research projects.