

**The Canadian Society of Plant Biologists
Eastern Regional Meeting 2013**

**Délibérations du Congrès de la Société Canadienne de Biologie Végétale
Congrès de l'Est 2013**

December 6th and 7th, 2013

University of Toronto Mississauga, Mississauga ON CANADA



Organizing Committee

Thomas Berleth, Ingo Ensminger (Chair), George Espie,
Herbert Kronzucker, Nick Provart, Rowan Sage, Deep Saini

The committee gratefully acknowledges the invaluable work of:

Carol Solonenko, Antonia Maughn, Jennifer Lee, Jenny Hu, Mikael Koza, Keith Nablo,
Carolyn Moon and our student and post doc volunteers Maryam Moazami-goudarzi, Omar El-Ansari;
Charlotte de Araujo, Emmanuelle Frechette, Laura Junker, Christine Chang, Thomas Braukmann, Ina
Anreiter, Sarzana Hasin Zafar, Janola Jeyachandra, Alex Zubilewich.

CSPB / SCBV gratefully acknowledge the financial support from our sponsors:

University of Toronto Mississauga, BioChambers, Qubit Systems, GeneQ Scientific Instruments, Hoskins
Scientific, Norgen Biotek



this process. Further readouts will include the expression patterns of genes in auxin transport, as they participate through dynamic redistribution of auxin in feedback regulations on the organismal level.

P5

Antitumorigenic and Antioxidant activity of methanolic extract of *Gloriosa superba* leaves

Saradha devi K.M¹, A. Poongothai¹, K. Ashokkumar^{2*} and S. Annapoorani¹

¹Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Deemed University for Women, Coimbatore-641043, India.

²Department of Plant Sciences, University of Saskatchewan, Saskatoon, S7N 0R7, Canada.

*Corresponding author email ID: biotech.ashok@gmail.com

The aim of the present study was carried out the *in vitro* and *in vivo* potential of methanolic leaf extract of *Gloriosa superba* as a natural antitumour and antioxidant. The cytotoxic effect of methanolic extract of *Gloriosa superba* (MEGS) to DLA tumour cells was found to be dose dependent and the ED₅₀ value was found to be 52µg. This 52µg was administered in the following *in vivo* study. Evaluation of the antioxidative and antitumorigenic potential of MEGS of Swiss albino mice were divided into six treatment groups such as water control, DMSO, PBS, methanol extract and methanol extract + DLA tumor cells. The experiment was carried out for 21 days. The mice liver homogenate of each treatment groups were taken and assessed the activities of enzymic and the levels of non enzymic antioxidants. The enzymic antioxidants catalase, superoxide dismutase, and glutathione reductase and the levels of non enzymic antioxidants vitamin A, vitamin C, and reduced glutathione were found to be significantly increased and the lipid peroxidation was found to be significantly decreased by the administration of MEGS individually and to DLA induced mice.

P6

HPLC analysis of flavonoids profile from Indian Curry leaf (*Murraya koenigii*. L)

Kaliyaperumal Ashokkumar^{1*}, Kumarakurubaran Selvaraj², Saradha Devi, K.M³

¹Department of Plant Sciences, University of Saskatchewan, Saskatoon, S7N 5A8, SK, Canada.

²Department of Biology, University of Saskatchewan, Saskatoon, S7N 5E2, SK, Canada.

³Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam University for Women, Coimbatore-43, Tamil Nadu, India.

*Presenting Author: email ID: biotech.ashok@gmail.com

Murraya koenigii, L. Spreng, a medicinally important herb of Indian origin, it has used for centuries in the Ayurvedic system of traditional Indian medicine and very popularly used in Indian cuisine are the daily basis. To evaluate the quality of *M. koenigii*, L. leaves, a sensitive, simple and precise reversed-phase high performance liquid chromatography method was developed for assessment of four major bioactive flavonoids: Rutin, quercetin, myricetin and kaempferol. Separation was achieved on a reversed phase column (ZORBAX, Eclipse plus-C₁₈, 5 µm, 4.6 x 150 mm, Agilent, USA) and methanol-acetonitrile-water-acetic acid (40:20:39:1, v/v/v/v) was employed as the isocratic eluent. Sample was eluted at 0.8 ml/minutes and peaks were simultaneously identified using UV/Vis absorbance at 350 nm for kaempferol and 254 nm for rutin, myricetin and quercetin. The authenticated four analytes were used to construct linear standard curves by injecting range of 20 - 200 ng. The correlation coefficients of the calibration curve for all the analytes was higher than 0.999. Isolation of the four compounds in *M. koenigii*, leaves was achieved by the HPLC method above and results showed that mean value of rutin (924.25mg/kg) and quercetin (85.88 mg/kg) accumulated greater concentration. Lowest flavonoid concentration 5.88 mg/kg and 0.20 mg/kg were found to possess in myricetin and kaempferol, respectively. Total flavonoids concentration was observed 1015.50 mg/kg. Present

study suggested accumulation of the greater amount of bioactive components; rutin and quercetin in *M. koenigii* leaves will be more useful information for further pharmacological investigations.

P7

Breeding potato varieties for chip processing and nutritional qualities – evaluation for central Canada conditions

Reena G. Pinhero¹, Qiang Liu², J. Alan Sullivan³, Vanessa Currie³, Benoit Bizimungu⁴ and Rickey Y. Yada¹

¹Department of Food Science, University of Guelph, Guelph, Ontario, N1G 2W1

²Agriculture and Agri-Food Canada, Guelph Research Station, Guelph, Ontario N1G 5C9

³Department of Plant Agriculture, University of Guelph, Guelph, Ontario N1G 2W1

⁴Agriculture and Agri-Food Canada, Fredericton, New Brunswick E3B 4Z7

Chips constitute one of the two major processed potato products in the food industry. Numerous factors affect chip processing, nutritional qualities and safety such as sugars, asparagine, polyphenol content and antioxidant potential, which are influenced by the genotype and the environment during growth and storage. This study evaluated thirteen elite lines including two colored lines from the potato breeding program of Agriculture and Agri-Food Canada, Fredericton and University of Wisconsin along with five promising varieties suitable for growing under Ontario conditions. These varieties were grown at the Elora Research Station, Elora, ON. Two varieties were also evaluated in Alliston, Ontario to measure regional influence. A one-year storage study at a commercial storage facility was also conducted. The colored potato lines F06053, F06058 had higher glucose content throughout the analysis period before and after storage. Comparatively lower glucose contents were observed in Tundra, W2715-15, Waneta, Beacon Chipper, W8867-5, and W2438-3Y before storage. Waneta consistently had low glucose content throughout the storage periods. Glucose content was greatly influenced by the environment as evidenced by Beacon Chipper grown at Alliston which had a lower glucose as compared to the Elora location. A general trend of lower sucrose content was observed in F06058, W2438-3Y, W5955-1 and Nicolet whereas W8641-4, F06058, F06053, and W5051-12 showed consistently lower asparagine content, a precursor for acrylamide production, both before and after storage. F06053, F06058, and W2438-3Y consistently had the highest total phenolic contents and antioxidant potential in potato dry matter and chips.

P8

Screening potato varieties for canning and nutritional qualities

Reena G. Pinhero¹, Qiang Liu², Rickey Y. Yada¹

¹Department of Food Science, University of Guelph, Guelph, Ontario, N1G 2W1

²Agriculture and Agri-Food Canada, Guelph Research Station, Guelph, Ontario, N1G 5C9

Potatoes rank fourth in world for food production and are the world's number one non-grain food commodity. In today's fast-paced life, processed foods such as canned potatoes are convenient, used in soups, for mashed potatoes, hash browns or as an accompaniment to a main course. The major defect in canned potatoes is sloughing (disintegration/cracking of the outer surface) for which the determination of specific gravity has been the major predictor; however, this has not always ensured consistent high quality canned potatoes. Recently, potatoes have been shown to have both good nutritional and economic value. The present study evaluated four potato varieties which fell within the specific gravity range normally used for canning along with a control, Atlantic, which has a higher specific gravity, in order to determine the starch characteristics which may contribute to sloughing. In addition, the nutritional qualities of these varieties were determined. Sloughing was assessed visually and by total solid leakage using turbidity analysis and showed the highest sloughing in Russet Norkotah, followed by Vivaldi, Superior and Sifra. Significant differences were also