

Title:

Investigation of anti-diabetic properties of haskap (*Lonicera caerulea* L.) berry polyphenols

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Haskap (*Lonicera caerulea* L.), also known as blue honeysuckle, is a recently commercialized berry crop in Canada. Haskap berries are rich in polyphenols, including anthocyanins, which are known for potential health-promoting effects. Cyanidin-3-*O*-glucoside (C3G) is the most prominent anthocyanin of haskap berries. Recent literature reveals the efficacy of C3G in reducing the risk of type 2 diabetes (T2D), which has become an increasingly common health issue around the world. The T2D is characterized as a metabolic disorder of hyperglycemia and insulin resistance. It has been demonstrated that C3G has anti-diabetic effects through various ways, including inhibition of dipeptidyl peptidase-4 (DPP-4), reduction of gluconeogenesis and inhibition of the formation of advanced glycation end-products (AGEs), improvement in insulin sensitivity, and inhibition of activities of carbohydrate hydrolyzing enzymes, including α-amylase and α-glucosidase. The proposed research investigates the influence of variety and harvest maturity of haskap on C3G, other fruit quality characteristics and anti-diabetic activities of haskap berries using *in vitro* and *in vivo* studies. The poster will address only the completed first objective

of my Masters project as follows; Variety and harvesting maturity can influence the polyphenol composition and biological properties of haskap berries. Haskap polyphenols, especially C3G exhibit anti-diabetic properties through multiple mechanisms. The *in vitro* assays will be conducted to investigate the inhibitory properties of haskap polyphenols on carbohydrate hydrolyzing enzymes and DPP-4. An established mice model will be used to determine serum glucose concentration, AMPK activation and inhibition of gluconeogenesis enzymes upon the dietary intervention of haskap berries.

Biography

Kithma De Silva is currently pursuing MSc. Degree at the department of plant, food and environmental sciences, faculty of agriculture, Dalhousie University, Nova Scotia. Her project is based on the investigation of anti-diabetic properties of haskap berry (*Lonicera caerulea* L.) polyphenols. Recently she has been considered for a co-authorship for a journal article in the journal of functional foods. She completed her BSc. (Biology) Hons degree with an upper second class at University of Brunei Darussalam under a government scholarship. She has gained laboratory research internship experiences during her third year in two countries. The first internship was at the Chungnam National University, Daejeon, South Korea for a period of six months. In that internship, her first research was based on zebra fish (*Danio rerio*) handling and toxicology. The second research was based on antibacterial study of fish pathogenic bacteria (*Vibrio ichthyoenteri*). She has published her research data in a journal article as a co-author.

Her second internship was at the department of animal science, faculty of Agriculture, University of Peradeniya, Sri Lanka, for a period of six months and it was based on the approximate analysis and the determination of minerals (Ca, Mg and Fe), antioxidants, and Phenolic compounds of different types of Proso Millet (*Panicum miliaceum*). Finally, she presented her research outcome

in two international conferences which were held in Sri Lanka. During both internships, she gained a wide variety of relevant knowledge, different laboratory techniques and has exposed to vast area of new technologies in the field of science. She believes that she is a good candidate for the international conference on food safety and health 2018, since she is young, hardworking & motivated student with some laboratory experiences. Therefore, she is highly interested to join this conference, in order to find out her potentials in the field of food science. She will be very much grateful if she would be able to receive a sponsorship in order to attend this conference. In addition it will be a great foundation for her future career as a food scientist. Thanking you in advance for your kind consideration.

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