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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.

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