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## Apple flavonoids based functional foods and ingredients for the prevention of chronic disorders

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Flavonoids are naturally occurring plant secondary metabolites found in many plant parts specially fruits such as apples. Evidence exists that dietary flavonoids have increased the antioxidant capacity in the plasma and tissue of rats, birds, pigs, and humans. In apple, flavonoids such as quercetin glycosides, epicatechins and chalcones are the most predominant. Besides these many recent advancements in understanding the flavonoid metabolism, mode of action of these flavonoids by gene expression and modulation of cell signal transduction is yet to be discovered. Recently, we have demonstrated physiological functions of apple flavonoids in relation to cardiovascular and brain health. Apple flavonoids showed lipid lowering and anti-inflammatory properties in experimental animals of hamsters and Wistar rats. Apple flavonoids inhibited angiotensin converting enzyme, which is a key enzyme that produce angiotensinogen II, a known vasoconstriction factor associated with hypertension. When the apple flavonoids was supplemented in the diets of lipopolysaccharides (LPS)-Induced inflammation possessing hyperlipidemic Wistar rats, hepatic and plasma levels of pro-inflammatory cytokines were reduced. Oral administration of apple flavonoids once daily for at least three days prior to hypoxia-ischemia markedly reduced subsequent motor impairments, brain damage and inflammation after an experimental stroke. Recently, we have also demonstrated anti-cancer properties of apple flavonoids. Overall, these apple flavonoids have exhibited strong biological functions that have potential for the prevention of cardiovascular and neurodegenerative disorders. Research and development associated with apple flavonoid-enriched functional foods and beverages, food additives and ingredients will also be presented.

### Biography

H P Vasantha Rupasinghe is an Associate Professor and Canada Research Chair in Fruit Bioactives & BioProducts at the Faculty of Agriculture of Dalhousie University, Truro, Nova Scotia. He also serves as an Adjunct Professor of the Faculty of Medicine and Faculty of Engineering of Dalhousie University. He received his MSc from Iowa State University, USA and PhD from University of Guelph, Canada. He has developed a unique research program for investigating the biological properties and mode of actions of flavonoids of cool climate fruits. He is the author and co-author of 110 refereed journals, 16 book chapters and over 150 abstracts of conference presentations.

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