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(+)-Catechin in prevention and treatment of endothelial dysfunction in diabetes

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Diabetes is known cause of endothelial dysfunction that leads to microvascular complications and end organ damage. The molecular mechanisms of these changes are poorly understood, but there is evidence that oxidative stress plays a role. (+)-Catechin (CTN), a polyphenolic compound abundantly found in grapes, wine, and tea, might serve as a supplemental therapy to alleviate impact of high ambient glucose. CTN belongs to a group of polyphenolic compounds, which are believed to have anti-inflammatory and antioxidative properties.

Our recent study showed that the effects of CTN are comparable with enalapril for the treatment of diabetic nephropathy in streptozotocin-induced diabetic rats. CTN decrease urinary albumin excretion, improved creatinine clearance, lowered serum concentrations of endothelin-1 and lipid peroxidation markers. Diabetes is a stage of low grade chronic inflammatory process. CTN has been shown significantly decrease levels of inflammatory cytokines.

Double blinded ongoing study scrutinizes the effects of flavonoids on endothelial function and inflammatory markers in type 1 diabetic adolescents. Patients between the ages of 12- 21 years are eligible for the study and are given flavanoid rich supplement or placebo. A non-invasive measurement of endothelial function is analyzed using an Endo-Pat2000 device. The preliminarily data showed that there is significant differences in reactive hyperemia before and after flavanoid treatment. The concentration of TNF- α and IL6 in urine is significantly decreased after flavonoid treatment.

Flavanols and particularly (+)-catechin, are powerful food supplements with significant impact of endothelial function and might be used to prevent microvascular complications in patients with diabetes.

Biography

Vasylyeva, Tetyana has completed her Ph.D. at the age of 28 years from Dnipropetrovsk State Medical Academy (Ukraine) and worked as a professor of pediatrics in Ukraine till 2000. After relocation to the USA she went through postdoctoral fellowship at University of Texas Health Science Center at San Antonio and at Harvard School of Medicine; graduated from the residency program at Texas Tech University HSC. She works as a professor of Pediatrics at Texas Tech University HSC, has more than 78 peer-reviewed published papers in addition to book chapters and published abstracts.