

# Effects of vitamin C supplementation on endothelial function in experimental diabetes

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The possible mechanisms by which hyperglycemia caused endothelial dysfunction are multi-disiplinary. Oxidative stress induced by hyperglycemia is implicated as a source of endothelial dysfunction in diabetes. To examine the efficacy of long-term supplemented natural anti-oxidant vitamin C on the prevention of endothelial dysfunction in diabetic cerebral microcirculation, the animal model of streptozotocin (STZ) – induced diabetic rats was used. The supplementation of vitamin C was performed by allowing the animals freely assessed to drinking water added 1 g/L /day of vitamin C. At 24 weeks, after the ST2 injection, the intravital fluorescent microscopy technique was performed. And closed cranial window technique was prepared for visualization of cerebral microcirculation. Changes

of cerebral arteriolar diameter in responses to endothelium-dependent relaxation ( $10^{-7}$ M) and endothelium-independent relaxation (nitroglycerine  $10^{-6}$  M) were examined. Acetylcholine mediated relaxation was impaired in cerebral arterioles from STZ-diabetic rats compared with non-diabetic rats. The 1g/L/day of vitamin C restored impaired endothelium-dependent relaxation in STZ-diabetic rats. The endothelium-independent relaxation responses to nitroglycerine  $10^{-6}$ M was not affected by diabetes or vitamin C. The results suggested that long-term supplement of vitamin C restored the impaired endothelium-dependent relaxation in cerebral arterioles in STZ-diabetic rats. Therefore, vitamin C which is one of the natural antioxidants is capable prevent endothelial dysfunction in diabetes mellitus.

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