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Title:

**Effect of Long-term Vitamin C Intake on Vascular  
Endothelial Function in Diabetic Children and  
Adolescents: A pilot study**

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### Abstract:

**Introduction:** This study attempted to determine the effects of long-term use of vitamin C on vascular endothelial function.

**Materials and methods:** During a pilot clinical trial study conducted at Imam Hussein Hospital (Isfahan) in 2014-2015, a total of 40 diabetic patients were selected and then assigned randomly into two 20-subject groups receiving Vitamin C and placebo tablets. The patients were treated with vitamin C or placebo for 6 months. All patients were examined through Echocardiography in terms of cardiac function before and after treatment. In order to evaluate the endothelial function (FMD<sup>1</sup>, IMT<sup>2</sup>), they underwent Arterial Doppler. Moreover, the chemical indices of vascular function were tested through inter cellular adhesion molecule(ICAM) and vascular cell adhesion molecule (VCAM). Finally, the results were compared between the two groups.

**Results:** Based on the results, the mean LV mass significantly reduced after the intervention in the group treated with vitamin C (from  $76.35 \pm 25.6$  to  $68.62 \pm 22.66$ ;  $p=0.015$ ), while there was no significant difference observed in the control group (from  $67.58 \pm 25.38$  to  $71.63 \pm 26.84$ ;  $p=0.19$ ) but no statistically difference between the two groups based repeated measures ANOVA test ( $p=0.6$ ). Also the mean of VCAM changes was significantly difference between the two groups ( $P<0.001$ ).

**Conclusions:** Long-term use of vitamin C in diabetic patients can improve certain echocardiographic parameters such as EF, FS and FMD, which in turn enhances vascular endothelial function. However, due to the lack of significant difference in biochemical markers, such as ICAM and VCAM in endothelial function as well as the limitations involved in this study, including a small sample size and low dose of vitamin C intake, it is recommended that further studies be carried out with larger sample size and higher doses of vitamin C in diabetic patients.

**Keywords:** endothelial function, diabetes, vitamin C, Children, Adolescents

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<sup>1</sup> flow mediated dilatation

<sup>2</sup> Intima-media thickness

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