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DIETARY SUPPLEMENTATION OF BLUEBERRY MODIFIES NFKB SIGNALING IN THE AORTIC VESSELS OF DIABETIC MICE

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Background: Cardiovascular disease is the leading cause of death in diabetic patients. Individuals with diabetes are more susceptible to cardiovascular disease such as atherosclerosis. In our recent study, blueberry supplementation reduced vascular inflammation in diabetic mice and blueberry metabolites attenuated endothelial dysfunction in human aortic endothelial cells. Nuclear factor-κB (NFκB) plays a major role in vascular inflammation by up-regulating chemokines and adhesion molecules. Inhibitor κB kinase (IκKβ) activates the nuclear translocation of NFκB-p50/p65 by degrading the inhibitor IκBα. In the nucleus, p50/p65 binds to the promoters of NFκB-dependent inflammatory genes and mediate vascular inflammation. In the present study, we studied the effect of blueberry supplementation on vascular IKKβ and IκBα in diabetic mice. ***Methods:*** Wild type *db/+* and diabetic *db/db* mice (7-wk) consumed standard diet or diet supplemented with 3.8% freeze-dried blueberries for 10 wk. Gene expression analysis of IκKβ and IκBα in the aortic vessels was determined by qPCR. Briefly, RNeasy plus mini kit was used to isolate RNA from aortic vessel, Reverse Transcription kit was used to synthesize cDNA, and SYBR green was used to complete qPCR analysis. The gene expression levels were calculated by normalizing to the level of GAPDH. ***Results:*** Diabetes increased the expression of IκKβ in the aortic vessels of diabetic mice but did not change IκBα. Blueberry supplementation suppressed IκKβ in diabetic mice indicating the vascular effects of blueberry may be mediated through regulation of NFκB signaling. ***Conclusion:*** Blueberry consumption may be an adjunct therapy to reduce vascular complications in diabetes.