



**EFFECT OF BLUEBERRY SUPPLEMENTATION ON VASCULAR NADPH
OXIDASES IN *db/db* MICE**

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Background

Cardiovascular disease is the leading cause of death in the United States. Diabetes greatly increases the risk of cardiovascular disease such as atherosclerosis. Recently we demonstrated that blueberry supplementation reduces vascular inflammation and improves vascular dysfunction in diabetic mice. NADPH oxidases (NOXs) are ROS generating enzymes that play a major role in vascular homeostasis and vascular pathology. An increased NOXs in vascular endothelium contributes to vascular inflammation and dysfunction in diabetes. We investigated the effect of blueberry supplementation on vascular NOX signaling in diabetic mice.

Methods

Seven-week old male diabetic *db/db* mice were either fed standard chow (*db/db*) or chow supplemented with 3.8% freeze-dried blueberries (*db/db*+BB), which is equivalent to ~240 g in humans, for 10 weeks. A control group of non-diabetic mice were fed standard chow (*db/+*). Gene expression analysis of NOX1, NOX2 and NOX4 in the aortic vessels was determined by qPCR. Briefly, mRNA was isolated from aortic vessels using RNeasy plus mini kit, cDNA was synthesized using the reverse transcription kit, and qPCR analysis was completed with SYBR Green. The gene expression levels of NOXs were calculated by normalizing to the level of GAPDH.

Results

In our study, vessels from *db/db* mice exhibited an increased expression of NOX2 and NOX4 without a change in NOX1 expression compared to *db/+* mice. Blueberry supplementation decreased NOX4 expression in *db/db*+BB compared to *db/db* mice indicating the possible role of NOX signaling.

Conclusion

Blueberry supplementation may benefit diabetic patients by preventing the vascular complications associated with diabetes.

References

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