

VACCINIUM ARCTOSTAPHYLOS L. FRUIT EXTRACT IMPROVES THE MOLECULAR AND HISTOPATHOLOGIC CHANGES IN EXPERIMENTAL DIABETES

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Recently the use of herbal medicine has certainly been of very high interest. *Vaccinium arctostaphylos* L. fruits which are traditionally used in Iran are highly rich in anthocyanins and widely used for treating diabetes mellitus (DM). The aim of this study was to evaluate the beneficiary effects of *Vaccinium arctostaphylos* extract (VAE) on pancreas and skeletal muscle of diabetic rats. Diabetes induced male Wistar rats were treated for four weeks with ethanolic extract of *Vaccinium arctostaphylos* fruit (200 mg/kg/day). At the end of treatment period, animals were sacrificed, and tissues were pooled. Pancreatic tissues stained with hematoxylin and eosin exhibited slight improvement in pancreatic architecture and also increased number of cells in the Langerhans

islets of the diabetic rats + VAE compared to diabetic control rats. Moreover, the expression of *INS*, *BCL2* and *BAX* genes in pancreatic tissues and insulin receptor substrate 1 (*IRS-1*) and *GLUT4* genes in skeletal muscle were determined using real time PCR. There was a significant increase in the expression of *INS* gene and survival gene *Bcl2* in pancreatic tissue of diabetic rats + VAE compared to diabetic control rats while there was a significant down regulation in the expression of apoptotic gene *BAX* in the same condition. Furthermore, microRNAs are key players of metabolic pathways and any modulations in their expression can lead to metabolic disorders like DM. Several lines of evidence demonstrated that miR-30d involves in insulin transcription and its secretion. Real time PCR results indicated that miR-30d upregulated after treatment with VAE. Additionally, the expression of *IRS-1* and *GLUT4* genes increased in diabetic rats + VAE to favour the antihyperglycemic potential of *Vaccinium arctostaphylos*. Collectively, our data suggests that *Vaccinium arctostaphylos* fruit extract can have therapeutic potential in treatment of diabetes.