HDAC3: A new target in treating diabetic vasculopathy

Shuai Huang
Gen Chen
Jia Sun
Yunjie Chen
Nan Wang
Yetong Dong
Enzhao Shen
Zhicheng Hu
Wenjie Gong
Litai Jin
Weitao Cong

Video Byte

Keywords: Cell Communication and Signaling, T2DM, endothelial dysfunction, HDAC3, Nrf2, type 2 diabetes mellitus, histone deacetylase 3, nuclear factor-E2-related factor 2, inflammation, de-endothelialization, endothelialization, RGFP966, Nox4, Keap1, reactive oxygen species, ROS, diabetic vasculopathy, cardiovascular disease, small interfering RNA, knockdown

Posted Date: October 16th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-978896/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Abstract

Type 2 diabetes currently affects approximately 425 million people across the world. One long-term complication of diabetes is diabetic vasculopathy, inflammation that affects blood vessel walls and can lead to cardiovascular disease, but the mechanism by which diabetic vasculopathy develops has remained unclear. Now, research points to the protein HDAC3 as an important part of this process. Researchers found that diabetic mice (db/db) had increased levels of HDAC3 activity versus nondiabetic mice (db/m), which resulted in endothelial damage and increased oxidative stress. Treating mice with the HDAC3 inhibitor RGFP966 had a protective effect, reducing endothelial damage induced by diabetes. In cell models of human diabetes, silencing HDAC3 altogether decreased oxidative stress, inflammation, and other damage. The mechanism controlling this effect was shown to involve the Keap1–Nrf2–Nox4 signaling pathway. The findings suggest that HDAC3 could be a new therapeutic target for the treatment of vasculopathy in patients with diabetes.