

# Pharmacological Intervention Targeting SGLT1 Improves Cardiovascular Dysfunction In-Vitro in Diabetic Cardiomyopathy



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## Abstract

Diabetic cardiomyopathy (DCM) is clinically defined as diastolic or systolic cardiac dysfunction occurring in diabetic patients independent of cardiomyopathy due to coronary artery disease, hypertension, or other vascular disease. Even though cardiovascular disorder (CVD) is the principal cause of death in patients with type 2 diabetes mellitus (T2DM), reducing plasma glucose level has little effect on CVD risk and alternative studies focused on reducing plasma glucose in T2DM patients have only a minor effect in reducing CVD risk. In view of the multiple CVD risk factors beyond hyperglycemia that exist in most T2DM patients, a multifactorial approach to address the CVD risk needs to be adopted. Thus, there is an urgent need to identify novel targets or pathways which regulate multiple mechanisms involved in the pathogenesis of DCM. Understanding the functional role of sodium dependent glucose co-transporters (SGLTs) in these multiple mechanisms can be an answer to this pathological condition. We looked into the potential impact of SGLT1 inhibition on the improvement of cardiovascular dysfunction using in-vitro model of DCM, created by treating cultured cardiomyocytes with high glucose and palmitic acid. Significant increase in SGLT1 expression was observed in high glucose+palmitic acid treated cardiomyocytes accompanied with increase in the markers of inflammation, hypertrophy, oxidative stress and decrease in glucose uptake. All these effects of high glucose+palmitic acid were attenuated by co-treatment with SGLT inhibitors Canagliflozin and Dapagliflozin. These results support the hypothesis that safe and specific SGLT1 inhibitors will be very effective in preventing diabetes associated cardiomyopathy and associated CVDs.

## Biography

Audesh Bhat is currently working as an assistant professor in the central university of jammu, India. Bhat completed his M.Phil/Ph.D from the university of Jammu, India in collaboration with jawaharlal nehru university, new delhi, India. He did his postdoctoral training from washington university, saint louis, USA and university of saskatchewan, Canada. Bhat briefly worked at novartis healthcare Pvt. Ltd before joining the current work place. His research work encompasses diverse areas such as diabetes, cardiovascular disorders, cancer biology, cell and molecular biology. He has published more than 40 research articles in peer-reviewed journals and has been serving as an editorial board of current pharmaceutical biotechnology journal.



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