allied academies Joint Event on
International Conference on
PHARMACEUTICAL CHEMISTRY & DRUG DISCOVERY
&
Global Congress on
TOXICOLOGY AND PHARMACOLOGY
September 10-11, 2018 | Dublin, Ireland
Asian J Biomed Pharmaceut Sci 2018, Volume 8 | DOI: 10.4066/2249-622X-C2-006

ROLE OF NANO-CURCUMIN IN DIABETIC CARDIOMYOPATHY

Dheeraj Nagore
Research and Development Center-Pune, India

Diabetes is a long-lasting disorder in the metabolism of proteins, fats, and carbohydrates. It is described as an increase in blood glucose. Diabetes results leads from either insulin deficiency or malfunction. According to statistics, 2.8% of the world's population suffers from this disease and it is expected to increase to more than 5.4% by 2025. These leads to the diabetes complication and one of the major complications are diabetic cardiomyopathy [DCM]. The main reason of the uncontrolled change of DCM is microangiopathy, which consequences in cardiac structural and functional modifications, such as apoptosis of the myocardium, myocardial interstitial fibrosis, and perfusion abnormality of the heart muscles. It was described that capillary basement membrane thickening and microaneurysms were witnessed in patients with DCM. Once the myocardial interstitial fibrosis in diabetes patients has developed, it cannot be inverted, and a poor forecast of the diseases is commonly expected. Therefore, it is important to recognize appropriate therapeutic goals notably at the initial stage of DCM. Numerous biological methods have been shown to interpretation for the pathogenesis and progression of DCM, including diabetes oxidative stress, cardiomyocyte apoptosis, endoplasmic reticulum stress, myocardial insulin resistance, endothelial dysfunction, mitochondrial dysfunction, and autophagy. Amongst which, oxidative stress is supposed to be important mechanism through which diabetes mellitus induces DCM. Reactive oxygen species are chemically responsive chemical species containing oxygen, including peroxides, superoxide, hydroxyl radical, and singlet oxygen. Mitochondrion is the main factory in which diabetes mellitus creates excessive mitochondrial superoxide. The diabetes mellitus induced overproduction of mitochondrial superoxide indications to increased development of advanced glycosylation end products, expression of the receptor for AGEs, and activation of protein kinase C, the polyol pathway, and the hexosamine pathway. In case of the additional ROS not being balanced or removed via the action of endogenous antioxidative enzymes or exogenous antioxidant molecules, an increased oxidative stress occurs, which can consequence in damage to proteins, lipids, and DNAs in cardiomyocyte. These harmful effects finally lead to the transformation of the diabetic heart, followed by its dysfunction the antioxidative effect of natural products on the attenuation of DCM has been extensively investigated in recent years, showing promising outcomes. Curcumin is a natural compound isolated from curcuma longa and has been widely used in indigenous medicine. Attention has been paid to the antioxidative effect of curcumin on DCM. Curcumin was establishing to reduce myocardial capillary sclerosis; attenuate cardiac tissue damage, myocardial cell hypertrophy, and apoptosis; reduce extracellular protein accumulation; and preserve left ventricular function in the hearts of STZ-induced diabetic rats. Mechanistically, curcumin was originated to increase HO-1, catalase, superoxide dismutase, and GSH. Although curcumin was found to have antioxidative effects on DCM, the exact goal through which curcumin applied the functions remained uncertain. Gene sensation and silencing approaches could aid the examination of the exact mechanism of antioxidative role induced by curcumin. Hence from above discussion it can be concluded that the curcumin can be the choice of treatment for DCM.