doi: http://dx.doi.org/10.4172/2155-9880.S1.01

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference & Exhibition on
Clinical Research
Dermatology, Ophthalmology & Cardiology
5-6 July 2011 San Francisco, USA

Effects of Granulocyte-Colony Stimulating (G-CSF) Factor on diabetic cardiomyopathy in sucrose fed otsuka long-evans tokushima fatty rat

Young-Hyo Lim, Jun-Ho Joe, Ki-Seok Jang, Yi-Sun Song, Byung-Im So, Cheng-Hu Fang and Kyung-Soo Kim

Hanyang University College of Medicine, Korea

Purpose: We investigated effects of G-CSF on diabetic cardiomyopathy in sucrose fed Otsuka Long-Evans Tokushima Fatty (OLETF) rat.

Methods: Seven-week old 20 male OLETF rats and 10 male Long-Evans Tokushima Otsuka rats were used as the experimental and control subjects. All of the LETO and 8 randomly selected OLETF rats were free access to tap water (OW) and other 12 OLETF rats were free access to sucrose contained water (OS). After 10 weeks, each group was divided randomly into two groups and saline or recombinant human G-CSF (100 μg/kg/day) was injected intraperitoneally for 5 days. Echocardiography was done just before treatment and sacrifice time.

Results: In the Doppler echocardiography data, diastolic dysfunction was slow progression in the OG group. In the Masson Trichrom, the progression of perivascular and/or interstitial fibrosis is significantly decreased in OG group. In the immunohistochemical findings, the extent of TGF-β immunoreactivity in the interstitial and perivascular tissue is significantly decreased in OG group. In the EM findings, the ultrastructure of ON group myocardium displays intracellular edema, deposition of collagen fibers in pericapillary region, swelling and/or disrupted cristae of mitochondria, damaged myofilaments and intracellular junctions, as well as increased accumulation of lipid droplets and lysosomes in cardiac cells. In contrast, OG group revealed absence of collagen deposition and relatively decreased number of abnormal mitochondria.

Conclusions: The present study provides evidence of the functional and histological beneficial effects of G-CSF on diabetic cardiomopathy in OLETF rats.