

## Protective Effect of Vitamin D on Cardiac Apoptosis in Obese Rats

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**Abstract :** Obesity and vitamin D deficiency have both been related to cardiovascular disease. The present work aimed to investigate the possible protective effect of vitamin D on cardiac apoptosis in a rat model of dietary-induced obesity. Methods: 30 male Wistar rats included in this study. They were allocated into 4 groups: Control (n=5), animal were fed standard diet for 3 months: Control + vitamin D (VD) (n=5), animals were fed a standard diet with 400IU VD/kg for 3 months: hypercaloric diets group (n=10), animals were fed a high fat diet for 3 months: hypercaloric diet with VD group (n=10), animals were fed a high fat diet with 400IU VD/kg for 3 months. At the beginning of the experiment, the weight and length were measured to assess body mass index (BMI) and repeated every 45 days. Food intake and body weight were monitored throughout the study period. Then rats were sacrificed and heart tissues collected for Quantitative Real-time polymerase chain reaction (qRT-PCR). qRT-PCR used to detect different genetic markers of apoptosis (anti-apoptotic gene (BCL2), a pro-apoptotic gene(BAX), pro-apoptotic genes (FAS, FAS-L), tumour necrosis factor (TNF), mitogen-activated protein kinases (MAPK). Results: FAS and FAS-L gene expression were significantly upregulated in rats fed with high fat diet. And FAS-L gene expression was significantly upregulated in all groups on comparison with control. Whereas Bax gene expression was significantly downregulated in rats fed with high-fat diet supplied with vitamin D. TNF was significantly upregulated in rats fed with high-fat diet treated with vitamin D. MAPK was significantly upregulated in rats fed with high fat diet group, and in rats fed with high-fat diet supplied with vitamin D. Conclusion: The cardiac apoptotic pathways were more activated in rats fed with high-fat than lean rats. And vitamin D protect the heart from the cardiac mitochondrial-dependent apoptotic pathway.

**Keywords :** apoptosis, heart, obesity, Vitamin D

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