

Deep-sea water and magnesium ions of the solution of diabetic rats

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Diabetes mellitus is one of the major risk factors for the development of cardiovascular disease. One of the main causes of hyperglycemia complications is the increased level of reactive species oxygen (ROS), which can directly cause cell and tissue injury by apoptosis and oxidative stress in hyperglycemia. Deep-sea water (DSW) refers to water 200 meters below sea level, the sun cannot penetrate, with a low, rich in minerals and nutrients, clean, very few characteristics of pathogens. DSW is rich in minerals, e.g., Mg, Ca, and K which have been considered to be associated with prevention of cardiovascular disease. DSW can lower high cholesterol-induced myocardial hypertrophy and apoptosis. On this basis, the study will use animal models of diabetes, long-term feeding of different multiples of deep ocean water, and to explore the mechanism of glucose and cardiac anomalies and benefits. In this study, diabetic rats produced by streptozotocin (65mg/Kg BW) with or without DSW were used. In diabetic rat heart determined by echocardiography, in diabetic rat heart determined by echocardiography, TUNEL-positive, caspase-3, protein kinase c (PKC) with decreased PI3K-Akt signaling activities were shown in the results of DSW has reduced diabetes-induced hypertension, and diabetes caused by ultrasound in reduced heart function, can be effective response, while inhibiting the activation of caspase-3 activity. Further promote the survival path-related protein, p-Akt performance. Therefore, the deep-sea water can be recommended as a prevention or treatment of cardiovascular disease caused by diabetes, to reduce the cardiac dysfunction.

Keywords: hyperglycemia, apoptosis, deep sea water, Mg, diabetic cardiomyopathy