

Cardiac protective effects of *Moringa oleifera* seeds in spontaneous hypertensive rats

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BACKGROUND Hypertension is characterized by a maintained high blood pressure leading to cardiac complications such as left ventricular hypertrophy and fibrosis and an increased risk of heart failure and myocardial infarction. This study investigated the cardiac effects of oral administration of *Moringa oleifera* (MOI) seed powder in spontaneous hypertensive rats (SHR).

METHODS SHR received food containing MOI seed powder (750mg/d, 8 weeks) or normal food. In vivo measurement of hemodynamic parameters by telemetry and cardiac structure and function analysis by echocardiography were performed.

Histological studies were performed to determine fibrosis and protein expression.

RESULTS MOI treatment did not modify blood pressure in SHR but reduced nocturnal heart rate and improved cardiac diastolic function (reduction of

isovolumetric relaxation time and deceleration time of the E wave, increase of ejection volume and cardiac output compared to nontreated SHR). Left ventricular anterior wall thickness, interseptal thickness on diastole, and relative wall thickness were reduced after MOI treatment. Furthermore, we found a significant reduction of fibrosis in the left ventricle of MOI-treated SHR. This antihypertrophic and antifibrotic effect of MOI was associated with increased expression of peroxisome proliferator-activated receptor (PPAR)- α and δ , reduced cardiac triglyceride level, and enhanced plasmatic prostacyclins.

CONCLUSIONS Our data show a beneficial effect of MOI on the cardiac structure and function in SHR associated with an upregulation of PPAR- α and δ signaling. This study thus provides scientific rational support for the empirical use of MOI in the traditional Malagasy medicine against cardiac diseases associated with blood pressure overload.

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