Inhibitory effects of spironolactone on myocardial fibrosis in spontaneously hypertensive rats

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ABSTRACT. This study evaluated the inhibitory effects of spironolactone, a non-selective aldosterone receptor antagonist, on hypertension-induced myocardial fibrosis. Collagen I and III contents was detected in the myocardial tissue of spontaneously hypertensive rats (SHRs) after spironolactone administration. Twenty male SHRs were assigned to the spironolactone group or control group (N = 10 each); 7 Wistar-Kyoto rats (WKY) were also used. Spironolactone dissolved in ddH₂O was administered via gavage at a dosage of 20 mg·kg⁻¹·day⁻¹. Meanwhile, the control and WKY groups were administered equivalent volumes of ddH₂O for 16 weeks. Western blotting was used to detect the contents of collagen I in myocardial tissue; observations were performed using polarizing microscopy, and the area integration and ratio of collagen I/III were subsequently calculated. Compared to the WKY group, col-
The area of collagen I synthesis was significantly higher in the control group (1.87 ± 0.2 vs 1.21 ± 0.7, P < 0.05). After 16 weeks of treatment, collagen I contents were significantly lower in the spironolactone group than in the control group (1.42 ± 0.05 vs 1.87 ± 0.2, P < 0.05). The areas of collagen I and collagen I/III ratio were significantly smaller in the spironolactone group than in the control group (6400 ± 259 vs 12,019 ± 734 pixels, 15.64 ± 1.34 vs 20.8 ± 3.04 pixels, respectively; P < 0.05). However, there were no significant differences in the area of collagen III among the three groups. In conclusion, spironolactone improves myocardial collagen deposition, preventing myocardial fibrosis in SHRs.

**Key words:** Spontaneous hypertension rats; Myocardial fibrosis; Spironolactone; Collagen I; Collagen III