

Anti-fibrosis effect and TLR-4 related inflammation pathway blockage of probiotic-fermented purple sweet yogurt on spontaneously hypertensive rat hearts

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Inflammation is a key component in the myocardial remodeling process that probably plays an important role in triggering fibrosis of cardiovascular disease and hypertension. As we known, Gamma-aminobutyric acid (GABA) possesses anti-hypertension function, and the GABA content could be further enhanced by applying lactic acid bacteria (LAB) with high GABA producing ability in yogurt. Therefore, we propose that probiotic-fermented purple sweet potato yogurt (PSPY) might suppress the cardiac fibrosis and inhibit TLR-4 related inflammatory pathway on spontaneously hypertensive rat (SHR) hearts. Six-week-old male SHR were separated randomly and equally into four experimental groups, which were fed individually with one of the following: sterile water, captopril, and two PSPY groups with different doses (10% and 100%) for 8 weeks. Age-matched Wistar Kyoto (WKY) rats were used as normal control. Histopathological analysis and western blotting assays were performed to measure the effects of PSPY in the excised left ventricle from these animals. The reduction of interstitial fibrosis was identified by histopathologic analysis in SHR-captopril and PSPY groups. Moreover, the key components of toll-like receptor 4 (TLR4) related inflammation pathway and fibrosis markers were significantly enhanced in SHR hearts, but highly suppressed in SHR-captopril as well as PSPY groups. Taken together, our findings strongly indicated that orally administration the probiotic-fermented purple sweet potato yogurt may inhibit TLR4-related cardiac inflammation and ameliorate cardiac fibrosis in spontaneously hypertensive rats.