The aim of the present study was to investigate the anti-hypertensive effect of prunetin. A lot of foods and medicinal plants such as soy milk, bovine milk, Citrus species, Prunus species contain prunetin. Vasorelaxant effects of prunetin on isolated rat aortic rings were investigated by organ bath technique. In addition, hypotensive effect of prunetin on spontaneously hypertensive rat (SHR) was investigated. Prunetin relaxed phenylephrine- or KCl-induced contractions of aortic rings in a dose-dependent manner. These vasorelaxant effects were not concerned with endothelium dependent pathway and various K⁺ channels. Prunetin relaxed aortic rings via blocking the entry of extracellular Ca²⁺ via ROCCs and VDCCs. And it also significantly reduced blood pressure of SHR. These results suggest that prunetin and foods containing prunetin may be useful to prevent and improve hypertension.