Dietary supplementation of a sulforaphane-enriched broccoli extract protects the heart from acute cardiac stress

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Abstract
Cardiac arrhythmias play a critical role in several pathological conditions. Importantly, increased arrhythmic risk is associated with systemic oxidative stress and activation of the autonomic nervous system. Thus, we hypothesized that dietary antioxidant supplementation may help in reducing cardiac stress-induced arrhythmias. Sulforaphane (SFN), an isothiocyanate present in Brassicaceae, is recognized as a powerful health-promoting compound with known antioxidant properties. Then, we aimed to generate a broccoli extract (BE) enriched in SFN and determine whether oral BE supplementation induced cardio-protection during acute cardiac stress in rats. BE decreases cardiac sympathetic drive and increases parasympathetic cardiac modulation as evidenced by heart rate variability (HRV) shifts. In addition, isoproterenol-induced cardiac stress (a sympathomimetic agent) induced a ~ 4-fold increase in arrhythmia incidence and this effect was almost completely abolished by BE treatment. In conclusion, dietary supplementation with a BE regulates cardiac autonomic drive and protects the heart from acute cardiac stress.

Author keywords
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