

# UHI Research Reviews

Practical Information to Help You Heal Right

## Blueberry-Enriched Diet Protects Rat Heart from Ischemic Damage

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### Objectives

to assess the cardioprotective properties of a blueberry enriched diet (BD).

### Background

Reactive oxygen species (ROS) play a major role in ischemia-related myocardial injury. The attempts to use synthetic antioxidants to block the detrimental effects of ROS have produced mixed or negative results precipitating the interest in natural products. Blueberries are readily available product with the highest antioxidant capacity among fruits and vegetables.

### Methods and Results

Following 3-mo of BD or a regular control diet (CD), the threshold for mitochondrial permeability transition ( $t_{MPT}$ ) was measured in isolated cardiomyocytes obtained from young male Fischer-344 rats. Compared to CD, BD resulted in a 24% increase ( $p < 0.001$ ) of ROS indexed  $t_{MPT}$ . The remaining animals were subjected to a permanent ligation of the left descending coronary artery. 24 hrs later resulting myocardial infarction (MI) in rats on BD was 22% less than in CD rats ( $p < 0.01$ ). Significantly less TUNEL(+) cardiomyocytes (2% vs 9%) and 40% less inflammation cells were observed in the myocardial area at risk of BD compared to CD rats ( $p < 0.01$ ). In the subgroup of rats, after coronary ligation the original diet was either continued or switched to the opposite one, and cardiac remodeling and MI expansion were followed by serial echocardiography for 10 weeks. Measurements suggested that continuation of BD or its withdrawal after MI attenuated or accelerated rates of post MI cardiac remodeling and MI expansion.

### Conclusion

A blueberry-enriched diet protected the myocardium from induced ischemic damage and demonstrated the potential to attenuate the development of post MI chronic heart failure.

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