Why salad helps you say yes to 'NO'

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Disorders of the circulatory system- vascular diseases- are common in the developed world, and can lead to heart attacks, strokes and even death. However, treatments for these disorders, such as bypass surgery and angioplasty, themselves induce vascular injury, after which the cells of the blood vessel can over-proliferate in a way that limits blood flow.

Nitric oxide (NO) is an important molecule that helps maintain the contractility and health of vascular smooth muscle cells, and multiple studies have linked vascular pathology to a decreased level of NO. Therefore, therapies that increase the availability of NO could help protect vascular health.

NO is synthesized from arginine by an enzyme called nitric oxide synthase (NOS). In new research, Brian Zuckerbraun and colleagues, of the University of Pittsburgh, in Pittsburgh, Pennsylvania, determined that after vessel injury in the rat, the NOS pathway is disrupted, but a secondary pathway that generates NO from nitrate is activated. Furthermore, supplementing rats with nitrate before inducing vessel injury markedly limited the extent of the damage, while a diet low in nitrate exacerbated it.

In the accompanying commentary, John Cooke and Yohannes Ghebremariam of Stanford University in Stanford, California point out that high levels of dietary nitrate might in part explain the vascular benefits of diets rich in leafy greens, but warn that high dose supplementation could lead to the generation of carcinogenic molecules.

More information: Nitrite-generated NO circumvents dysregulated arginine/NOS signaling to protect against intimal hyperplasia in Sprague-Dawley rats
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Dietary nitrate, nitric oxide, and restenosis
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