

# THE SCIENCE OF JUICE PLUS+<sup>®</sup>



## What separates Juice Plus+® from the thousands of other nutritional products on the market today?

The quality and simplicity of Juice Plus+® is a great place to begin. The latest dietary guidelines and clinical research consistently emphasize that people need to eat more fruits and vegetables to improve their chances of living longer and healthier lives. Scientists learn more every day about the nutritional power packed into every tomato, cranberry, or piece of broccoli. Juice Plus+® provides nutrition from 17 different fruits, vegetables, and grains in convenient and inexpensive capsule form.

You can also add to that the support of thousands of health professionals who recommend Juice Plus+® to their patients, family, and friends. But the single most important factor that separates Juice Plus+® from the rest of the nutritional pack is the large and growing body of independent, clinical research conducted by investigators associated with leading universities and hospitals all over the world and published in peer-reviewed scientific journals. Juice Plus+® is the most thoroughly researched namebrand nutritional product on the market today.

Juice Plus+® delivers key phytonutrients that are absorbed by the body.



**bi·o·a·vail·a·bil·i·ty** – n.

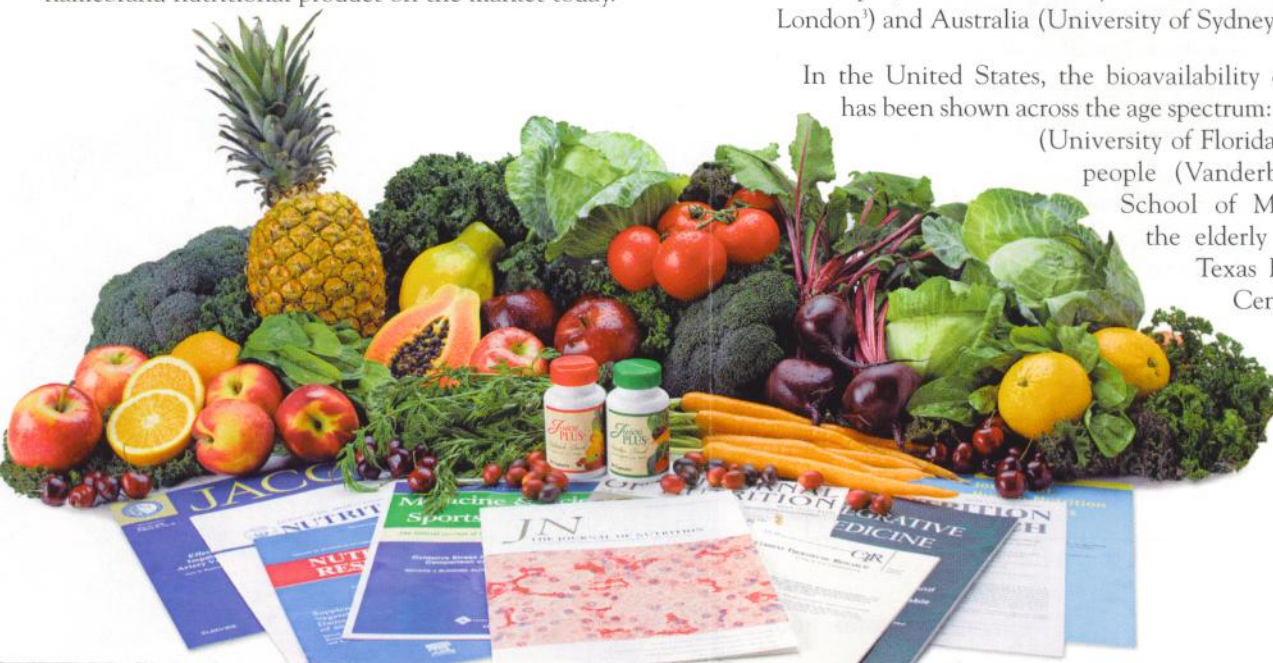
The degree or rate to which a substance is absorbed or becomes available at the site of physiological activity.

**an·ti·ox·i·dant** – n.

A substance such as vitamin E, vitamin C, or beta carotene that protects body cells from the damaging effects of oxidation.

There are numerous examples of published, peer-reviewed clinical research showing the bioavailability of select nutrients found in Juice Plus+®. Recently, for example, in a study conducted at Tokyo Women's Medical University,<sup>1</sup> Juice Plus+® was shown to increase the bioavailability of various nutrients in a Japanese population. The bioavailability of Juice Plus+® has also been demonstrated in research subjects in Europe (Medical University of Vienna<sup>2</sup> and King's College London<sup>3</sup>) and Australia (University of Sydney<sup>4</sup>).

In the United States, the bioavailability of Juice Plus+® has been shown across the age spectrum: in young adults (University of Florida<sup>5</sup>), middle-aged people (Vanderbilt University School of Medicine<sup>6</sup>), and the elderly (University of Texas Health Science Center<sup>7</sup>).



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## Juice Plus+® reduces oxidative stress.

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### ox·i·da·tive stress – n.

Physiological stress on the body that is caused by the cumulative damage done by free radicals (oxidants) inadequately neutralized by antioxidants.



Several investigations have reported that Juice Plus+® reduced specific indicators of oxidative stress. For example, a study conducted at the University of North Carolina-Greensboro<sup>8</sup> showed that Juice Plus+® Orchard, Garden, and Vineyard Blends together were effective in reducing a marker of oxidative stress associated with aerobic exercise. Improvements in other markers of oxidative stress have been noted in studies of more sedentary people in both the United States (University of Texas Health Science Center<sup>7</sup>) and England (King's College London<sup>3</sup>).

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## Juice Plus+® helps support a healthy immune system.

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### im·mune sys·tem – n.

The integrated body system of organs, tissues, cells, and cell products that protects the body from potentially harmful organisms, cells, or substances.



A healthy immune system protects the body, and good nutrition is important for a healthy immune system. Published clinical research indicates that Juice Plus+® supports several measures of immune function – in law school students at the University of Florida<sup>5</sup> and in elderly people in a study conducted at the University of Arizona.<sup>9</sup>

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## Juice Plus+® helps protect DNA.

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### DNA – n.

Deoxyribonucleic acid, a nucleic acid molecule that carries the cell's genetic information and hereditary characteristics.



A diet rich in nutrition from fruits and vegetables is also important to protect DNA from oxidative damage, which can weaken the structural integrity of DNA. DNA becomes damaged and fragile when exposed to oxidative stress; antioxidants from fruits and vegetables can help protect DNA from this damage. Studies conducted on Juice Plus+® have shown a reduction in DNA damage after taking Juice Plus+® in both young adults (University of Florida<sup>5</sup>) and in an elderly population (Brigham Young University<sup>10</sup>).

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## Juice Plus+® positively impacts several key indicators of cardiovascular wellness.

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### car·dio·vas·cu·lar – adj.

The body system of, relating to, or involving the heart and blood vessels.

### ho·mo·cys·te·ine – n.

An amino acid formed by the body during normal metabolism that can accumulate to unhealthy levels when we don't get the right nutrition.



Several investigations have found that Juice Plus+® positively impacts various indicators associated with cardiovascular health.

A clinical study at the University of Sydney<sup>4</sup> reported that subjects taking Juice Plus+® showed a reduction of homocysteine levels – even though their levels on average were already within an acceptable range. Researchers in Foggia, Italy<sup>11</sup> also found a reduction of homocysteine levels, this time in subjects with elevated levels of homocysteine.

Researchers at the University of Maryland School of Medicine<sup>12</sup> have found that subjects who consumed Juice Plus+® were better able to maintain the elasticity of the arteries, even after a high-fat meal.

Investigators at Vanderbilt University School of Medicine<sup>6</sup> monitored several measures of vascular health in a low risk population who took Juice Plus+® Orchard, Garden, and Vineyard Blends for two years. They noted various improvements with no adverse side effects.

## Juice Plus+® Clinical Research Citations

1. Kawashima A, et al. Four week supplementation with mixed fruit and vegetable juice concentrates increased protective serum antioxidants and folate and decreased plasma homocysteine in Japanese subjects. *Asia Pacific Journal of Clinical Nutrition* 2007; 16: 411-421\*
2. Kiefer I, et al. Supplementation with mixed fruit and vegetable juice concentrates increased serum antioxidants and folate in healthy adults. *Journal of the American College of Nutrition* 2004; 23: 205-211\*
3. Leeds AR, et al. Availability of micronutrients from dried, encapsulated fruit and vegetable preparations: a study in healthy volunteers. *Journal of Human Nutrition and Dietetics* 2000; 13: 21-27
4. Samman S, et al. A mixed fruit and vegetable concentrate increases plasma antioxidant vitamins and folate and lowers plasma homocysteine in men. *Journal of Nutrition* 2003; 133: 2188-2193\*
5. Nantz MP, et al. Immunity and antioxidant capacity in humans is enhanced by consumption of a dried, encapsulated fruit and vegetable juice concentrate. *Journal of Nutrition* 2006; 136: 2606-2610\*
6. Houston MC, et al. Juice powder concentrate and systemic blood pressure, progression of coronary artery calcium and antioxidant status in hypertensive subjects: a pilot study. *Evidence-based Complementary and Alternative Medicine* 2007
7. Wise JA, et al. Changes in plasma carotenoids, alpha-tocopherol, and lipid peroxide levels in response to supplementation with concentrated fruit and vegetable extracts: a pilot study. *Current Therapeutic Research* 1996; 57: 445-461
8. Bloomer RJ, et al. Oxidative stress response to aerobic exercise: comparison of antioxidant supplements. *Medicine & Science in Sports & Exercise* 2006; 38: 1098-1105\*
9. Inserra PF, et al. Immune function in elderly smokers and nonsmokers improves during supplementation with fruit and vegetable extracts. *Integrative Medicine* 1999; 2: 3-10
10. Smith MJ, et al. Supplementation with fruit and vegetable extracts may decrease DNA damage in the peripheral lymphocytes of an elderly population. *Nutrition Research* 1999; 19: 1507-1518
11. Panunzio MF, et al. Supplementation with fruit and vegetable concentrate decreases plasma homocysteine in a dietary controlled trial. *Nutrition Research* 2003; 23: 1221-1228
12. Plotnick GD, et al. Effect of supplemental phytonutrients on impairment of the flow-mediated brachial artery vasoactivity after a single high-fat meal. *Journal of the American College of Cardiology* 2003; 41: 1744-1749\*

\* randomized, double-blind, placebo-controlled investigation



## Examples of current and past Juice Plus+® research affiliations:

Brigham Young University  
Georgetown University  
King's College, London, England  
Medical University of Graz, Austria  
Medical University of Vienna, Austria  
Tokyo Women's Medical University, Japan  
University of Arizona  
University of Birmingham, England  
University of California, Los Angeles  
University of Florida  
University of Maryland School of Medicine  
University of Milan, Italy  
University of Mississippi Medical Center  
University of North Carolina-Greensboro  
University of South Carolina  
University of Sydney, Australia  
University of Texas Health Science Center  
University of Texas/MD Anderson  
University of Würzburg, Germany  
Vanderbilt University School of Medicine  
Wake Forest University  
(with the NCI-National Institutes of Health)  
Yale University-Griffin Hospital  
Prevention Research Center

For more information about Juice Plus+® products or Juice Plus+®  
research, please contact your Juice Plus+® representative.