



IMAGE AWARENESS WELLNESS INSTITUTE

TRÉ: A Liquid Supplement

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TRÉ

TRÉ is a tasty liquid supplement with three primary ingredients: pomegranate, green tea, and acai. The supplement also contains a substantial number of antioxidants from other sources including grapes, black currant, blueberry, resveratrol and alpha-lipoic acid. This is the first product with standardized quantities of the biologically active components from what have come to be called the super-fruits. This newsletter provides the rationale for the ingredient selection in the product.

POMEGRANATE

The pomegranate is deservedly classified as a superfruit. When its antioxidant potential is matched against other potent antioxidants such as grape, blueberry, red wine, vitamin C and vitamin E, pomegranate wins hands down. As little as 3 units of a six-fold dilution of pomegranate juice were as effective as 300 units of undiluted blueberry juice and nearly 1000 units of undiluted Concord grape juice.

The pomegranate contains powerful antioxidant and anti-inflammatory compounds called punicalagins. The study above was measuring the ability of pomegranate juice to protect from oxidation of a compound called nitric oxide which is critically important for heart health.

Nitric oxide helps prevent LDL cholesterol from oxidizing, it prevents adhesion and accumulation of blood cells and platelets on the inner lining of blood vessels, and it inhibits the proliferation of smooth muscle cells in the blood vessels which is a characteristic of the progression of atherosclerosis.

One of the characteristics of atherosclerosis is shear stress. This is a process whereby blood vessel walls become damaged when blood vessels narrow or when blood pressure is elevated. Research suggests that pomegranate juice can impede the progression of atherosclerosis by reducing or reversing the effects of shear stress.

Research in Israel studied the effect of pomegranate juice on the carotid arteries that carry 80% of the blood flow to the brain. The test subjects suffered with atherosclerosis. The inner lining of the blood vessels

increased by 9% during a year among control subjects. Subjects consuming pomegranate juice daily experienced a 30% reduction in the thickness of the inner lining of the carotid arteries. Total antioxidant activity in the juice consumers increased by 130 percent after a year. Systolic blood pressure dropped by 21 percent in the experimental group.

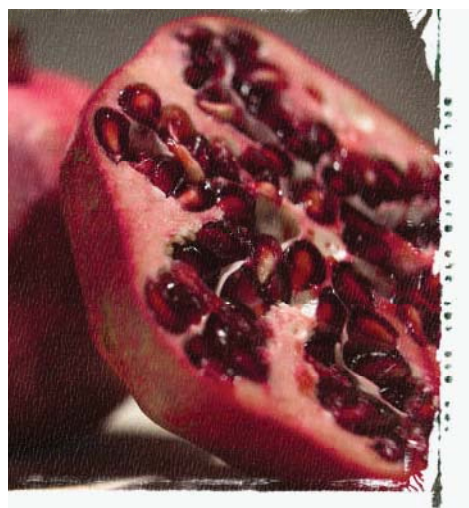
Pomegranate juice contains sugars. A study was done of adult onset diabetics with the juice. The juice at 50 ml a day did not alter blood sugars, but it did reduce oxidized lipids in the blood by 56 percent. Cellular free radicals (peroxides) decreased by 71% and glutathione (the body's major antioxidant) levels increased by 141%. The researchers wrote, "We thus conclude that PJ consumption by diabetic patients did not worsen the diabetic parameters, but rather resulted in anti-oxidative effects on serum and macrophages, which could contribute to attenuation of atherosclerosis development in these patients."

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PROSTATE

Pomegranate fruit extracts may be a future treatment for prostate cancer. Researchers tested pomegranate fruit extract (PFE) on highly aggressive human prostate cancers. They found a “dose-dependent inhibition of cell growth/cell viability and induction of apoptosis.” Apoptosis is a process in which cells commit suicide when they become abnormal.

The authors wrote, “We suggest that pomegranate juice may have cancer-chemopreventive as well as cancer-chemotherapeutic effects against prostate cancer in humans.” The mechanisms involved appeared to be many.

Another study found that the period of time it took for PSA (prostate specific antigen) levels in many men to double increased from 15 months to 54 months when they were consuming pomegranate juice.

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OTHER BENEFITS

Pomegranate offers promise for reducing inflammation from osteoarthritis and may even slow the breakdown of cartilage.

In a mouse model of Alzheimer’s pomegranate juice reduced the accumulation of amyloid beta, a product of oxidative damage, by 50% and also preserved brain function.

In one study, rinsing the mouth with pomegranate juice for one minute reduced the microbes in the mouth that cause dental plaque.

Finally, pomegranate extract reduced free radical activity and damage in the liver of laboratory mice.

The phytochemicals of greatest interest and research in the pomegranate are the punicalagins and ellagic acid. The juice has a wide variety of other compounds as well.

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Ahmed, S., et al, Punica granatum L. extract inhibits IL-1beta-induced expression of matrix metalloproteinases by inhibiting the activation of MAP kinases and NF-kappaB in human chondrocytes in vitro. *J Nutr*. 2005 Sep;135(9):2096-102.

Hartman, RE, et al., Pomegranate juice decreases amyloid load and improves behavior in a mouse model of Alzheimer’s disease. *Neurobiol Dis*. 2006 Dec;24(3):506-15.

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Faria, Ana, et al, Effect of pomegranate (Punica granatum) juice intake on hepatic oxidative stress, *European Journal of Nutrition*, Vol. 46, No 5, August 2007, 271-278.

GREEN TEA

Dr. Norman Hollenberg of Harvard Medical School studied the Kuna people of Panama. These people have a very high intake of the catechins found in some foods and beverages including chocolate, wine and tea. He has studied the effects of epicatechin in hundreds of elderly people from different cultures as well as 15 years of research among the Kuna.

The Kuna get most of their epicatechin from unprocessed cocoa which is extremely bitter. Most processed chocolate has the epicatechin removed.

Hollenberg found that 4 of the 5 most common killer diseases (stroke, heart failure, cancer and diabetes) were reduced to less than 10% in the Kuna.

Hollenberg said, “If these observations predict the future, then we can say without blushing that they are among the most important observations in the history of medicine.... epicatechin could potentially get rid of 4 of the 5 most common diseases in the western world, how important does that make epicatechin?...I would say very important.”

Hollenberg became so impressed with the protective effects of epicatechin that he feels the flavonoid should be considered essential and classified as a vitamin.

Green tea is added to TRE for its catechin content. Green tea contains not only epicatechin but also other powerful catechins. A substantial body of research suggests that these compounds not only provide the benefits already mentioned, but also promote oral health, aid in weight control, have anti-bacterial and antiviral activity, provide protection from ultraviolet radiation, increase bone mineral density, have anti-fibrotic properties, and protect the nerves.

Green tea contains four primary catechins which are undergoing scientific investigation: EGCG (epigallocatechin-3-gallate), EGC (epigallocatechin), ECG (epicatechin-3-gallate, and EC (epicatechin). Green tea contains a number of other promising compounds including chlorogenic acid, caffeic acid, kaempferol, myricetin and quercetin.

To review the research on all these compounds would take more space than we have available here. Studies have shown that catechins can cause regression of atherosclerotic plaque in animal models of the disease. Other studies have shown a suppression of viability of human breast cancer cells and induction of apoptosis or self-

destruction on the part of the cancer cells.

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Cocoa 'vitamin' health benefits could outshine penicillin, *Science Daily*, March 12, 2007.

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Int J Oncol. 2004 Mar;24(3):703-10

ACAÍ

Acaí is pronounced "Ah-sah-EE." This plant is also known as the Amazonian Palm Berry. This super fruit has very high antioxidant activity.

One of the mistakes commonly made with regard to antioxidants is to assume that if a food or beverage has a high ORAC value this means it is an effective antioxidant. ORAC stands for Oxygen Radical Absorbance Capacity. Drawbacks of this method are that it measures primarily peroxy radicals, the nature of the reaction is not characterized, and there is no relationship between ORAC values and health benefit that has been established.

Acaí is interesting because it shows very high antioxidant capacity with a number of different measures of testing. It has exceptional activity against superoxide with the SOD assay. This was the highest activity of any fruit or vegetable tested to date. It has the highest peroxy radical absorbing capacity of any food as measured by ORAC (1026.9). Acaí also demonstrated activity against the peroxy nitrite radical (NORAC) and against the hydroxyl radical as measured by HORAC.

It is of interest that Acaí does not have the same content of polyphenol compounds as found in pomegranate and green tea, but it is exceptionally rich in anthocyanins. This suggests that its benefits may be complementary to that of pomegranate and green tea.

A great many claims have been made for the Acaí berry, but the fruit is actually much less studied than green tea and pomegranate. Extracts from the fresh fruit have only been available for a few years.

Stephen Talcott of the University of Florida's Institute of Food and Agricultural Sciences conducted an interesting study of Acaí extracts in 2006. Six different chemical extracts were made from Acaí fruit pulp. Four of these extracts proved capable of killing leukemia cells when applied for 24 hours. The percentage of cells tests varied with extract and concentration anywhere from 35 percent to 86 percent. The extracts appear to have triggered apoptosis or the self-destruction response in the cancer cells. The researchers pointed out that this was only a test in a cell culture and similar studies have not been conducted on cancers in the human body.

A randomized, double-blind, placebo-controlled crossover trial of 12 human subjects found that consumption of a juice with Acaí increased antioxidants in the blood and inhibited oxidation of blood fats two hours after consumption. Laboratory testing suggested a wide range of activity reducing the inflammatory process. Another study found as much as a three-fold increase in antioxidant capacity in the blood.

Acaí contains a wide variety of phytochemicals, some unknown, which are the subject of intense scientific scrutiny. Among the primary compounds undergoing examination are the following anthocyanins: cyanidin 3-sambubioside, cyanidin 3-glucoside, cyanidin 3-rutinoside, peonidin 3-glucoside, and peonidin 3-rutinoside. The berry also contains resveratrol.

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RESVERATROL

Grapes produce compounds called phytoalexins which act as a defense against microbes such as fungi. Resveratrol is a phytoalexin. Resveratrol is believed to be responsible for what is called the "French Paradox." The French consume large quantities of fat, but have a very low incidence of heart disease, apparently because of their consumption of red wine which contains resveratrol.

This compound is believed to have powerful anti-cancer and heart protective activity. Resveratrol is of particular interest because of its potential for detoxification. It interferes with the ability of dioxin and similar carcinogens to damage DNA.

A compound called NF kappa B is strongly linked with inflammatory activity and cancer development in the human body. Resveratrol suppresses the activation of this compound via a variety of mechanisms.

David Sinclair and his associates reported that resveratrol significantly





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extends the lifespan of middle age mice on a high-calorie diet. Resveratrol also produced changes in mice associated with a longer lifespan such as improved sensitivity to insulin, increased numbers of mitochondria for energy production, and improved motor function. Resveratrol opposed the harmful effects of a high calorie diet in 144 out of 153 metabolic pathways. The alterations were similar to what happens in animals with caloric restriction or fasting which can produce profound increases in lifespan.

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Bhat, KP, et al, Estrogenic and antiestrogenic properties of resveratrol in mammary tumor models. *Cancer Res.* 2001 Oct. 15;61(20):7456-63.

Sinclair, David A., Baur, Joseph A., Resveratrol improves health and survival of mice on a high-calorie diet, *Nature* 444, 337-342 (November 16, 2006).

ALPHA-LIPOIC ACID

Alpha-lipoic acid is a sulfur containing fatty acid with powerful antioxidant properties. It is both fat and water soluble giving it a wide range

of biological activity.

Lipoic acid enhances the ability of the body to cope with lead. It also assists the functioning of vitamin C, vitamin E, and glutathione, the most important antioxidant produced within the human body. It plays an important role in energy production in the body.

This particular nutrient has been widely researched for its benefits to the nerves in peripheral neuropathy associated with diabetes.

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Stevens, MJ, et al, Effects of DL-alpha-lipoic acid on peripheral nerve conduction, blood flow, energy metabolism, and oxidative stress in experimental diabetic neuropathy. *Diabetes* 49(6):1006-1015, June 2000.



SODIUM BENZOATE

The preservative in Tre is sodium benzoate. This substance is naturally occurring in cranberries, prunes, greengage plums, apples, cinnamon, and cloves in approximately the same quantity as found in Tre.

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