



## Kyäni Sunrise™:

The Science Behind The Super foods

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# Kyäni Sunrise™:

## The Science Behind The Super foods

One of Kyäni's three proprietary products, Kyäni Sunrise™, is a blend of several "Superfoods," vitamins, and trace minerals. Taken in the morning, this product provides a rich blend of anti-oxidants that help fend off free radical damage throughout the day. Berries are among the foods with the highest anti-oxidant activity and that is why Kyäni included juices from several berries and Superfoods in Kyäni Sunrise™. Another important piece of information would seem obvious to most readers, namely that although a food or berry may have a high level of innate anti-oxidant capacity, if one consumed only a tiny bit, then it might not be very effective in defense against free radical damage to cells. Kyäni has not scrimped on the amounts of the Superfoods that are included in Kyäni Sunrise™. Finally, all sources of fruits and berries are not "created" equal. Environmental growing conditions appear to strongly influence how much anti-oxidant potential is present in a particular food. This is especially true for blueberries, as you will see in the next section, and is one reason the foundation of Kyäni Sunrise™ is the Wild Alaskan Blueberries.

Inclusion of a large number of Superfoods and a comprehensive group of vitamins in Kyäni Sunrise™ also helps cells in organs such as nerves, heart, liver, and others to maximize their metabolism. Interested readers may find the following helpful in understanding why Kyäni incorporated various ingredients in Kyäni Sunrise™. Please note this document discusses the formulation of Kyäni Sunrise™ for the United States. Some foreign countries may have formula variations.

### **FRUITS IN KYÄNI SUNRISE™**

Wild Alaskan Blueberries, Pomegranate, Red Raspberry, Cranberry, Concord Grapes, Grape Skin/Grape Seed, Aloe Vera, Wolfberry, and Noni.

### **WILD ALASKAN BLUEBERRIES**

As the foundational ingredient in Kyäni Sunrise™, the Wild Alaskan Blueberry is the king of Superfoods, boasting a broad range of nutrients. Much of the research and health benefits related to blueberries are focused on cultivated blueberries, sometimes referred to as high-bush blueberries. However, *it is known that Wild Alaskan Blueberries, or low-bush blueberries, are superior to high-bush blueberries by a factor as great as ten.* This comparison is illustrated in the overview section below.

Cultivated blueberries are the blueberries available at the supermarket. According to Julie Cascio, (1) research with various fruits shows that cultivated blueberries have a free radical defense score of 24, which is higher than other commercial fruits included in the studies. Anything above 40 is considered *very high. Wild Alaskan Blueberries, or low-bush blueberries, score even higher: at 111 in this particular test.*

Others have compared the commercially available blueberry with the kind of blueberry found in Alaska. (2) They report that *regardless of the method of testing*, low-bush blueberries were consistently higher in anthocyanins (these are water-soluble pigments that give fruits, flowers, and some vegetables their distinct color and may appear red, purple, or blue), total phenolics (these are organic compounds found in plants that protect them from injury), and anti-oxidant capacity compared with high-bush blueberries.

It is important to consider whether these scientific studies have any real meaning for a person who consumes Wild Alaskan Blueberries (or Kyäni Sunrise™). USDA scientists recently concluded that eating Wild Blueberries and other anti-oxidant-rich foods at every meal helps prevent oxidative stress. (3) Oxidative stress is linked to chronic diseases, such as heart disease and aging. This study advances anti-oxidant research by moving beyond the measurement of anti-oxidants in foods to actual examination of the performance of specific fruits against oxidative stress in the human body.

## Heart Health

Blueberries may help preserve heart health, especially in those who are obese. Clearly heart disease is a leading cause of death worldwide and obesity is becoming a universal health problem. One eight-week study examined subjects who consumed blueberry supplements compared to a control group. (4) Selective risk factors in obese people such as low-density lipoprotein (LDL; the ‘bad’ cholesterol) and systolic and diastolic blood pressure were significantly reduced in the subjects who consumed blueberry supplements. The health benefits of these modest health improvements cannot be overestimated.

## Healthy Blood Sugar Levels

Obese individuals are also at high risk for diabetes with many deleterious effects on circulation to the eyes, heart, and kidneys. Consumption of blueberries improved the handling of glucose in a large cadre of obese, diabetic subjects. (5) Better control of rising blood glucose may help preserve circulation to the vital organs mentioned above.

One placebo-controlled clinical study using a mixed berry preparation that included blueberries showed a significant reduction in cholesterol at the end of four weeks. (6) Blueberries’ anti-inflammatory effects were also investigated in a clinical study involving 42 subjects diagnosed with Type 2 diabetes. (7) Researchers found ingestion of a preparation of blueberry leaves rich in chlorogenic acid plus anthocyanin myricetin significantly reduced C-reactive protein (CRP) and other inflammatory enzymes.

Small clinical trials do support the anti-oxidant efficacy of blueberries. In one study, consumption of a single meal of blueberries (100 g freeze dried powder) increased plasma anti-oxidant capacity in the postprandial state. (8) Trials have also shown ingesting blueberries can reduce oxidative stress as measured by plasma biomarkers. (9) Such effects were shown to be specific to the *anthocyanin* content of blueberries. (10)

Another problem facing the Western world is an aging population. The transition to living longer comes with an increase in the number of people with dementia or Alzheimer’s disease. Recently, blueberry juice was shown to improve recognition and learning in a few subjects with early evidence of Alzheimer’s disease. (10)

Several authors have recruited human subjects and, after feeding them blueberry juice or extracts from blueberries, measured the anti-oxidant activity in the blood. (11,12) Anti-oxidant activity increased substantially.

There are many scientific reports in animal models of various diseases including aging, Parkinson’s disease, Alzheimer’s disease, high cholesterol, and heart problems.

## Summary

The ingredients in blueberries appear to enhance anti-oxidant levels in human blood after ingestion and should help defend against any free radical damage that occurs as a part of natural aging and/or in several disease states.

## CONCORD GRAPES

A second Kyäni Sunrise™ ingredient is the juice from Concord grapes. A large study performed in the UK on several juices demonstrated that “[t]he purple grape juice contained the largest number of individual phenolic compounds and also the highest concentration of total phenolics. The main components were flavan-3-ols, *anthocyanins*, and hydroxycinnamates, which accounted for 93% of the total phenolic content.” (13) Phenols are organic compounds that convey anti-oxidant activity in a vegetable or fruit. A very recent review of most of the human studies in which grape juice was tested appears in *Nutrition Reviews*. (14) The health benefits include a positive influence on cardiovascular health, cancer, neurodegenerative disease, and age related cognitive decline. These effects are often attributed to the

anti-oxidant activity and function of flavonoid compounds found in grapes as well as other actions such as increasing nitric oxide production. The well-established health effects of grapes on cardiovascular disease risk, mainly on endothelial function, LDL oxidation, progression of atherosclerosis, and reduction in oxidative stress, have been clearly identified. Rather than list each of these studies, the interested reader is pointed to reference 14 for further information.

## **Heart Health**

One ingredient in grapes is resveratrol, which has been identified as an important ingredient for health benefits in a number of different conditions. It is thought to be the reason that moderate consumption of red wine helps preserve cardiovascular, cerebrovascular, and peripheral vascular function.

In addition to resveratrol, grapes also contain a large variety of anti-oxidants, catechin, epicatechin, and proanthocyanidins. Resveratrol is mainly found in the grape skin, but proanthocyanidins are found only in the seeds. Resveratrol and proanthocyanidin are the major compounds present in grapes responsible for cardioprotection. Grapes can attenuate cardiac diseases such as atherosclerosis and ischemic heart disease. It appears that resveratrol and proanthocyanidins, especially resveratrol, present in grapes play a crucial role in cardio-protective abilities of grapes.

In addition, use of grape juice alone has been shown to reduce blood pressure in hypertensive men. (15) The study was placebo controlled and double blinded, the gold standard for clinical studies in which physicians and other healthcare professionals strongly believe.

Grape juice has also been found to inhibit platelets from sticking together and forming clots. (16) Platelets are cells in blood that help in blood clotting. However, sticky platelets can help form blood clots that can travel to vessels in the heart, brain, or lungs. Therefore, a natural product that inhibits platelet-derived clots would obviously have health benefits.

Finally, grape skin extracts have direct effects to dilate blood vessels (therefore leading to lower blood pressure). This occurs through stimulation of the nitric oxide system. This unique effect on nitric oxide helps to explain many of the cardiovascular effects of grapes and grape skin. (17)

## **Mental Health**

Several studies suggest that cognitive decline (dementia or Alzheimer's disease) is related to decreased blood flow in the brain. In elderly people with dementia, grape juice can improve several tests of mental status. (18) These preliminary findings suggest that supplementation with Concord grape juice may enhance cognitive function for older adults with early memory decline.

## **Strengthen Immune System**

Our most powerful defense against bacterial and viral infections is the immune system. Consumption of grape juice for nine weeks showed enhancement of human immune function but a placebo treatment did not. There were 85 people who participated in the study. Several measures of immune function were assessed on each person and all showed enhanced levels. This is an important study in that one can't assume taking a supplement for a couple of times a week will be as healthy as routine and consistent consumption. (19)

## **Summary**

Concord grapes processed into juice as well as extract from grape skin and seeds contain a powerful blend of phenol compounds, flavonoids, and anthocyanins that fight the injury that would otherwise be created by free radicals. Additionally, grapes appear to be active in all ages relative to cardiovascular health and may be an unappreciated way to help the elderly avoid some of the disabling effects of dementia. Strokes may also be reduced and immune function should be enhanced. Clearly, the benefits of grapes are vast and profound.

## **RED RASPBERRY**

Red Raspberries, as most fruits, contain phenolics that have anti-oxidant properties. As a food containing a novel anti-oxidant called ellagic acid, raspberries (and also pomegranates) help prevent unwanted damage to cell membranes and other structures in the body by neutralizing free radicals. However, ellagic acid is not the only well-researched phytonutrient component of raspberries. Raspberries' flavonoid content is also well documented. The key substances are quercetin, kaempferol, and the cyanidin-based molecules called cyanidin-3-glucosylrutinoside and cyanidin-3-rutinoside. These flavonoid molecules are also classified as anthocyanins (which you will remember as being important components of blueberries and grapes as well).

Furthermore, raspberries contain the group of substances that give them their rich, red color. Raspberries' anthocyanins also give these delectable berries unique anti-oxidant properties, as well as some anti-microbial ones, including the ability to prevent overgrowth of certain bacteria and fungi in the body (for example, the yeast *Candida albicans*, which is a frequent culprit in vaginal infections and can be a contributing cause in irritable bowel syndrome). They also contain vitamin C, manganese, vitamin K, magnesium, folate (folic acid), omega-3 fatty acids, copper, vitamin E, and potassium. (20) Even with all of the remarkable health benefits, a cup of raspberries has only 63 calories!

In addition, Red Raspberries inhibit the production of inflammatory COX-I and COX-II enzymes. Anti-inflammatory products like ibuprofen and aspirin also inhibit COX-I and COX-II, resulting in the reduction of pain associated with arthritis, gout, and other inflammatory conditions. (21)

Although scientific studies have shown unique effects on one single component extracted from Red Raspberries, consumption of whole berries has been shown in scientific studies to be more beneficial than taking the individual phytochemicals in the form of dietary supplements. The oil from Raspberry seeds is rich in Vitamin E, omega-3 fatty acids and has a sun protection factor (SPF) of 25-50. This is the reason the oil is often used in skin care products. Finally, Red Raspberry ketones are currently being used in Japan as a weight loss supplement in a pill form and as an external patch.

### **Summary**

Red Raspberries contain high amounts of polyphenolic compounds (phenols) and strong anti-oxidants such as Vitamin C, quercetin, and gallic acid that fight against heart and circulatory disease and age-related mental decline. Their anti-oxidant levels are nearly as high as blueberries. The future of Red Raspberries as an important health aid will only expand in the future. Red Raspberries are one of the key Superfoods available in Kyäni Sunrise™.

## **POMEGRANATE**

### **Heart Health**

Pomegranate juice contains anti-oxidants such as soluble polyphenols, tannins, anthocyanins, and may have anti-atherosclerotic properties. This means the inhibition or reversal of atherosclerosis (or hardening of the arteries). Atherosclerosis is the narrowing of blood vessels and is a major contributor to coronary artery vessel disease and other vessel diseases. Patients with coronary heart disease show changes on the cardiograms during stress tests such as running on a treadmill. In other words, the narrowed vessels cannot provide enough blood flow and oxygen to meet the demands of exercise.

Three months of pomegranate juice consumption resulted in an improved stress test and less electrocardiogram changes. This occurred without changes in cardiac medications, blood sugar, hemoglobin A1c, weight, or blood pressure. (22)

Blood pressure is also reduced during pomegranate consumption. There are two primary reasons why

pomegranate effects blood pressure: 1) The enzyme that causes high blood pressure, namely angiotensin converting enzyme (ACE), is also inhibited (23, 24) by pomegranate and 2) pomegranate juice helps protect nitric oxide from being destroyed as identified during research by Dr. Ignarro and his colleagues.

Dr. Louis Ignarro, Nobel laureate for his work on nitric oxide (see paper on Kyäni Nitro FX™ and Kyäni Nitro Xtreme™) has shown that pomegranate juice protects nitric oxide from being destroyed. Therefore, when Kyäni Sunrise™ is taken together with Kyäni Nitro FX™ and/or Kyäni Nitro Xtreme™, the pomegranate juice in Kyäni Sunrise™ helps to keep nitric oxide working on the cardiovascular system. (25)

### **Inflammation**

A small study in patients with rheumatoid arthritis (RA) showed that pomegranate consumption reduced markers of inflammation in RA patients. This could be related to the anti-oxidative property of pomegranates. (26)

Those who exercise often suffer from muscle soreness. Exercise is healthy and anything that helps reduce muscle soreness would be very appreciated. A study was undertaken to see if pomegranate juice supplementation improved the recovery of skeletal muscle strength after eccentric exercise in subjects who routinely performed resistance training. The results suggest that supplementation with pomegranate juice attenuates weakness and reduces soreness of the elbow flexor. It seems reasonable to suggest that Kyäni Sunrise™ may help one recover from some forms of exercise. (27)

### **Obesity**

Pomegranate juice taken daily for a month by obese subjects caused them to lose weight whereas the control group actually increased body weight. (28)

### **Other**

Rat, rabbit hamster, and cell culture studies using whole pomegranate juice or one of its components have suggested that pomegranate may help prevent ulcers, reduce influenza (the flu), inhibit viruses, improve skin health, and prevent some skin cancers caused by exposure to UV rays. Photo aging may also be delayed or prevented. Digestion may be improved and healthy bacteria in the intestine appear to be more robust in the presence of pomegranate juice.

### **Summary**

Pomegranates contain powerful anti-oxidants that positively effect many systems of the body. Pomegranates promote heart in several ways. Additionally, the Superfruit has many other health benefits including the reduction of the inflammation associated with rheumatoid arthritis and decreased obesity.

## **CRANBERRIES**

### **Infections**

Cranberries have a long history of preventing the severity of urinary tract infections. (29-32) This appears to be due to preventing the binding of the bacteria to the cells lining the urinary tract that effectively prevents the bacteria from multiplying.

### **Heart Health**

In addition, a growing body of evidence suggests that cranberry flavonoids and polyphenols may contribute to reducing the risk of cardiovascular disease (CVD) by inhibiting LDL-oxidation, maintaining or improving high-density lipoprotein (HDL) levels, reducing platelet aggregation, improving vascular

function, and reducing blood pressure among other potential cardiovascular benefits. (33, 34) Cranberry interventions have been shown to improve risk factors for cardiovascular disease among high-risk populations, including those with Type 2 diabetes. (35)

In one study, low calorie cranberry juice cocktail has also been shown to raise HDL-cholesterol levels among abdominally obese men. (36) In the study, 250 ml of cranberry juice cocktail consumed daily showed positive increases in HDL-cholesterol concentrations. (36)

Published results also show that short-term cranberry juice supplementation is associated with a significant increase in plasma anti-oxidant capacity and reduction in circulating oxidized LDL concentrations. (37)

### **Healthy Blood Sugar Levels**

Since cranberries are nutrient-rich and contain naturally occurring flavonoids, anthocyanins, and proanthocyanidins, it is thought that drinking cranberry juice cocktail and other cranberry beverages may not have the same glycemic response compared to a placebo beverage with the same sugar content. In other words, the theory was drinking cranberry juice wouldn't cause blood glucose to increase. Current research conducted with humans suggests that the polyphenols in cranberries do, in fact, blunt the blood sugar response in humans. (38, 39) While more research is needed, these preliminary studies suggest that cranberry juice cocktail may be an acceptable product for individuals with impaired glucose tolerance or those at risk for metabolic syndrome.

### **Anti-Oxidants**

Anti-oxidants help neutralize free radicals, which scientists believe can damage the body's DNA or genes, interfere with normal lipid metabolism, and promote inflammation, thereby increasing the risk for certain chronic diseases. (40-43) Cranberries contain naturally occurring anti-oxidant compounds: flavonoids (anthocyanins, flavonoids, and proanthocyanidins) (44) and a particularly rich source of phenolic phytochemicals including the phenolic acids (benzoic, hydroxycinnamic, and ellagic acids). Studies using various measures of anti-oxidant activity have revealed that cranberries and cranberry products have among the highest anti-oxidant capacity of fruits and fruit juices. (41-43, 45-47)

### **Summary**

Cranberries are a powerful natural fruit with multiple health-promoting properties based on their abundant content of anti-oxidants. Their anti-bacterial and other effects have led to a focus of their role in helping decrease urinary tract infections. This has excited scientists because if cranberries could be shown to minimize the binding of bacteria in the mouth or stomach or intestine, perhaps it would provide other targets for cranberries. Such research is currently ongoing and seems promising. Research has also shown that the same anti-oxidant and cholesterol metabolism effects of the other fruits in Kyäni Sunrise™ are also shared by cranberries.

### **WOLFBERRY (GOJI)**

The Western world owes much to the Chinese and their long history of natural, plant based treatments. Goji is the modernized name for wolfberry, a red berry of the family of plants that includes tomato, eggplant, chili pepper, and potato. For at least 2,000 years, wolfberry has grown wild in China and been used in common recipes and traditional Chinese medicine. Wolves in China actually feast among the berry-laden vines during late summer at prime harvest time, probably to store nutrients for the winter; hence the name "wolfberry."

Wolfberry juices and fruits have only begun to appear in the US and Europe in this century. As a result, there are a limited number of human trials. Virtually all research has been performed in mice, rats, dogs, and various cell cultures. Wolfberry contains significant percentages of a day's macronutrient needs – carbohydrates, protein, fat, and dietary fiber. Studies show that 68% of the mass of a wolfberry exists as

carbohydrate, 12% as protein, and 10% each as fiber and fat, giving a total caloric value of 370 for a 100 gram (quarter pound) serving. Seeds contain the wolfberry's main complement of polyunsaturated fats such as linoleic (omega-6) and linolenic (omega-3) acids.

Wolfberry's high concentration of micronutrients suggests it is an exceptional health food. There are 11 essential minerals, 22 trace minerals, 7 vitamins, and 18 amino acids. Some of these are calcium, potassium, iron, zinc, selenium, vitamin B2, and vitamin C.

Wolfberries contain dozens of phytochemicals. Three of particular interest are beta-carotene which is a pigment in orange-red foods like wolfberries, pumpkins, carrots, and salmon. Beta-carotene is important for synthesis of vitamin A, a fat-soluble nutrient and anti-oxidant essential for normal growth, vision, cell structure, bones, teeth, and healthy skin. *Wolfberry's beta-carotene content per unit weight (7 mg/100 grams) is among the highest for edible plants.* Another is zeaxanthin, an extraordinary carotenoid important as an anti-oxidant. Finally, wolfberries contain polysaccharides. These are long-chain sugar molecules characteristic of many herbal medicines like mushrooms and roots. Metabolism in the intestine yields short-chain fatty acids which 1) are valuable for health of the colon epithelial lining, 2) enhance mineral uptake, 3) stabilize blood glucose levels, 4) lower pH, and 5) stimulate immune functions. Polysaccharides also display anti-oxidant activity.

In preliminary research to date, wolfberries may have potential benefits against cardiovascular and inflammatory diseases, some forms of cancer, diabetes, premature aging, memory deficits, vision degeneration, and lung disorders, among other diseases of oxidative stress.

Although not adequately demonstrated yet in published research, a synergy of anti-oxidant carotenoids (primarily beta-carotene and zeaxanthin) with polysaccharides may make wolfberries an exceptionally rich anti-oxidant food source.

Micronutrients and minerals combined with key health phytochemicals like carotenoids and polysaccharides give wolfberries remarkable nutritional qualities making this berry possibly one of the most nutritious plant foods on Earth.

## **Summary**

Wolfberry is an exceptional health food containing carbohydrates, protein, fat, dietary fiber, omega-3s, omega-6s, and high levels of anti-oxidants. Wolfberry's beta-carotene content per unit weight is among the highest for edible plants. As a result, this Superfruit may possess many potential benefits against diseases. Maybe the ancient Chinese were right!

## **ALOE VERA**

Aloe vera has been revered as a natural healer for decades. There is some evidence that Aloe vera extracts may be useful in the treatment of wound and burn healing, minor skin infections, sebaceous cysts, diabetes, and elevated blood lipids in humans. These positive effects are thought to be due to the presence of compounds such as polysaccharides, mannans, anthraquinones, and lectins.

Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids, and amino acids. (48-50) It contains vitamins A (beta-carotene), C and E, which are anti-oxidants. It also contains vitamin B12, folic acid, and choline. Anti-oxidants neutralize free radicals. It contains eight enzymes: aliase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase. Bradykinase helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats. Aloe vera also provides calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium, and zinc. They are essential minerals for the proper functioning of various enzyme systems in different metabolic pathways and a few are anti-oxidants.

Aloe vera also provides monosaccharides (glucose and fructose) and polysaccharides:(glucomannans

and polymannose). These are derived from the mucilage layer of the plant and are known as mucopolysaccharides. The most prominent monosaccharide is mannose-6-phosphate, and the most common polysaccharides are called glucomannans [ $\beta$ -(1,4)-acetylated mannan]. Acemannan, a prominent glucomannan, has also been found. Recently, a glycoprotein with anti-allergic properties, called alprogen and a novel anti-inflammatory compound, C-glucosyl chromone, has been isolated from Aloe vera gel. (51,52) Aloe vera also provides 12 anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin act as analgesic, anti-bacterial, and anti-viral agents.

Additionally, Aloe vera provides four plant steroids: cholesterol, campesterol,  $\beta$ -sisosterol, and lupeol. All these have anti-inflammatory action. Lupeol also possesses anti-septic and analgesic properties. The hormones auxins and gibberellins help in wound healing and have anti-inflammatory action. It provides 20 of the 22 human required amino acids and 7 of the 8 essential amino acids. It also contains salicylic acid that possesses anti-inflammatory and anti-bacterial properties.

### **Healing Properties**

Aloe vera significantly increases collagen synthesis after topical and oral treatment. (53) Furthermore, Aloe vera increases collagen content of the wound as well as changed collagen composition (more type III) and increased degree of collagen cross-linking. Due to this, it accelerated wound contraction and increased the breaking strength of resulting scar tissue. (54) An increased synthesis of hyaluronic acid and dermatan sulfate in the granulation tissue of a healing wound following oral or topical treatment has been reported. (55)

### **Inflammation**

Aloe vera also inhibits the cyclooxygenase (COX-1, COX-2) pathway and reduces prostaglandin E2 production from arachidonic acid. This would provide a second mechanism for its anti-inflammatory action. (52)

### **Summary**

Aloe vera contains numerous ingredients including vitamins and anti-oxidants that have been individually recognized as contributors to maintaining good health. It has been revered for decades in promoting wound healing and skin health. Aloe vera is another Superfood included in Kyäni Sunrise™ to promote health and wellness.

### **NONI**

In laboratory research, noni has shown anti-oxidant, immune-stimulating, and tumor-fighting properties. These results suggest that noni may warrant further study for conditions such as cancer and cardiovascular disease. Many companies process, produce, and market various noni products; not all are the same and many simply capitalize on the efforts of others.

Members of Kyäni's Medical and Scientific Advisory Board have been involved in the noni industry virtually since its inception. Kyäni draws upon the strong scientific knowledge and clinical observations of members of this esteemed board as well as other physicians, healthcare professionals, and scientists.

The composition of noni is, like many plants, complex. The purported benefits reported by citizens in the South Pacific islands who have used the noni plants are wide ranging. Yet some consumers would say that if a product claims to do "everything," it couldn't do anything.

One way to approach this apparent paradox is to see what is scientifically similar between all the claims made for noni. Members of Kyäni's Medical and Scientific Advisory Board examined the components of noni, namely nitrates and nitrites, and developed a theory that nitric oxide production, from the nitrates and nitrites, might be enhanced by the ingestion of noni. Basic studies on extracts of noni placed in contact with certain cells that produce nitric oxide showed an enhanced nitric oxide production. Nitric

oxide is effective in wound healing, pain relief, immune stimulation, gastric motility, lung function, and many other areas. Nitric oxide is most well known as a vasodilator of blood vessels. In other words, better blood flow and lower blood pressure occurs when nitric oxide is produced.

Kyäni includes noni juice in Kyäni Sunrise™ to help maintain blood flow to various organs throughout the body. Additionally the noni allows for the anti-oxidants, minerals, and vitamins in Kyäni Sunrise™, as well as the tocotrienols and omega-3 in Kyäni Sunset™ to reach the cells and organs throughout the body.

If someone has a distinct interest in nitric oxide as it relates to a particular health issue, please visit the National Library of medicine website (<http://www.ncbi.nlm.nih.gov/pubmed/>) and search for nitric oxide or anything else of interest. There are over 112,000 papers on nitric oxide listed there. Additional information about nitric oxide can be found in the scientific paper on Kyäni Nitro FX™ and Kyäni Nitro Xtreme™.

### **Summary**

Noni has been shown to promote the production of nitric oxide in the body. Nitric oxide has been thoroughly studied by doctors and researchers and positively impacts nearly every system of the body. Noni is included as one of the Superfoods available in Kyäni Sunrise™.

### **CONCLUSION**

Kyäni Sunrise™ is a liquid dietary supplement containing numerous Superfoods. There is substantial scientific and medical evidence supporting the use of these Superfoods in achieving optimal health and wellness. For more information about Kyäni Sunrise™ and the other Kyäni products, please visit [www.kyaniscience.com](http://www.kyaniscience.com).

## References

1. <http://www.uaf.edu/files/ces/publications-db/catalog/hec/FNH-00111.pdf>
2. Kalt W, Ryan DA, Duy JC, Prior RL, Ehlenfeldt MK, Vander Kloet SP. Interspecific variation in anthocyanins, phenolics, and antioxidant capacity among genotypes of highbush and lowbush blueberries (*Vaccinium* section *cyanococcus* spp.). *Journal of Agricultural and Food Chemistry* 2001; 49: 4761-4767.
3. Prior RL, Gu L, Wu X, Jacob RA, Sotoudeh G, Kader AA, Cook RA. Plasma antioxidant capacity changes following a meal as a measure of the ability of a food to alter in vivo antioxidant status. *Journal of the American College of Nutrition* 2007; 26: 170-181.
4. Basu A, Du M, Leyva MJ, Sanchez K, Betts NM, Wu M, Aston CE, Lyons TJ. Blueberries Decrease Cardiovascular Risk Factors in Obese Men and Women with Metabolic Syndrome. *The Journal of Nutrition* 2010; 140: 1582-1587.
5. Stull AJ, Cash KC, Johnson WD, Champagne CM, Cefalu WT. Bioactives in blueberries improve insulin sensitivity in obese, insulin-resistant men and women. *J Nutr.* 2010; 140: 1764-1768.
6. Abidov M, Jimenez Del Rio M, Ramazanov A, Kalyuzhin O, Chkhikvishvili I. Efficiency of pharmacologically-active antioxidant phytomedicine Radical Fruits in treatment hypercholesteremia at men. *Georgian Med News.* 2006; 140: 78-83.
7. Abidov M, Ramazanov A, Jimenez Del Rio M, Chkhikvishvili I. Effect of Blueberin on fasting glucose, C-reactive protein and plasma aminotransferases, in female volunteers with diabetes type 2: double-blind, placebo controlled clinical study. *Georgian Med News.* 2006; 141: 66-72.
8. Kay CD, Holub BJ. The effect of wild blueberry (*Vaccinium angustifolium*) consumption on postprandial serum antioxidant status in human subjects. *Br J Nutr.* 2002; 88: 389-398.
9. McAnulty SR, McAnulty LS, Morrow JD, Khardouni D, Shooter L, Monk J, Gross S, Brown V. Effect of daily fruit ingestion on angiotensin converting enzyme activity, blood pressure, and oxidative stress in chronic smokers. *Free Radic Res.* 2005; 39: 1241-1248.
10. Krikorian R, Shidler MD, Nash TA, Kalt W, Vinqvist-Tymchuk MR, Shukitt-Hale B, Joseph JA. Blueberry supplementation improves memory in older adults. *J Agric Food Chem.* 2010; 58: 3996-4000.
11. Kay, CD and BJ Holub. The effect of wild blueberry (*Vaccinium angustifolium*) consumption on postprandial serum antioxidant status in human subjects. *The British Journal of Nutrition* 2002; 88: 389-398.
12. Qin Y, XiaM, Ma J, Hao Y, Liu J, Mou H, Cao L, LingW. Anthocyanin supplementation improves serum LDL- and HDL-cholesterol concentrations associated with the inhibition of cholesteryl ester transfer protein in dyslipidemic subjects. *Am J Clin Nutr.* 2009; 90: 485-492.
13. Mullen W, Marks SC, Crozier A. Evaluation of phenolic compounds in commercial fruit juices and fruit drinks. *Journal of Agricultural and Food Chemistry.* 2007; 55: 3148-3157.
14. Vislocky LM, Fernandez ML. Biomedical effects of grape products. *Nutrition Reviews.* 2010; 68: 656-670.
15. Park YK, Kim JS, Kang MH. Concord grape juice supplementation reduces blood pressure in Korean hypertensive men: double-blind, placebo controlled intervention trial. *Biofactors.* 2004; 22: 145-147.
16. Freedman JE, Parker C 3rd, Li L, Perlman JA, Frei B, Ivanov V, Deak LR, Iafrati MD, Folts JD.

Select flavonoids and whole juice from purple grapes inhibit platelet function and enhance nitric oxide release. *Circulation*. 2001; 103: 2792-2798.

17. Fitzpatrick DF, Hirschfield SL, Coffey RG. Endothelium-dependent vasorelaxing activity of wine and other grape products. *The American Journal of Physiology*. 1993; 265: H774-H778.
18. Krikorian R, Nash TA, Shidler MD, Shukitt-Hale B, Joseph JA. Concord grape juice supplementation improves memory function in older adults with mild cognitive impairment. *The British Journal of Nutrition*. 2010; 103: 730-734.
19. Rowe CA, Nantz MP, Nieves C Jr, West RL, Percival SS. Regular consumption of concord grape juice benefits human immunity. *Journal of Medicinal Food*. 2011; 14: 69-78.
20. <http://www.whfoods.com/genpage.php?pfriendly=1&tname=foodspice&dbid=39>
21. [ww.red-raspberry.org](http://www.red-raspberry.org)
22. Sumner MD, Elliott-Eller M, Weidner G, Daubenmier JJ, Chew MH, Marlin R, Raisin CJ, Ornish D. Effects of pomegranate juice consumption on myocardial perfusion in patients with coronary heart disease. *The American Journal of Cardiology*. 2005; 96: 810-814.
23. Stowe CB. The effects of pomegranate juice consumption on blood pressure and cardiovascular health. *Complementary Therapies in Clinical Practice*. 2011; 17: 113-115.
24. Aviram M, Dornfeld L. Pomegranate juice consumption inhibits serum angiotensin converting enzyme activity and reduces systolic blood pressure. *Atherosclerosis* 2001; 158: 195-8.
25. Ignarro LJ, Byrns RE, Sumi D, de Nigris F, Napoli C. Pomegranate juice protects nitric oxide against oxidative destruction and enhances the biological actions of nitric oxide. *Nitric Oxide*. 2006; 15: 93-102.
26. Balbir-Gurman A, Fuhrman B, Braun-Moscovici Y, Markovits D, Aviram M. Consumption of pomegranate decreases serum oxidative stress and reduces disease activity in patients with active rheumatoid arthritis: a pilot study. *The Israel Medical Association Journal*. 2011; 13: 474-479.
27. Trombold JR, Reinfeld AS, Casler JR, Coyle EF. The effect of pomegranate juice supplementation on strength and soreness after eccentric exercise. *Journal of Strength and Conditioning Research*. 2011; 25: 1782-1788.
28. González-Ortiz M, Martínez-Abundis E, Espinel-Bermúdez MC, Pérez-Rubio KG. Effect of pomegranate juice on insulin secretion and sensitivity in patients with obesity. *Annals of Nutrition & Metabolism*. 2011; 58: 220-223.
29. Park SJ, Yoon HN, Shim BS. Prevention of relapse with the cranberry juice in chronic pelvic pain syndrome. *Korean J Urol*. 2005; 46: 63-67.
30. Wing DA, Rumney PJ, Preslicka C, Chung JH. Daily cranberry juice for the prevention of asymptomatic bacteriuria in pregnancy: a randomized, controlled pilot study. *J Urol*. 2008; 27: 137- 142.
31. Dugoua JJ, Seely D, Perri D, Mills E, Koren G. Safety and efficacy of cranberry (vaccinium macrocarpon) during pregnancy and lactation. *Can J Clin Pharmacol*. 2008; 15: e80-86.
32. Vidlar A, Vostalova J, Ulrichova J, Student V, Stejskal D, Reichenbach R, Vrbkova J, Ruzicka F, Simanek V. The effectiveness of dried cranberries (*Vaccinium macrocarpon*) in men with lower urinary tract symptoms. *Br J Nutr*. 2010; 104: 1181-1189.

33. Basu A, Rhone M, Lyons TJ. Berries: emerging impact on cardiovascular health. *Nutr Rev.* 2010; 68: 168-177.
34. Bean H, Schuler C, Leggett RE, Levin RM. Antioxidant levels of common fruits, vegetables, and juices versus protective activity against in vitro ischemia/reperfusion. *Int Urol Nephrol.* 2010; 42: 409-415.
35. Lee IT, Chan YC, Lin CW, Lee WJ, Sheu WH. Effect of cranberry extracts on lipid profiles in subjects with Type 2 diabetes. *Diabet Med.* 2008; 25: 1473-1477.
36. Ruel G, Pomerleau S, Couture P, Lemieux S, Lamarche B, Couillard C. Low-calorie cranberry juice supplementation reduces plasma oxidized LDL and cell adhesion molecule concentrations in men. *Br J Nutr.* 2008; 99: 352-359.
37. Ruel G, Pomerleau S, Couture P, Lamarche B, Couillard C. Changes in plasma antioxidant capacity and oxidized low-density lipoprotein levels in men after short-term cranberry juice consumption. *Metabolism.* 2005; 54: 856-861.
38. Lee IT, Chan YC, Lin CW, Lee WJ, Sheu WH. Effect of cranberry extracts on lipid profiles in subjects with Type 2 diabetes. *Diabet Med.* 2008; 25: 1473-1477.
39. Ruel G, Pomerleau S, Couture P, Lemieux S, Lamarche B, Couillard C. Low-calorie cranberry juice supplementation reduces plasma oxidized LDL and cell adhesion molecule concentrations in men. *Br J Nutr.* 2008; 99: 352-359.
40. Neto CC, Amoroso JW, Liberty AM. Anticancer activities of cranberry phytochemicals: an update. *Mol Nutr Food Res.* 2008;52(Suppl 1):S18-27.
41. Basu A, Rhone M, Lyons TJ. Berries: emerging impact on cardiovascular health. *Nutr Rev.* 2010;68(3):168-77.
42. Bean H, Schuler C, Leggett RE, Levin RM. Antioxidant levels of common fruits, vegetables, and juices versus protective activity against in vitro ischemia/reperfusion. *Int Urol Nephrol.* 2010; 42: 409-415.
43. Wolfe KL, Liu RH. Cellular antioxidant activity (CAA) assay for assessing antioxidants, foods, and dietary supplements. *J Agric Food Chem.* 2007; 55: 8896-8907.
44. Neto CC. Cranberry and blueberry: evidence for protective effects against cancer and vascular diseases. *Mol Nutr Food Res.* 2007; 51: 652-664.
45. Sun J, Chu YF, Wu X, Liu RH. Antioxidant and antiproliferative activities of common fruits. *J Agric Food Chem.* 2002; 50: 7449-7454.
46. Wilson T, Porcari JP, Maher MA. Cranberry juice inhibits metal and non-metal initiated oxidation of human low-density lipoproteins in vitro. *J Nutraceut Function Med Foods.* 1999; 2: 5-14.
47. Reed J. Cranberry flavonoids, atherosclerosis and cardiovascular health. *Crit Rev Food Sci Nutr.* 2002; 42(3 Suppl): 301-316.
48. Atherton P. Aloe vera revisited. *Br J Phytother.* 1998; 4: 76-83.
49. Shelton M. Aloe vera, its chemical and therapeutic properties. *Int J Dermatol.* 1991; 30: 679-683.
50. Atherton P. The essential Aloe vera: The actions and the evidence. 2nd ed 1997.
51. Ro JY, Lee B, Kim JY, Chung Y, Chung MH, Lee SK, et al. Inhibitory mechanism of aloe single component (Alprogen) on mediator release in guinea pig lung mast cells activated with specific antigen-

antibody reactions. *J Pharmacol Exp Ther.* 2000; 292: 114–121.

52. Hutter JA, Salmon M, Stavinoha WB, Satsangi N, Williams RF, Streeper RT, et al. Anti-inflammatory C-glucosyl chromone from *Aloe barbadensis*. *J Nat Prod.* 1996; 59: 541–543.

53. Chithra R Sajithlal GB, Chandrakasan G. Influence of aloe vera on collagen characteristics in healing dermal wounds in rats. *Mol Cell Biochem.* 1998; 181: 71–76.

54. Heggors J, Kucukcelebi A, Listengarten D, Stabenau J, Ko F, Broemeling LD, et al. Beneficial effect of aloe on wound healing in an excisional wound model. *J Altern Complement Med.* 1996; 2: 271–277.

55. Chithra P, Sajithlal G, Chandrakasan G. Influence of aloe vera on the glycosaminoglycans in the matrix of healing dermal wounds in rats. *J Ethnopharmacol.* 1998; 59: 179–86.