THE BERKELEY LIFE™ + BERKELEY TEST®:

a dietary lifestyle approach to vascular wellness

With age and a sedentary lifestyle, a nitrate-rich diet coupled with exercise is the most effective way to elevate naturally occurring nitric oxide (NO), the body's natural cardio-protective factor.

Several clinical studies consisting of over 250+ participants consuming dietary nitrate delivered in the form of well-defined, commercially-available beet juices (ranging from 360 to 400+ mg nitrate per serving size/day) to salt forms of nitrate (NO3) delivered in water or a capsule as either sodium nitrate (NaNO3) or potassium nitrate (KNO3) (ranging from 157 to 1,488 mg per serving/day) resulted in blood pressure reduction of 4-11 mmHg and a restoration of endothelial function in hypertensives (Gee et al., 2016, Ashor et al., 2017, Lara et al., 2016).

The National Institute of Health-supported DASH diet (Dietary Approach to Stop Hypertension diet) showed that dietary NO3 can exceed 1,000 mg/day with associated 'heart healthy' benefits. The authors not only link the consumption of nitrate-rich plant foods to beneficial health effects but conclude that dietary NO3 should be considered a necessary nutrient in our daily diet (Hord et al., 2009).

Collectively, dietary NO3 represents a valuable, safe and effective intervention to provide a sustained lowering of BP and improvement in vascular health in the population including hypertensive individuals and those at risk of becoming hypertensive (Kapil et al., 2010). This is particular evident when NO3 is delivered in a plant-based diet. Fruits and vegetables can be rich in vitamin C, vitamin E, and phenolic compounds which minimize any potential nitrosamine formation of the nitrite (NO2) which is generated in the body from NO3. Unlike the chronic administration of prescription organic NO donors and anti-hypertension drugs, dietary inorganic nitrate (NO3) does not appear to lead to the development of tolerance and endothelial dysfunction (Omar et al., 2012).

Accelerating heart risk = Advancing age + Sedentary behavior + Nitrate-deficient diets

With age, arteries lose their elasticity and ability to make nitric oxide (NO) hence, accelerating cardiovascular disease. However, during the stress of exercise, the blood vessel cells are activated to increase the production of the enzyme that produces nitric oxide, endothelium Nitric Oxide Synthases or eNOS. Unfortunately, exercise is not enough, especially, as we age and naturally become more sedentary (Seal et al., 2009).

Therefore, L-arginine supplementation is not sufficient in providing adequate NO production, because age-related NOS expression is lower. Furthermore, age-related conditions tend to be associated with a rise in arginase, which breakdown arginine, thereby, reducing the availability of L-arginine for NOS. Other inhibitors that are associated with advancing age, such as dimethylarginine, blocks arginine from being transformed to NO by eNOS. And poor diet leads to Uric Acid that inhibits NO production and lowers vascular NO activity. Therefore, regardless of the amount of L-arginine we make or ingest, NO production is limited by either the low expression of eNOS or low bioavailability of L-arginine. Or a combination of both low eNOS expression and L-arginine. Hence, dietary NO3 becomes critical.

So, vascular aging can be delayed through the increased consumption of NO3-rich foods, which increase the amount of NO generated independently from the eNOS enzyme that produces NO from L-arginine. Hord et al (2009) point out the average consumption of dietary NO3 is 71 mg, well short of the conservative 350 mg serving required to produce adequate amounts of nitric oxide from dietary NO3.

Reducing risk: Replenish nitrate-rich diets, daily

Nitric Oxide-potent vegetables, such as leafy greens and beets -- rich in nitrate - lowered blood pressure as effectively as hypotensive medication (Ashor et al., 2017, Lara et al., 2016, Gee et al., 2016, Ashworth et al., 2015, Ghosh et al., 2013, Kapil et al., 2015, 2010, Vanhatalo et al., 2010).

Other reports have shown that the bioconversion of dietary nitrate to NO reverses metabolic syndrome, such as obesity and type 2 diabetes (Carlstrom et al, 2010).

A preclinical study recently showed that reduced bioavailable NO, at the vascular level, contributes to atheromatous plaque. However, dietary nitrate supplementation enhanced nitric oxide bioavailability, thereby, reducing macrophage content of atherosclerotic lesions and stabilized plaque formation. The anti-inflammatory effects of dietary nitrate may have clinical importance in the delaying atheroma development (Raymand et al., 2017).

Unfortunately, dietary adherence to nitrate-rich plant-based diets & supplements remains an obstacle. Data from major cohort studies suggest that >80% of cardiovascular disease and 91% of diabetes risk may be prevented by changes in diet and lifestyle. The scientific recommendations of the U.S. Dietary Guidelines Advisory committee advocate the therapeutic diet, Dietary Approaches to Stop Hypertension (DASH), recommended in the AHA/ACC guidelines and the dietary portfolio recommended in the Canadian Cardiovascular Society guidelines to lower blood pressure. Yet despite efforts to encourage the public to increase plant food consumption of nitrate-rich foods, the response has been slow.

A recent randomized study published in the American College of Cardiology journal confirmed that adhering to diet recommendations lead to benefits in coronary heart disease risk factors but unfortunately, found that changing eating habits proved the most difficult. “These data demonstrate the difficulty in effectively promoting fruit and vegetable to the general population, using recommendations that, when followed, decrease risk factors for chronic disease,” the researchers wrote. “They indicate an urgent need for innovative approaches to support the implementation of current dietary advice.”

Berkeley Life + Berkeley Test is a solution

Studies conducted between 2006 and 2012 included a total of 250+ participants consuming dietary nitrate delivered in the form of well-defined, commercially-available beet juices (ranged from 360 to 400+ mg nitrate per serving size with no limitations as to the number of servings per day) to non-plant based forms of nitrate delivered in water or a capsule which ranged from 157 to 1,488 mg per serving/day. With the clear majority of these clinical outcomes resulting in heart, vascular, and/or athletic performance benefits with no harmful side effects (Gee et al, 2016, Lara et al., 2016).

The formulation and recommended dose of Berkeley Life supplements is based on:

1. the plant-based equivalency of nitrate found in clinically- supported beet juice (vs. matched control of nitrate-depleted beet juice) and

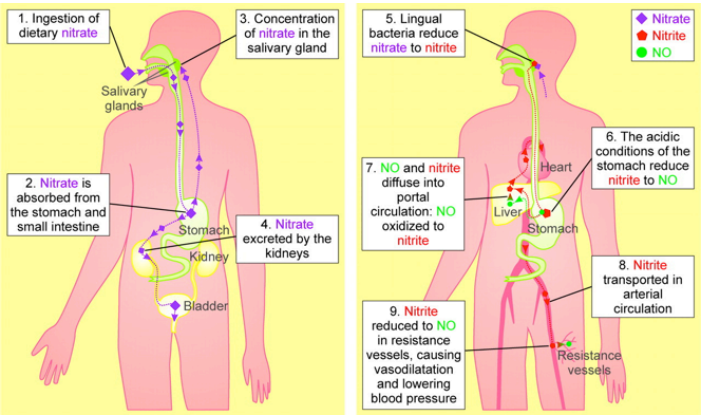
2. The lowest dose of nitrate salt (vs matched control) to achieve a clinically-supported cardiovascular benefit among both normotensive and pre-hypertensives.

The underlying formulation is based primarily on the pioneering work from the Karolinski Institute, who discovered the NO3-NO2-NO dietary pathway - the alternative pathway to the L-arginine NO pathway -- and supportive body of clinical evidence from several UK (Exeter, William Harvey, Barts and London School, Queen Mary University of London) and a growing number of US labs, showing dietary nitrate as the active ingredient (Ducan et al., 1995, Lundberg et al., 2004).

Once ingested, dietary NO3 is rapidly absorbed in the upper GI tract and a quarter of the plasma NO3 passes into circulation and concentrates in the salivary gland as NO3. Upon secretion from the saliva gland, facultative anaerobes in the oral cavity reduces salivary NO3 to salivary NO2 and when swallowed, a portion of the NO2, is absorbed into circulation where it is further reduced to nitric oxide (NO) to mediate physiological effects, such as the lowering of BP (Ashworth et al., 2015; Bailey et al., 2009; Larsen et al., 77 2006; Vanhatalo et al., 2010; Webb et al., 2008).

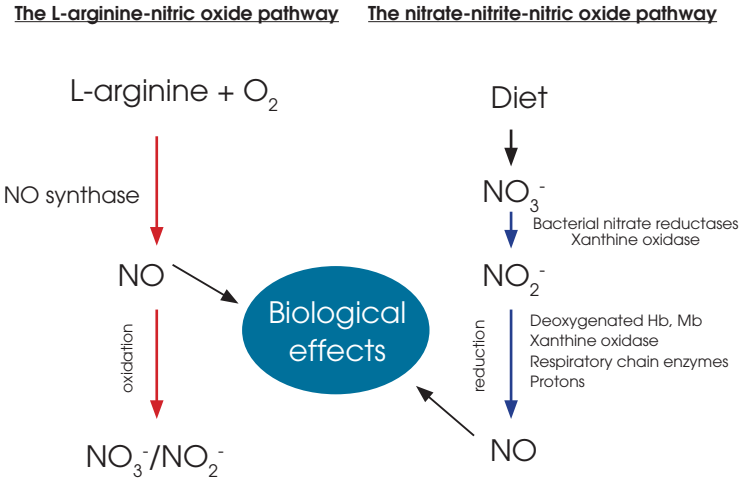
Increase in NO3-rich plant food intake augment circulating NO2 and nitric oxide-mediate effects of lower BP and improved vascular function. One of the curiosities of nitrate handling is that such a large proportion is concentrated in the salivary glands. Most estimates suggest that 28% of a nitrate load is secreted in saliva; salivary NO2 levels correlate with plasma levels, which serves as a surrogate for NO bioavailability (figure 1).

(Figure. 1). Nitrate-Nitrite-Nitric Oxide Pathway



As shown in figure 2, both pathways ultimately lead to the production of nitric oxide and related nitrogen oxide intermediates.

Figure 2. Dietary NO3-NO2-NO Pathway vs L-arginine

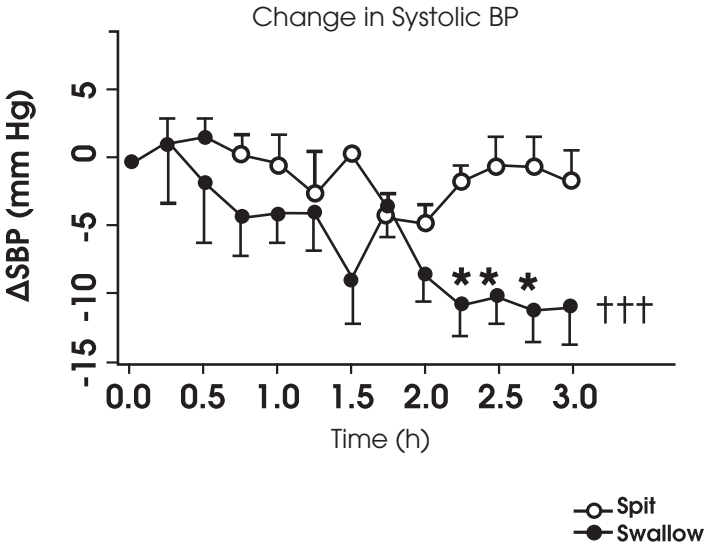


What's most striking about the non-L-arginine NO pathway or dietary nitrate consumption is:

1. Dietary sources of inorganic nitrate derived plant-base foods is serially reduced by both enzymatic and non-enzymatic means, i.e., XOR, acidosis, etc. and requires recycling via the entero-saliva loop from the gut the to salivary gland and back to the gut,
2. Elevated levels of nitrate and nitrite in blood and saliva are correlated with functional outcomes, i.e., BP reduction, and improved endothelial function,
3. Bioconversion of nitrate to nitrite in saliva (resulting in NO and related NOx) is obligatory for functional outcomes: if saliva secretion and nitrite is interrupted BP lowering is blunted (Fig. 3).

Webb's work elegantly reinforced the obligatory role of saliva in humans (Webb et al., 2008). Here, ingestion of beet juice, with a high nitrate concentration by healthy volunteers markedly reduced systolic and diastolic blood pressure by 10/8 mmHg and by disrupting saliva, either by spitting or interrupting the conversion of dietary NO3 to NO2 in the mouth, the reduction of blood pressure was abated; by blocking the saliva from recirculating, it prevented a rise in plasma levels, and blocked a decrease in blood pressure (as shown in the figure 3) and abolished the inhibitor effects on platelets aggregation confirming that were attributable to the conversion nitrate to nitrite in the mouth.

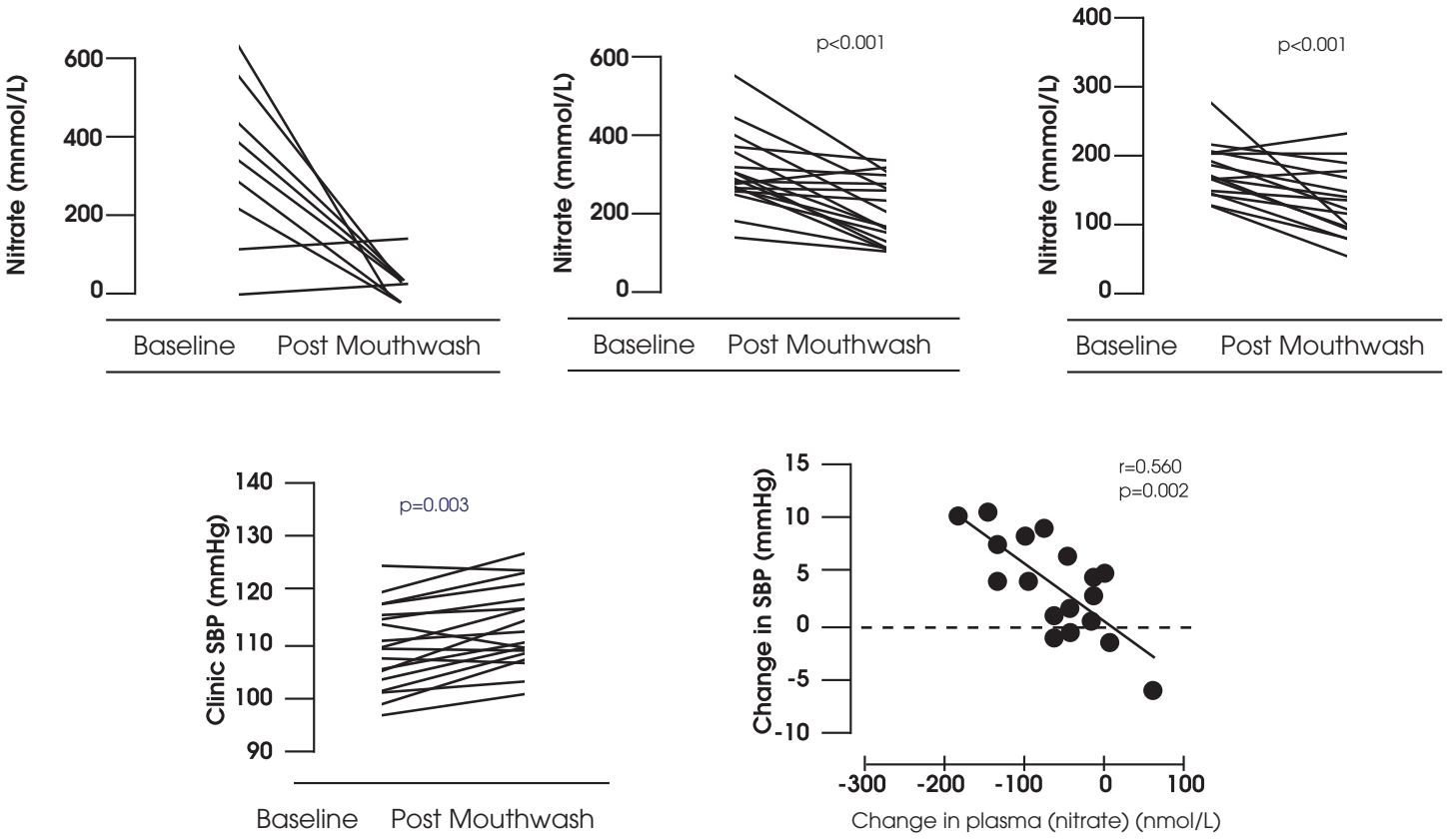
Figure 3. Disrupting the salivary loop, blocks BP reduction (Webb et al., 2008)



There was a lag period of approximately 1 to 2 hours, after ingestion, with a peak drop in blood pressure occurring after 2-3 hours. This time course of reduction in both blood pressure correlated with the appearance and peak levels of nitrite in the circulation and saliva; again, an effect that was absent in individuals within whom the entero-salivary circuit was disrupted by avoidance of swallowing. These observations, together with the fact that nitrite, and not nitrate, concentration correlated with the decreases in blood pressure implicate nitrite reduced from nitrate as the functional NO precursor and recycled byproduct of the beetroot juice-induced effects on blood pressure.

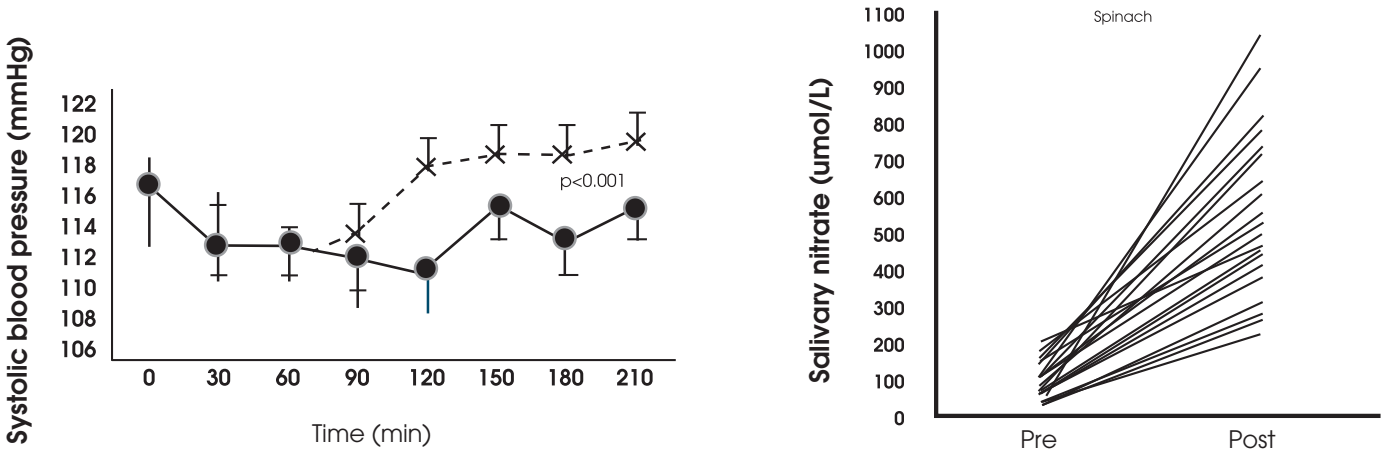
By interrupted saliva levels in volunteers that already had elevated saliva levels (200-450 uM nitrate), Kapil et al (2010) showed a rise in blood pressure (shown in figure 4, Kapil et al., 2010).

Figure 4. Disrupting the salivary loop: mouthwash blocks nitrate bioconversion with a corresponding increase in BP (Kapil et al., 2010)



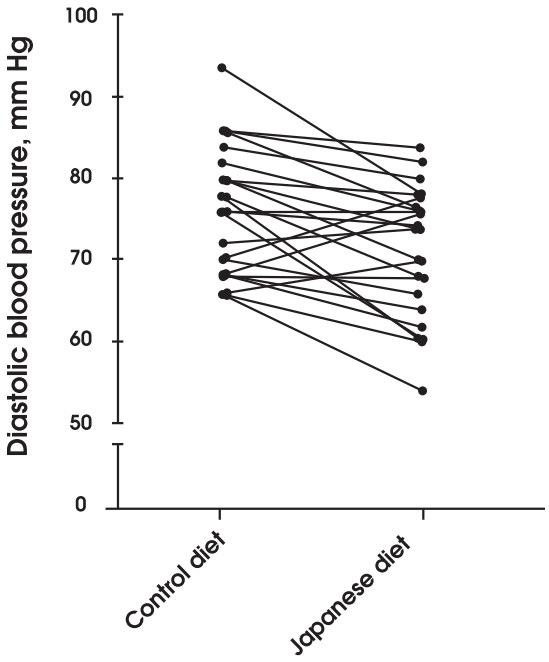
The recent observation by Liu's (2013) assessment of the acute vascular effects of an easily achieved intake of nitrate, derived from a single meal containing nitrate-rich spinach. The outcome measurements were performed pre - and post-meal up to 3 hrs post meal. As shown in the figure 5, spinach results in an eightfold increase (compared to control) in saliva levels with a corresponding decrease in systolic (-7.5 mmHg), and higher large artery elasticity index (p,0.001).

Figure 5. Effects of nitrate-rich spinach on BP lowering and salivary NO (Liu et al., 2013)



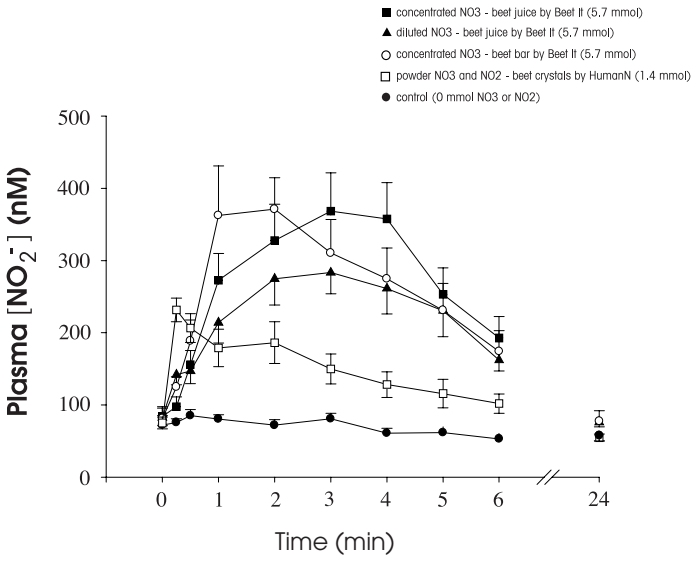
Other correlates of saliva levels that are reflective of BP changes continue to be published; i.e., Sobko et al (2009) showing (figure below) that Japanese traditional diets abundant in leafy greens elevated both plasma and saliva levels with a corresponding BP decrease.

Figure 6. Nitrate-rich plant-based diet lowers BP (Sobko et al., 2009)



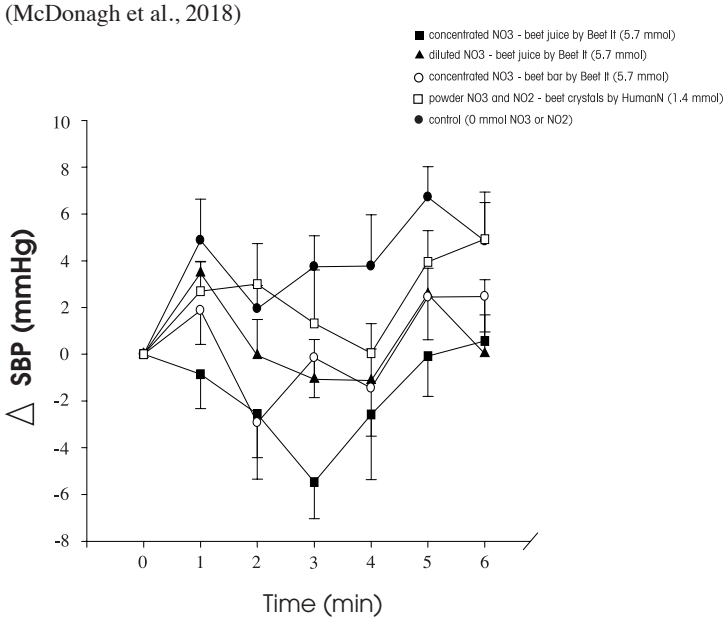
Jones' Lab (McDonagh et al., 2018) observed that consumption of a small, concentrated dose of dietary nitrate (NO3) was the most effective means at increasing plasma and saliva nitrite (NO2) – proximal biomarkers of nitric oxide (NO) bioavailability - and reducing systemic blood pressure (BP).

Figure 7. Plasma NO2 time course of different NO3 delivery sources (McDonagh et al., 2018)



In a randomly assigned, blinded clinical study, 10 normotensive subjects were followed over a 24 hr period after the consumption of different beet preparations with known amounts of dietary NO3. The largest increase in plasma NO2 was found with the smallest volume (see Figure 7), highest concentrated-NO3 beet juice (5.7 mmol NO3 in 55 ml; Beet It Shot) rising from a baseline of 67+16 to 371+136 nM in 2-3 hrs with a corresponding Systolic BP reduction of 5 mmHg ($p < 0.05$). (see Figure 8).

Figure 8. BP lowering effects of different NO3 delivery sources (McDonagh et al., 2018)



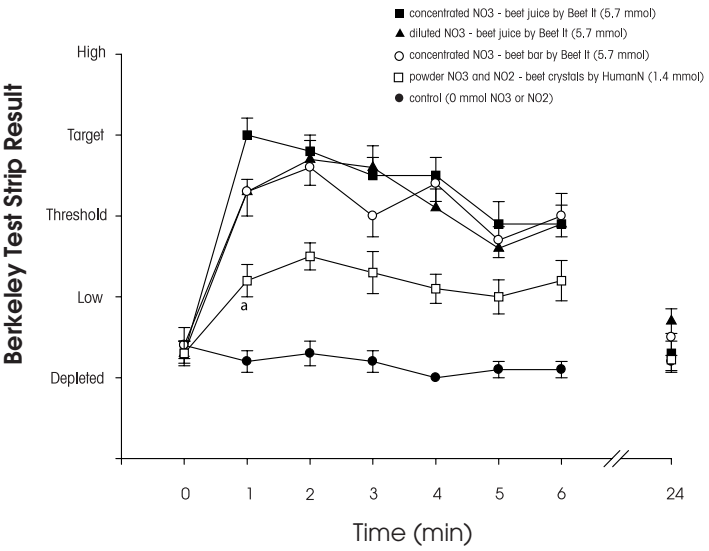
In contrast, subjects that either consumed an equimolar high volume, non-concentrated-NO3 beet juice or a diluted beetroot crystal mix (1.4 mmol NO3 in 114 ml; SuperBeet by HumanN), resulted in plasma NO2 levels of 232+51 nM and no effect on BP (McDonagh et al., 2018).

Unlike the other dietary NO3 sources, SuperBeet crystals peaked within 15 min after ingestion followed by a precipitously dropped below 200 nM. As stated by the authors, the likely explanation for this low, albeit early spike of plasma NO2 with SuperBeet is due to the presence of NO2 (0.07 mmol) and 1.4 mmol NO3. The fact that SuperBeet did not reduce BP at any point is likely explained by the low dose of NO3 administration and consequently, small rise in the plasma and saliva markers of NO bioavailability.

The authors further show a significant correlation between the change in plasma NO2 and the change in Berkeley NO Test Strips across all conditions ($r=0.48$, $P<0.05$). There was also a significant correlation between salivary NO2 and the Berkeley Nitric Oxide Test strip result across all conditions ($r=0.57$, $P<0.05$).

In Figure 9, the 5.7 mM NO3 concentrated beet shot (Beet It) increased from Low-Depleted levels (<161 uM NO2) to Target-High levels (>361uM) within 1 hr and maintained a high Threshold level (220-315 uM) for 4 hrs. In contrast, the 1.4 mM NO3 beet crystal (HumanN) peaked at Low (<161 uM) at 2 hr and stayed within the Low range for 4 hrs.

Figure 9. Salivary NO2 time course of different NO3 delivery sources (McDonagh et al., 2018)



Green and collaborators (2018; unpublished) provide confirmatory evidence with a cohort of 30 randomly assigned normotensives. Subjects were given a single dose of a NO3-concentrated capsule (5.04 mmol NO3; Berkeley Life tablet). Plasma NO2 was significant elevated in subjects 2 hrs after ingesting Berkeley Life tablets (456+30 nM) compared to placebo matched-control subjects (100+21 nM) (P<0.005). And with daily ingestion, plasma NO2 continued to rise to 544+60 nM compared to placebo control 90+30 nM (P<0.005) after 2 weeks.

	Pre-treatment	post 2 hrs	post 14 days
Plasma NO2	100±20	456±30	544±60
		n=21; p<0.0014	*n=16; p<0.005*
Berkeley Test	30±8	381±51	428±68
	*Depleted**	*Target**	*Target**
		n=21; p<0.0014	*n=16; p<0.005*

** depleted 10-58m low 59-161, threshold 162-315, target 316-630, high > 631 uM salivary NO2*

Consistent with earlier reports that there is a direct relationship between dietary NO3 consumption and salivary NO2 (Spiegelhalder et al., 1976), concentrated NO3 delivered in a beetroot juice shot and tablet increased salivary NO2 to a similar extent, peaking at 2 h post consumption. In contrast, the smaller dose of NO3-administered in the beetroot crystal condition resulted in a smaller rise in salivary NO2 when compared with the other vehicles.

McDonagh et al. (2015) have also shown increases in salivary NO3 and NO2 after chronic ingestion of the same concentrated beetroot juice shot but the magnitude of increase was much greater than in the present study, which may be linked to the longer supplementation period. Although not highly significant, this observation is consistent with daily dosing of Berkeley Life tablets over a two-week period resulting in a notable increase in plasma NO3, plasma NO2, and salivary NO2 as measured by Berkeley Test.

The salivary NO2 response observed by both McDonagh and Green mirrors those of salivary NO3, suggesting that the increase in salivary NO2 following the consumption of each supplement is proportional to the amount of NO3 available for bacterial reduction to NO2 in the oral cavity. In both studies, plasma NO3 peaked with 2-3 hrs after ingesting either Beet It Shot or Berkeley Life with there being a 400% increase above baseline.

The peak elevation in non-concentrated, beet crystal by SuperBeets occurred at 2 hrs post ingestion, increasing by 130%. It is important to note here that the smaller plasma NO3 elevation in the beetroot crystal condition was likely due to the smaller dose of NO3 administered when compared with the other NO3-rich vehicles (1.40 vs. 5.76 mmol NO3 for Beet Shots and 5.09 mmol for Berkeley Life).

Clearly, ingesting a single, concentrated NO3 dose, such as that found in Beet It Shots and Berkeley Life tablets, appear to be an effective approach in elevating plasma and salivary NO2 to physiological relevant levels to elicit a favorable vascular response such as BP reduction. What is unclear is what the minimal plasma NO2 threshold is necessary to achieve such benefit. At the very the least, these studies demonstrate that concentrated dietary NO3 delivered in a small volume such as either Beet It juice (5.76 mmol NO3 in 55 ml) or Berkeley Life tablet (5.04 mmol NO3 in 2 tablets) may be recommended as a practical approach for maintaining or improving markers of cardiovascular health in healthy individuals.

Berkeley Life, plant-based bio-equivalency of dietary inorganic nitrate

Berkeley Life is based on a simple premise: provide a plant-based bio-equivalency of nitrate that would be found in clinically-supported beet juice and leafy greens. That's it.

Berkeley Life's inorganic nitrate-rich proprietary blend is fortified with:

- beet root extract
- Organic fermented beetroot powder

and fortified with:

- Vitamin C,
- Thiamin (vitamin B1),
- Vitamin B12,
- Magnesium and Potassium

Again, plant-based nitrate bio-equivalency restores nitric oxide deficiency, especially, if the eNOS pathway is compromised. Exercise daily and drink well characterized beet juice and/or eat multiple servings of leafy greens that is consistent with the DASH diet.

And if you don't have access to plant-based sources, consider a plant-based equivalency that is based upon the clinically supported, Berkeley Life.

Keep it simple and don't try to short-circuit the pathway with nitrite supplements. Instead, allow the body to convert nitrate -- at the appropriate time and at the appropriate place within the body -- to nitric oxide.

Remember, plants have very little, if any nitrite, but are a great source of nitrate and the human body is best adapted to handle nitrate, not nitrite, especially, as to safely regulating nitrogen oxide metabolism and the production of nitric oxide within the body.

The importance of a dietary nitrate (vs nitrite) supplement is further emphasized in the thoughtful letter to the editor in the Journal of Applied Physiology in 2011 by Lundberg comparing nitrate vs nitrite supplementation. Lundberg -- credited for identifying the non-arginine or dietary nitrate pathway -- first showed how dietary nitrate reduces BP and oxygen cost during physical exercise to increase stamina: this slow controlled release of nitrite from dietary nitrate may have desirable health effects, including a lowering of blood pressure.

Berkeley Life's nitrate formula is based on several clinical studies by multiple labs and is intentionally void of nitrite. The idea of' short-circuiting the dietary nitrate pathway with nitrite supplement is counter to how the body metabolizes nitrate. Hence, Berkeley Life is focused on plant-based equivalency of nitrate that would be found in clinically-supported beet juice and leafy greens.

Berkeley Life formula is under clinical investigation at UCLA to further advance our understanding of dietary nitrate in vascular health.

Plant-based bio-equivalency of nitrate	Berkeley Life
Source of NOx species	Modeled after nitrate-rich beets and leafy greens clinical studies which includes vitamin C, thiamin, vitamin B-12, magnesium, potassium nitrate, non-GNO beet root extract, and fermented organic beet root
Primary NOx bioactive	Dietary nitrate and non-GMO and organic fermented beet-derived nitrate
Duration & magnitude of benefit	Nitrate half-life: longer 5-7 hours in circulation
Clinical studies on nitrate for BP reduction	Several peer-reviewed articles in notable journals show blood pressure lowering with a 3-7 mM NO3 dose
Underlying approach	'modeled after nitrate-rich plant diets: allows the slow release of NO2 for the body to convert'

Berkeley Test, patented salivary nitric oxide test strip

Berkeley Life's dietary approach to restoring nitric oxide is based on plant-based bio-equivalence with dietary inorganic nitrate. Such a formula represents a valuable, safe and effective intervention to provide a sustained lowering of blood pressure and improvement in vascular health among hypertensive individuals and those at risk of becoming hypertensive.

In our desire to stay healthy, two important questions to restore and sustain your nitric oxide levels are considered:

- Do your foods and supplements have the important ingredients to keep you healthy?
- Is your body 'bio-converting' these foods and supplements to achieve the desired effect?

Each of us is different and the demand for bioactives, such as nitric oxide, can vary significantly based on our biology and lifestyle. Nitric oxide levels rise and fall throughout the day. Our challenge is to maintain a steady, yet elevated state.

To maintain this elevated state we need to be able to easily test our nitric oxide status levels so that we can make immediate and real-time dietary adjustment. Berkeley Test provides an easy-to-use self-administered saliva test for consumers to monitor NO levels.

We are bombarded daily with advice about foods and supplements that we can take to improve our health. We are told these foods and supplements contain bioactive ingredients that are good for our cardiovascular health and system. And yet we are also told that not all vegetables, varieties, and brands are created equally. And we also know that handling, cooking, and processing may impact nutritional value and bioactivity.

And so we are left with many questions for which we don't have answers. How much should I be eating? Is it having the desired effect?

Disappointingly, the traditional approach to foods and supplements is just to slap on nutritional labels and supplement facts. Yet we all know that these labels don't really answer those important questions. To make matters worse labeling standards can never keep up with scientific advances and fail to track the necessary bioactive ingredients. It is common for labels to dramatically understate or overstate the nutritional value of the food.

As a result, consumers today lack effective tools with which to measure the personal impact that these bioactive ingredients will have.

Berkeley Test addresses commonly posed questions:

- Is the supplement effective at enhancing my nitric oxide status? and,
- Is my body converting nitrate to nitric oxide - as well as ensuring that our levels are sustained throughout the day?

As to the latter, Michael Greger, M.D., of NutritionFacts.org, said it best: "Berkeley Test may offer hope by bringing plant- based foods into our dietary lifestyle in an engaging fashion. At the very least, it will remind us to eat our greens on a more frequent basis" (Real World Health care blog. Turning DASH Strategy into Reality for Improved Cardio Wellness Outcomes: Part II).

The Berkeley Test nitric oxide test strips are the only patented strips for salivary nitric oxide status. (U.S. Patent and Trademark Office has issued U.S. patent numbers 9,360,490 and 9,759,716 entitled, Compositions, Apparatus and Methods for Monitoring Biomarkers, for the Nitric Oxide Test Strip and a method to assess the effects of diet and exercise on changing an individual's nitric oxide status and health).

In Europe, the Berkeley Test strips have also been awarded a patent and a second patent will be issued by the USPTO for the bundling of the strip with nitrate-based supplements. The Berkeley Test strips were designed to both collect saliva without using your finger as some other indicator strips unfortunately requires. Berkeley Test strips also prevent false positive results.

Qualities	Berkeley Test
Offering	• 10 individually sealed strips in a box • 50 strips in a tube • 2 free individually sealed + Berkeley Life NO3 dietary supplement
Product attributes	• Easy collection & no mess: saliva to strip • 'certified food safe' • Prevents false positives
Intellectual property	• US patent (strip), awarded 2016 • US continuation (strip + supplement), notice of allowance, 2017 • Europe Patent, granted, 2017

Berkeley Life's philosophy to achieving vascular wellness

- Poor diet and physical inactivity remain the primary drivers of cardiovascular disease and metabolic disorders such as obesity, hypertension, and diabetic insulin resistance. A daily lifestyle of a cardioprotective diet, including nitrate-rich plant-based foods, is a solution.
- The amino acid, arginine can be a source for the body to make nitric oxide. Unfortunately, as we age, we lose our ability to make nitric oxide through the use of arginine, thereby increasing reliance on a non-arginine source, specifically, and dietary nitrate. Plant-based foods, such as the DASH Diet – rich in leafy greens such as arugula, kale, and spinach – help supplement the body's pool of nitrate, which can be converted to nitric oxide, independent of the arginine-dependent eNOS pathway.
- If you don't have access to nitrate-rich plant-based whole foods consider a plant-based equivalency that is based upon the clinically supported, Berkeley Life.
- Allow the body to convert nitrate - at the appropriate time and at the appropriate place within the body - to nitric oxide.
- Remember, plants have very little, if any nitrite (NO2), but are a great source of nitrate (NO3). The human body is best adapted to handle NO3, not NO2, especially, as to safely regulating nitrogen oxide metabolism and the production of nitric oxide within the body.
- By incorporating the saliva NO test strips into one's daily routine, Berkeley Test users can make informed real-time dietary adjustments throughout the day. Recognizing the importance of monitoring ones saliva nitric oxide status for improving vascular heath, Berkeley Test's patented salivary nitric oxide test strip confirms the conversion of dietary nitrate to nitric oxide metabolites in the body, thereby helping to validate claims of various dietary nitrate products. Remember, if you can't measure it, you cant manage it.
- Use Berkeley Test throughout the day to sustain your levels. Remember, if you can't measure it, you can't manage it.

References

- Ashor et al. 2017. Medium-term effects of dietary nitrate supplementation on systolic and diastolic blood pressure in adults: a systematic review and meta-analysis. J Hypertension.
- Appel LJ, Moore TJ, Obarzanek E et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. 1997. N Engl J Med. 336:1117-1124.
- Ashworth A, Mitchell K, Blackwell JR et al. High-nitrate vegetable diet increases plasma nitrate and nitrite concentrations and reduces blood pressure in healthy women. 2015. Public Health Nutr. 16: 1-10.

- Bazzano LA, He J, Ogden LG et al. Fruit and vegetable intake and risk of cardiovascular disease in US adults: the first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. 2002. Am J Clin Nutr. 76:93-99.
- Bazzano LA, Serdula MK, Liu S. Dietary intake of fruits and vegetables and risk of cardiovascular disease. 2003. Curr Atheroscler Rep. 5:492-499.
- Ben-Shlomo Y, Spears M, Boustred C, et al. 2014. Aortic pulse wave velocity improves cardiovascular event prediction: An individual participant meta-analysis of prospective observational data from 17,635 subjects. J Am Coll Cardiol. 63:636-646.
- Carlström, M., Larsen, F. J., Nyström, T., Hezel, M., Borniquel, S., Weitzberg, E., & Lundberg, J. O. Dietary inorganic nitrate reverses features of metabolic syndrome in endothelial nitric oxide synthase-deficient mice. 2010. Proceedings of the National Academy of Sciences of the United States of America, 107(41), 17716–17720.
- Couch SC, Saelens BE, Levin L, et al. 2008. The efficacy of a clinic-based behavioral nutrition intervention emphasizing a DASH-type diet for adolescents with elevated blood pressure. J Pediatr. 152: 494–501.
- Duncan C, Dougall H, Johnston P, Green S, Brogan R, Smith L, Golden M, Benjamin N. 1995. Chemical generation of nitric oxide in the mouth from the enterosalivary circulation of dietary nitrate. Nat Med 1: 546-551.
- Gee et al. 2016. Dietary Nitrate Lowers Blood Pressure: Epidemiological, Pre-clinical Experimental and Clinical Trial Evidence. Curr Hypertens Rep.
- Ghosh SM, Kapil V, Fuentes-Calvo I et al. 2013 Enhanced vasodilator activity of nitrite in hypertension. Hypertension. 61:1091-102.
- Govoni M, Jansson EA, Weitzberg E, et al. 2008. The increase in plasma nitrite after a dietary nitrate load is markedly attenuated by an antibacterial mouthwash. Nitric Oxide. 19:333–337.
- Green SJ, Sotka, W., Suri RS. 2018. Effects of concentrated dietary nitrate on nitrate metabolism and salivary bioconversion in pre-hypertensive adults. Manuscript in preparation.
- Hord NG, Tang Y, Bryan NS. 2009. Food sources of nitrates and nitrites: the physiologic context for potential health benefits. Am J Clin Nutr. 90: 1-10.
- Kapil V, Khambata RS, Robertson A et al. 2015. Dietary nitrate provides sustained blood pressure lowering in hypertensive patients: a randomised, phase 2, double-blind, placebo-controlled study. Hypertension. 65: 320- 327.
- Kapil V, Milsom AB, Okorie M, et al. 2010. Inorganic nitrate supplementation lowers blood pressure in humans role for nitrite-derived NO. Hypertension. 56:274–281.
- Lara et al. 2016. Effects of inorganic nitrate and beetroot supplementation on endothelial function: a systematic review and meta-analysis. Eur J Nutr.
- Larsen FJ, Weitzberg E, Lundberg JO et al. 2007. Effects of dietary nitrate on oxygen cost during exercise. Acta Physiol. 191:59–66.
- Liu, et al. 2013. Effects of a nitrate-rich meal on arterial stiffness and blood pressure in healthy volunteers. Nitric Oxide 35:123
- Lundberg JO and Govoni M. 2004. Inorganic nitrate is a possible source for systemic generation of nitric oxide. Free Radic Biol Med. 37:395-400.
- Lundberg JO, Larsen FJ, Weitzberg, E 2011. Supplementation with nitrate and nitrite salts in exercise: a word of caution. Journal of Applied Physiology 616-617; DOI:
- McDonagh STJ, Wylie LJ, Webster JM, Vanhatalo A, Jones AM. 2018. Influence of dietary nitrate food forms on nitrate metabolism and blood pressure in healthy normotensive adults. Nitric Oxide 30: 66-74
- Omar SA,Artime E,Webb AJ. 2012.A comparison of organic and inorganic nitrates/nitrites. Nitric Oxide 26:229-240.
- Rayomand S. Khambata, Suborno M. Ghosh, Krishnaraj S. Rathod, Tharssana Thevathasan, Federica Filomena, Qingzhong Xiao, and Amrita Ahluwalia. 2017. Antiinflammatory actions of inorganic nitrate stabilize the atherosclerotic plaque. PNAS 114: E550-E559.
- RealWorld Health care blog. Turning DASH Strategy into Reality for Improved Cardio Wellness Outcomes: Part II http://www.realworldhealthcare.org/ author/shawn-green/
- Seals DR, Walker AE, Pierce GL, Lesniewski LA. 2009. Habitual exercise and vascular ageing. The Journal of Physiology. 587(Pt 23):5541-5549
- Sobko et al. 2009. Dietary nitrate in Japanese traditional foods lowers diastolic blood pressure in healthy volunteers. Nitric Oxide 22:136
- Spiegelhalder B, Eisenbrand G, Preussmann R. 1976. Influence of dietary nitrate on nitrite content of human saliva: possible relevance to in vivo formation of N-nitroso compounds. Food Cosmet Toxicol. 14:545-8.
- Vanhatalo A, Bailey SJ, Blackwell JR, et al. 2010. Acute and chronic effects of dietary nitrate supplementation on blood pressure and the physiological responses to moderate-intensity and incremental exercise. Am J Physiol-Regul Integr Comp Physiol. 299:R1121–R1131.
- Webb AJ, Nakul Patel, Stavros Loukogeorgakis, Mike Okorie, Zainab Aboud, Shivani Misra, Rahim Rashid, Philip Miall, John Deanfield, Nigel Benjamin, Raymond MacAllister, Adrian J. Hobbs and Amrita Ahluwalia. 2008. Acute Blood Pressure Lowering, Vasoprotective, and Antiplatelet Properties of Dietary Nitrate via Bioconversion to Nitrite. Hypertension. 51:784-790
- Wylie LJ, Kelly J, Bailey SJ et al. 2013. Beetroot juice and exercise: pharmacokinetics and dose-response relationship. Journal of Applied Physiology. 115: 325-336.